mineral resources

Department:
Mineral Resources
REPUBLIC OF SOUTH AFRICA

STINKFONTEIN PROSPECT

BASIC ASSESSMENT REPORT & ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

SUBMITTED FOR ENVIRONMENTAL AUTHORIZATIONS IN TERMS OF THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 1998 AND THE NATIONAL ENVIRONMENTAL MANAGEMENT WASTE ACT, 2008 IN RESPECT OF LISTED ACTIVITIES THAT HAVE BEEN TRIGGERED BY APPLICATIONS IN TERMS OF THE MINERAL AND PETROLEUM RESOURCES DEVELOPMENT ACT, 2002 (MPRDA) (AS AMENDED).

NAME OF APPLICANT:	**Rooiberg Mining (Pty) Ltd**
TEL NO:	**082 300 4184**
FAX NO:	**None**
POSTAL ADDRESS:	**PO Box 84 Napier 7270**
PHYSICAL ADDRESS:	**94 Gentoo Street, Cape Agulhas, 7287**
FILE REFERENCE NUMBER SAMRAD:	**NC 30/5/1/1/2/13093 PR**

July 2022
Report #: 2595/D-BAR

STINKFONTEIN PROSPECT

BASIC ASSESSMENT REPORT &
ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

Applicant:
Rooiberg Mining (Pty) Ltd
94 Gentoo Street, Cape Agulhas, 7287
PO Box 84, Napier, 7270
stephenleroux@ymail.com

Environmental Assessment Practitioner:
Site Plan Consulting

Po Box 28 Strand 7139
Craig Donald (EAP Registration: EAPASA 2020-2124)
craig@siteplan.co.za

February 2022
Report #: 2595/D-BAR
NC 30/5/1/1/2/13093 PR

IMPORTANT NOTICE

In terms of the Mineral and Petroleum Resources Development Act (Act 28 of 2002 as amended), the Minister must grant a prospecting or mining right if among others the mining "will not result in unacceptable pollution, ecological degradation or damage to the environment".

Unless an Environmental Authorisation can be granted following the evaluation of an Environmental Impact Assessment and an Environmental Management Programme report in terms of the National Environmental Management Act (Act 107 of 1998) (NEMA), it cannot be concluded that the said activities will not result in unacceptable pollution, ecological degradation or damage to the environment.

In terms of section 16(3)(b) of the EIA Regulations, 2014, any report submitted as part of an application must be prepared in a format that may be determined by the Competent Authority and in terms of section 17 (1) (c) the competent Authority must check whether the application has taken into account any minimum requirements applicable or instructions or guidance provided by the competent authority to the submission of applications.

It is therefore an instruction that the prescribed reports required in respect of applications for an environmental authorisation for listed activities triggered by an application for a right or a permit are submitted in the exact format of, and provide all the information required in terms of, this template. Furthermore please be advised that failure to submit the information required in the format provided in this template will be regarded as a failure to meet the requirements of the Regulation and will lead to the Environmental Authorisation being refused.

It is furthermore an instruction that the Environmental Assessment Practitioner must process and interpret his/her research and analysis and use the findings thereof to compile the information required herein. (Unprocessed supporting information may be attached as appendices). The EAP must ensure that the information required is placed correctly in the relevant sections of the Report, in the order, and under the provided headings as set out below, and ensure that the report is not cluttered with un-interpreted information and that it unambiguously represents the interpretation of the applicant.

Objective of the basic assessment process

The objective of the basic assessment process is to, through a consultative process–

(a) determine the policy and legislative context within which the proposed activity is located and how the activity complies with and responds to the policy and legislative context;

(b) identify the alternatives considered, including the activity, location, and technology alternatives;

(c) describe the need and desirability of the proposed alternatives,

(d) through the undertaking of an impact and risk assessment process inclusive of cumulative impacts which focused on determining the geographical, physical, biological, social, economic, heritage , and cultural sensitivity of the sites and locations within sites and the risk of impact of the proposed activity and technology alternatives on the these aspects to determine:

  (i) the nature, significance, consequence, extent, duration, and probability of the impacts occurring to; and

  (ii) the degree to which these impacts—

    (aa) can be reversed;

    (bb) may cause irreplaceable loss of resources; and

    (cc) can be managed, avoided or mitigated;

(e) through a ranking of the site sensitivities and possible impacts the activity and technology alternatives will impose on the sites and location identified through the life of the activity to—

  (i) identify and motivate a preferred site, activity and technology alternative;

  (ii) identify suitable measures to manage, avoid or mitigate identified impacts; and

  (iii) identify residual risks that need to be managed and monitored.

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List of Abbreviations

amsl	Above mean sea level
CBA	Critical Biodiversity Area
dB	Decibel
DMRE	Department of Mineral Resources and Energy
DTM	Digital Terrain Model
EAP	Environmental Assessment Practitioner
EIA	Environmental Impact Assessment
EM	Electromagnetic (Survey)
EMP	Environmental Management Programme
ESA	Ecological Support Area
GPR	Ground Penetrating Radar
I&AP	Interested and Affected Party
IDP	Integrated Development Plan
PWP	Prospecting Work Programme
NCHRA	Northern Cape Heritage Resources Authority (Previously NBKB)
ngl	Natural Ground Level
NEMA	National Environmental Management Act
NEM: AQA	National Environmental Management: Air Quality Act
NEM:WA	National Environmental Management: Waste Act
NID	Notification of Intent to Develop
ONA	Other Natural Area
SANBI	South African National Botanical Institute
SPC	Spatial Planning Category
SDF	Spatial Development Framework
WCBSP	Western Cape Biosphere Spatial Plan
WULA	Water Use Licence Application

PART A

SCOPE OF ASSESSMENT AND BASIC ASSESSMENT REPORT

1 Contact Person and correspondence address

1.1 Details of the EAP

Name of the Practitioner: Craig Donald (EAPASA 2020-2124)

Tel No.: 021 854 4260 / 084 511 1520

Fax No. : 021 854 4321

E-mail address: craig@siteplan.co.za

1.2 Expertise of the EAP

The qualifications of the EAP
Refer **Appendix 1.**

Summary of the EAP's past experience.
Refer **Appendix 1.**

2 Location of the overall activity

Farm Name:	**The total Prospecting Right Application area is located on 5 non-contiguous portions of land on land parcels as follows:**

Section 1: Kopjeskraal Section
Portion of Portion 1 of Kopjeskraal 273
Section 2: Eyer Gat Section
Portion of Remainder of Eyer Gat 327
Section 3: Wolve Grav Section
Portion of Portion 2 of Wolve Grav Water 330
Section 4: Stinkfontein East Section
Portion 6 of Stinkfontein 461
Portion of Portion 7 of Stinkfontein 461
Portion of Portion 9 of Stinkfontein 461
Portion 12 of Stinkfontein 461
Portion 14 of Stinkfontein 461
Portion 16 of Stinkfontein 461
Portion 18 of Stinkfontein 461
Portion of Portion 21 of Stinkfontein 461
Section 5: Stinkfontein West Section
Portion of Portion 7 of Stinkfontein 461
Portion of Portion 8 of Stinkfontein 461
Portion of Portion 10 of Stinkfontein 461
Portion of Portion 21 of Stinkfontein 461

All farms in Calvinia Administrative District

<table>
<tr><td>Application area (Ha)</td><td><table>
<tr><td colspan="2">Total 8 796.5827ha made up of the following sections:</td></tr>
<tr><td>Kopjeskraal Section</td><td>618.6723ha</td></tr>
<tr><td>Eyer Gat Section</td><td>1 692.1361ha</td></tr>
<tr><td>Wolve Grav Section</td><td>777.7756ha</td></tr>
<tr><td>Stinkfontein East Section</td><td>4 345.2530ha</td></tr>
<tr><td>Stinkfontein West Section</td><td>1 362.7457ha</td></tr>
<tr><td>TOTAL</td><td>8 796.5827ha</td></tr>
</table></td></tr>
<tr><td>Magisterial district:</td><td>Calvinia</td></tr>
<tr><td>Distance and direction from nearest town:</td><td>The site is located approximately 30km west of Calvinia.</td></tr>
<tr><td>21 digit Surveyor General Code for each farm portion:</td><td>C01500000000027300001
C01500000000032700000
C01500000000033000002
C01500000000046100006
C01500000000046100007
C01500000000046100009
C01500000000046100012
C01500000000046100014
C01500000000046100016
C01500000000046100018
C01500000000046100021
C01500000000046100008
C01500000000046100010
C01500000000046100021</td></tr>
<tr><td>Locality map</td><td>Refer Figure 1.</td></tr>
<tr><td>Description of the overall activity. (Indicate Mining Right, Mining Permit, Prospecting right, Bulk Sampling, Production Right, Exploration Right, Reconnaisance permit, Technical co-operation permit, Additional listed activity).</td><td>Prospecting Right: Reverse Circulation Exploratory Drilling.</td></tr>
</table>

3 Locality map

Refer Figure 1 below.

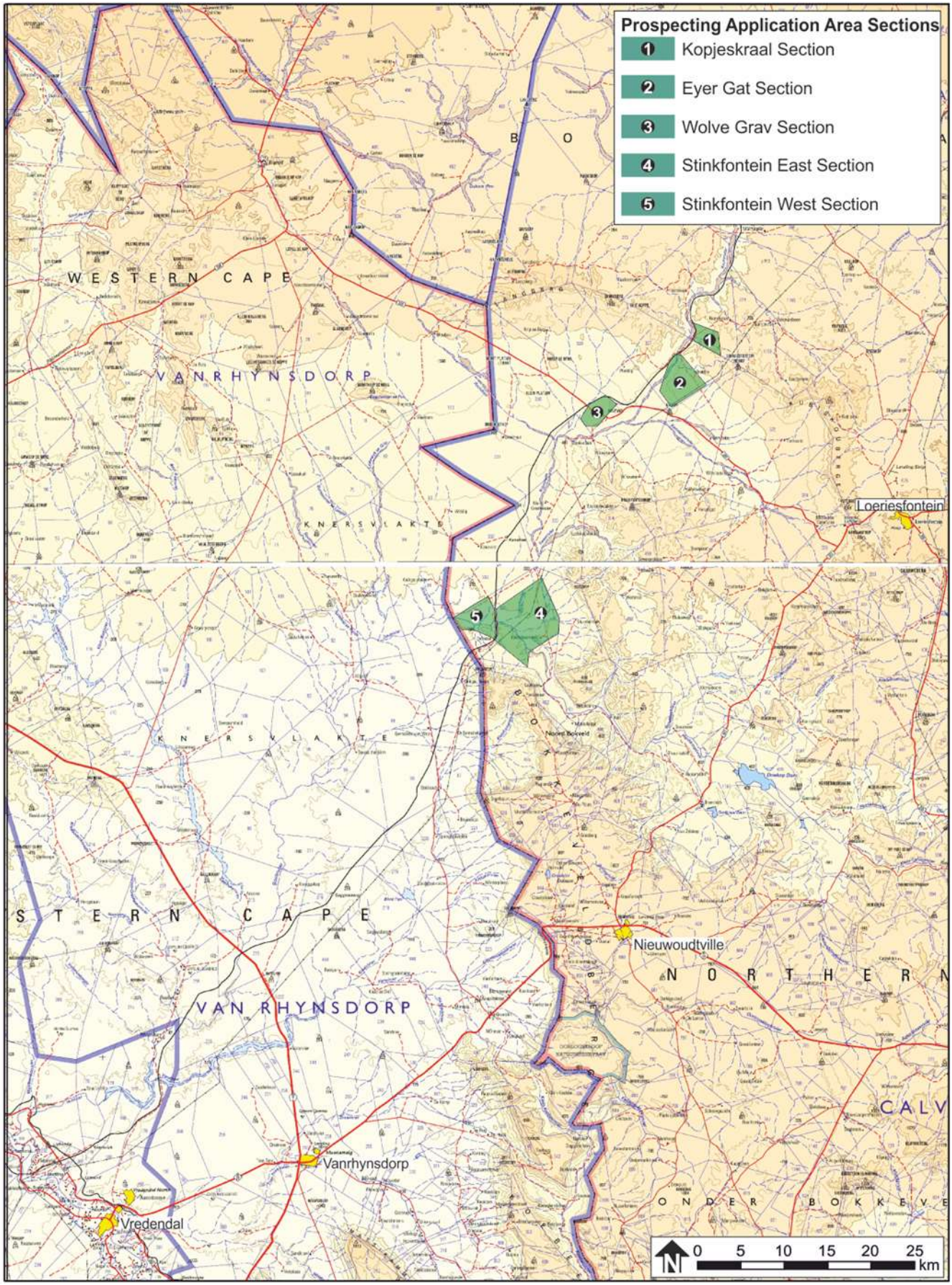
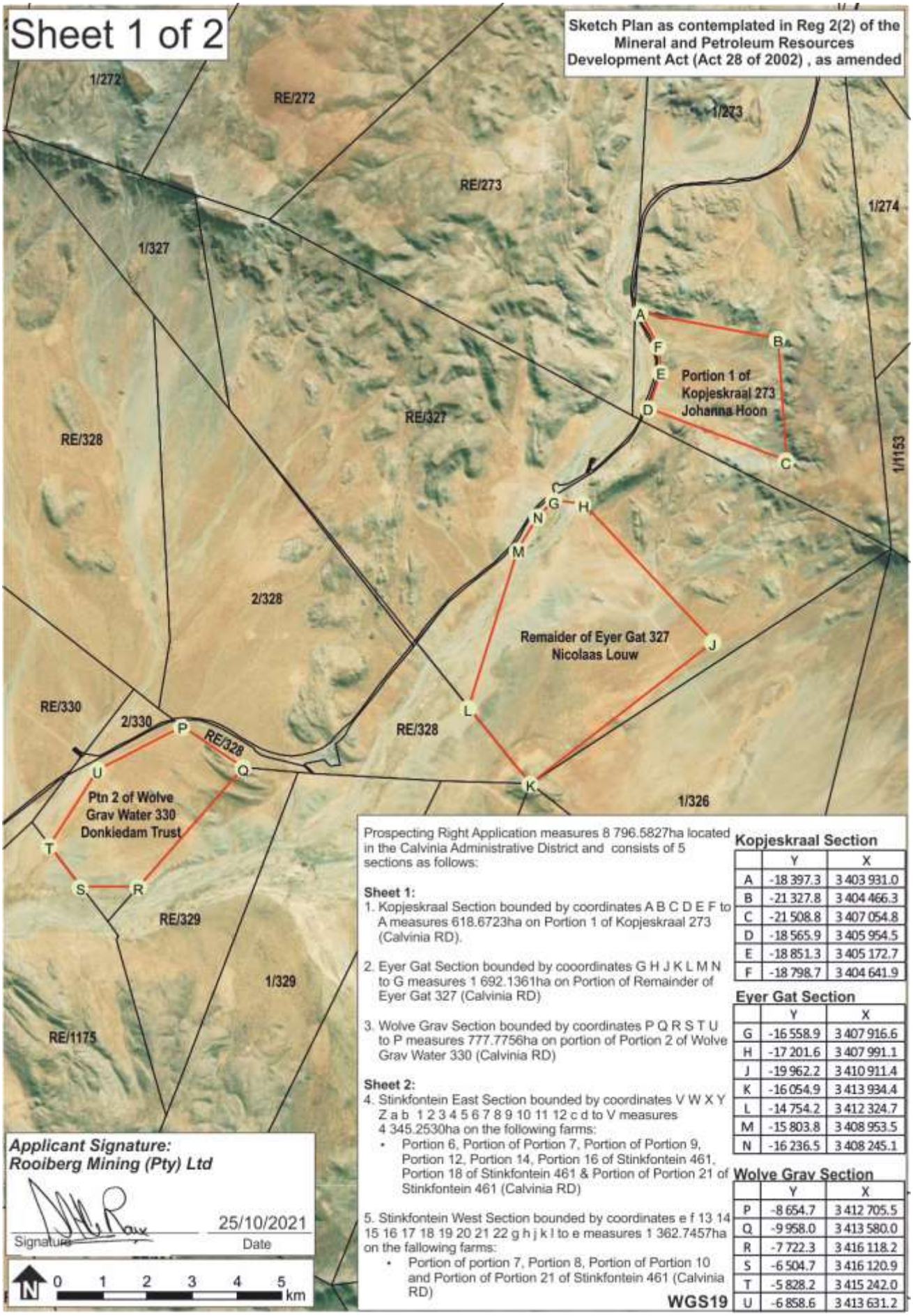


Figure 1: Locality Plan

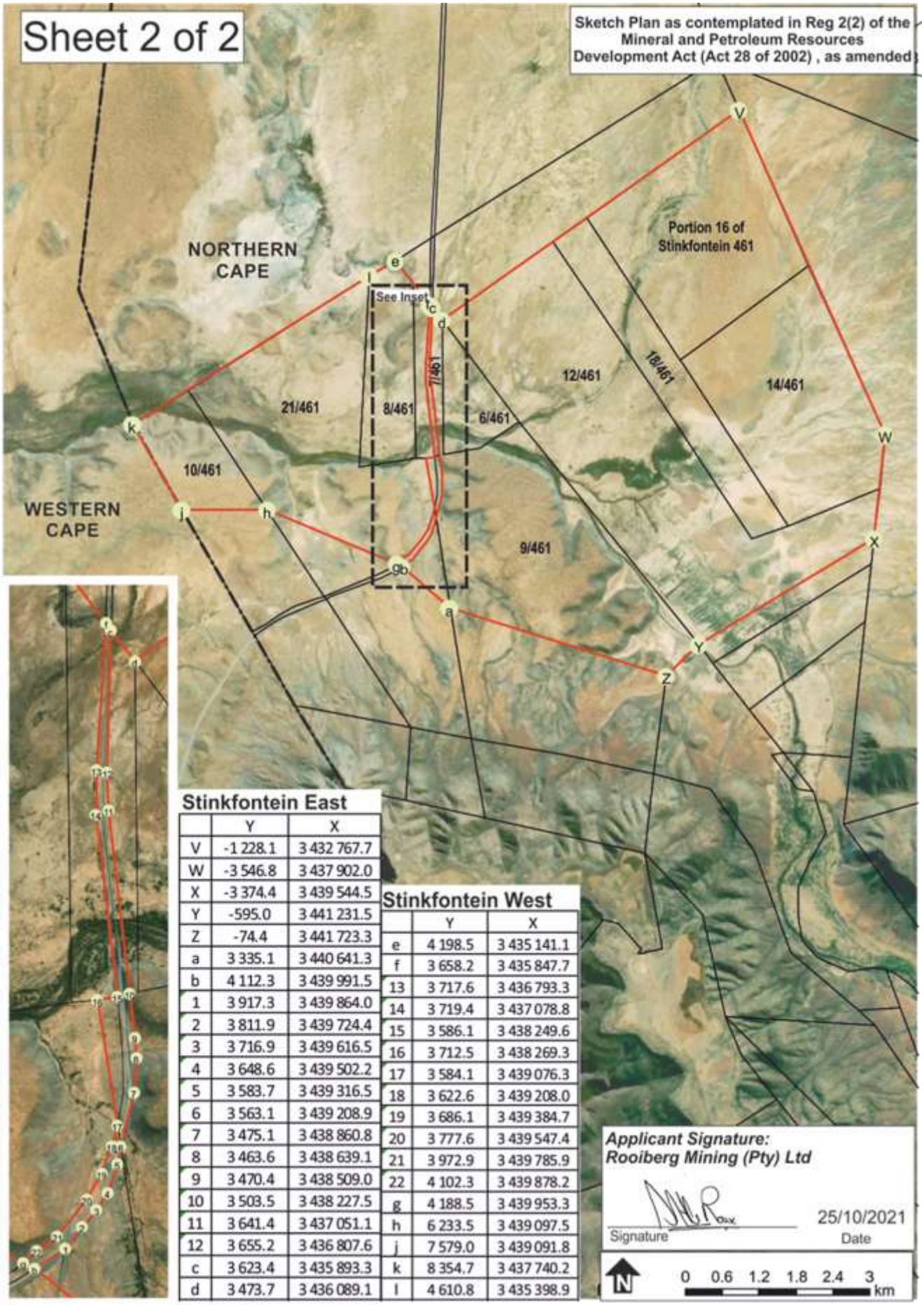


Kopjeskraal Section	Y	X
A	-18 397.3	3 403 931.0
B	-21 327.8	3 404 466.3
C	-21 508.8	3 407 054.8
D	-18 565.9	3 405 954.5
E	-18 851.3	3 405 172.7
F	-18 798.7	3 404 641.9

Eyer Gat Section	Y	X
G	-16 558.9	3 407 916.6
H	-17 201.6	3 407 991.1
J	-19 962.2	3 410 911.4
K	-16 054.9	3 413 934.4
L	-14 754.2	3 412 324.7
M	-15 803.8	3 408 953.5
N	-16 236.5	3 408 245.1

Wolve Grav Section	Y	X
P	-8 654.7	3 412 705.5
Q	-9 958.0	3 413 580.0
R	-7 722.3	3 416 118.2
S	-6 504.7	3 416 120.9
T	-5 828.2	3 415 242.0
U	-6 858.6	3 413 631.2

Figure 2: Reg 2(2) Drawing showing detailed Project Location (Sheet 1 of 2)



Stinkfontein East

	Y	X
V	-1 228.1	3 432 767.7
W	-3 546.8	3 437 902.0
X	-3 374.4	3 439 544.5
Y	-595.0	3 441 231.5
Z	-74.4	3 441 723.3
a	3 335.1	3 440 641.3
b	4 112.3	3 439 991.5
1	3 917.3	3 439 864.0
2	3 811.9	3 439 724.4
3	3 716.9	3 439 616.5
4	3 648.6	3 439 502.2
5	3 583.7	3 439 316.5
6	3 563.1	3 439 208.9
7	3 475.1	3 438 860.8
8	3 463.6	3 438 639.1
9	3 470.4	3 438 509.0
10	3 503.5	3 438 227.5
11	3 641.4	3 437 051.1
12	3 655.2	3 436 807.6
c	3 623.4	3 435 893.3
d	3 473.7	3 436 089.1

Stinkfontein West

	Y	X
e	4 198.5	3 435 141.1
f	3 658.2	3 435 847.7
13	3 717.6	3 436 793.3
14	3 719.4	3 437 078.8
15	3 586.1	3 438 249.6
16	3 712.5	3 438 269.3
17	3 584.1	3 439 076.3
18	3 622.6	3 439 208.0
19	3 686.1	3 439 384.7
20	3 777.6	3 439 547.4
21	3 972.9	3 439 785.9
22	4 102.3	3 439 878.2
g	4 188.5	3 439 953.3
h	6 233.5	3 439 097.5
j	7 579.0	3 439 091.8
k	8 354.7	3 437 740.2
l	4 610.8	3 435 398.9

Figure 3: Reg 2(2) Drawing showing detailed Project Location (Sheet 2 of 2)

4 Description of the scope of the proposed overall activity

4.1 Prospecting Right Application Process

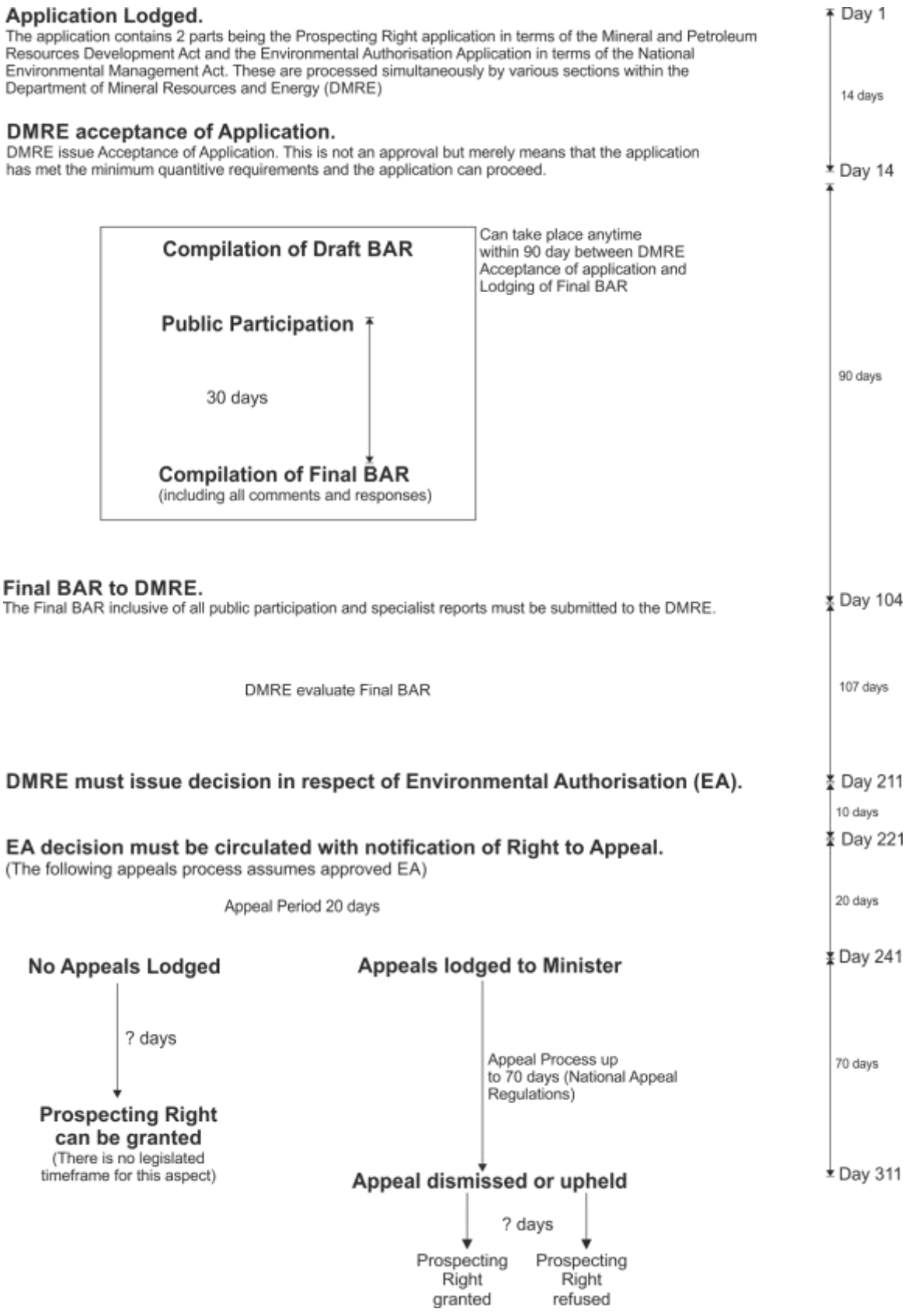


Figure 4: Prospecting Right Application Process Flow Diagram

Prior to the 2021 amendment to the listed activities, in order to determine listed activities, cognisance had to be taken of location of National Parks and/or formally Protected Areas, CBA's, Endangered Vegetation Types and National Protected Area Expansion Strategy (NPAES) areas. Although the amendment does not require this, it is good practice at this stage to acknowledge and have an understanding of how the application area intersects or interacts with these.

The site is not located within a National Park or formally protected area. However the Stinkfontein West area is located adjacent to the Kalkgat Private Nature Reserve. The Knersvlate Nature Reserve is located 11km west of Stinkfontein west Section.

The sites are not located in any of the SKEP Geographic Priority areas.

All of the application polygons intersect to a greater or lesser degree with the NPAES with the Kopjeskraal Section been located completely inside the Knersvlakte / Hantam NPAES.

In respect of vegetation (Refer Figure 5 below), the 5 non-contiguous prospecting sections is located in the vegetation classified by Mucina and Rutherford as:

Vegetation Type	**NEMBA Classification**
Namaqualand Klipkoppe Shrubland	None
Namaqualand Riviere	None
Northern Knersvlakte Vygieveld	None
Knersvlakte Shale Vygieveld	None
Vanrhynsdorp Gannabos Veld	None

In terms of CBA classification (Refer Figure 6), the Prospecting Right authorisation area **does** intersect with Critical Biodiversity Areas 1 and 2 as well as Ecological Support Areas. Other natural areas make up a relatively small percentage of the application area.

There are stream channels (episodic) within the authorisation area.

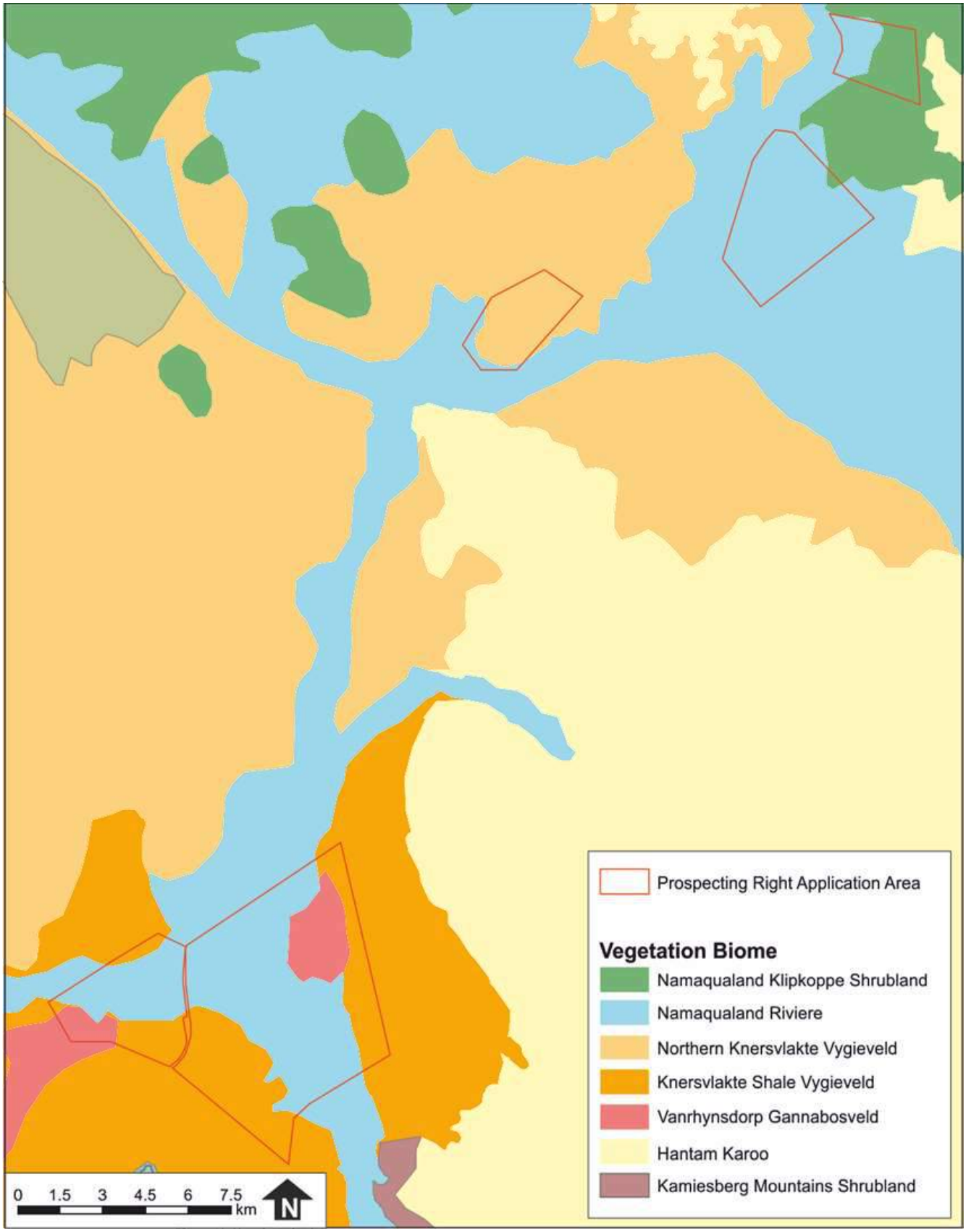


Figure 5: Vegetation Classification (Mucina and Rutherford)

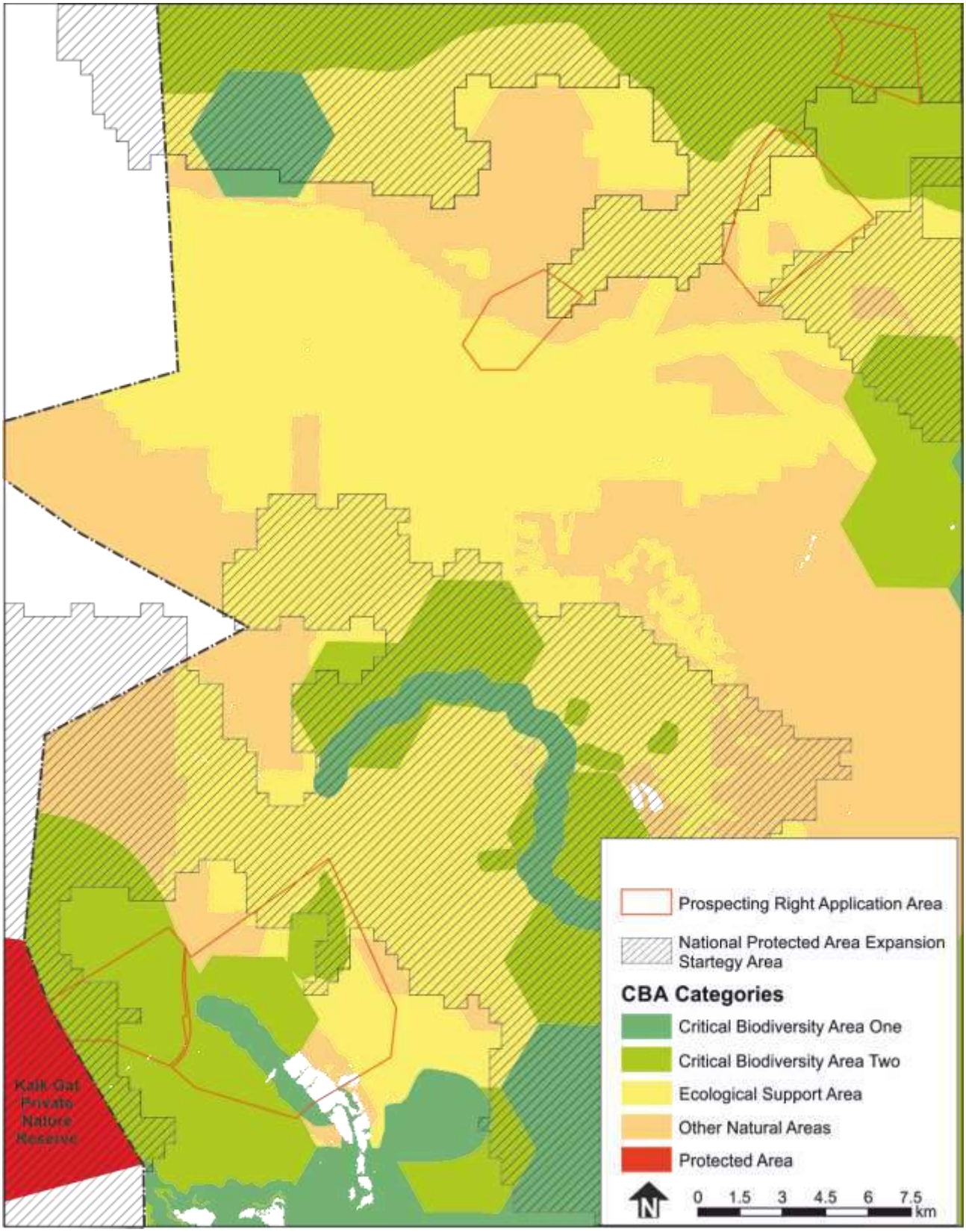


Figure 6: CBA Classification and NPAES

General Prospect Description:

The following general description is important in contextualizing the listed activities described in the table below.

It is proposed the area of land applied for will be evaluated through prospecting activities in phases as described in list form and more detail in para 4.3 below:

1) Review of historical data
2) Geophysical Work
3) Site establishment
4) Reverse circulation drilling on broad spaced pattern (99 holes to 10m deep)
5) Possible infill drilling based on results of initial drilling
6) Pre-feasibility study and mineral resource estimation

4.2 Listed and specified activities

4.2.1 In table format

NAME OF ACTIVITY	**Aerial extent of Activity** (Ha or m^2)	**LISTED ACTIVITY** (Mark with X)	**APPLICABLE LISTING NOTICE *(GNR 983- 985)***	**WASTE MANAGEMENT AUTHORISATION**
Application for Prospecting Right	8 796.5827ha	**X**	GNR 983: Activity 20	
Total disturbance area – see line item 2.3 and 2.4 below. Drill sites and access tracks along identified traverses	Drilling: 1.19ha Tracks: 4.56ha			
1. Establishment Phase				
1.1. Office to be established in Loeriesfontein				
1.2. Establish mobile chemical toilet at the traverse				
2. Operational Phase				
2.1. Geophysical Survey on foot				
2.2. Marking of traverses and drill sites				
2.3. Access along traverse to drill sites	18.5kmx 2.5m wide = 4.56ha	**x**	See note below*	
2.4. Establish drill at hole position and conduct RC drilling (Max 120m² disturbance site)	99 holes x 120m² each = 1.19ha	**x**	See note below*	
2.5. Rehabilitate drill site				
2.6. Rehabilitate any tracks which may have developed				
3. Decommissioning Phase				
3.1. Finalise rehabilitation of drill sites and access traverses				
3.2. Lodge Closure Application				

4.2.2 In word format

GNR983: Activity # 20

Any activity including the operation of that activity which requires a prospecting right in terms of section 16 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002), as well as any other applicable activity contained in this Listing Notice or Listing Notice 3 of 2014, as required to exercise the Prospecting Right

* The activities trigger several listed activities but the way we understand the 2021 amendment of the listed activities is that these are all included in the amended Listing Notice 1: Activity 20.

4.3 Geology informing the selection of the Prospecting Right Application Site

The Kalahari (palaeo-Orange), Karoo (palaeo-Olifants) and Gamoep (palaeo Buffels) Rivers are recognised as the three major source points through which diamonds were introduced to the West Coast from their origin in the hinterland. Other rivers that are also considered to have acted as significant source points are the Holgat, Buffels, Swartlintjies, Spoeg, Groen, Krom and Sout Rivers.

Rooiberg Mining (Pty) Ltd's proposed Stinkfontein Pospect occupies a strategic position with respect to the Krom and Sout Rivers. From Cretaceous to Miocene times the Doring and Sout Rivers transported diamonds from the interior of South Africa to the west coast. During Miocene times the Krom and Sout Rivers captured the headwaters of the diamondiferous Koa River and deposited heavy minerals including diamonds along its banks as well as in Palaeo Rivers still to be discovered within the area (as per Figure 7 below).

Detail Geology

The areas of interest lies within the Namaqua Mobile Belt, which consists mainly of granitic and gneissic bedrock which are overlain by younger sediments such as sand, clay and quartz debrits. During Cretaceous times, rivers from the hinterland, such as the Krom and Sout Rivers, carved into this gneissic bedrock, leaving diamondiferous gravels behind along its banks in the form of terraces or palaeo channels (Rooiberg). These channels can be up to 30m deep and are mainly covered by Aeolian sand and clay.

See Figure 7 overleaf which shows the potential alluvial transport routes as discussed above.

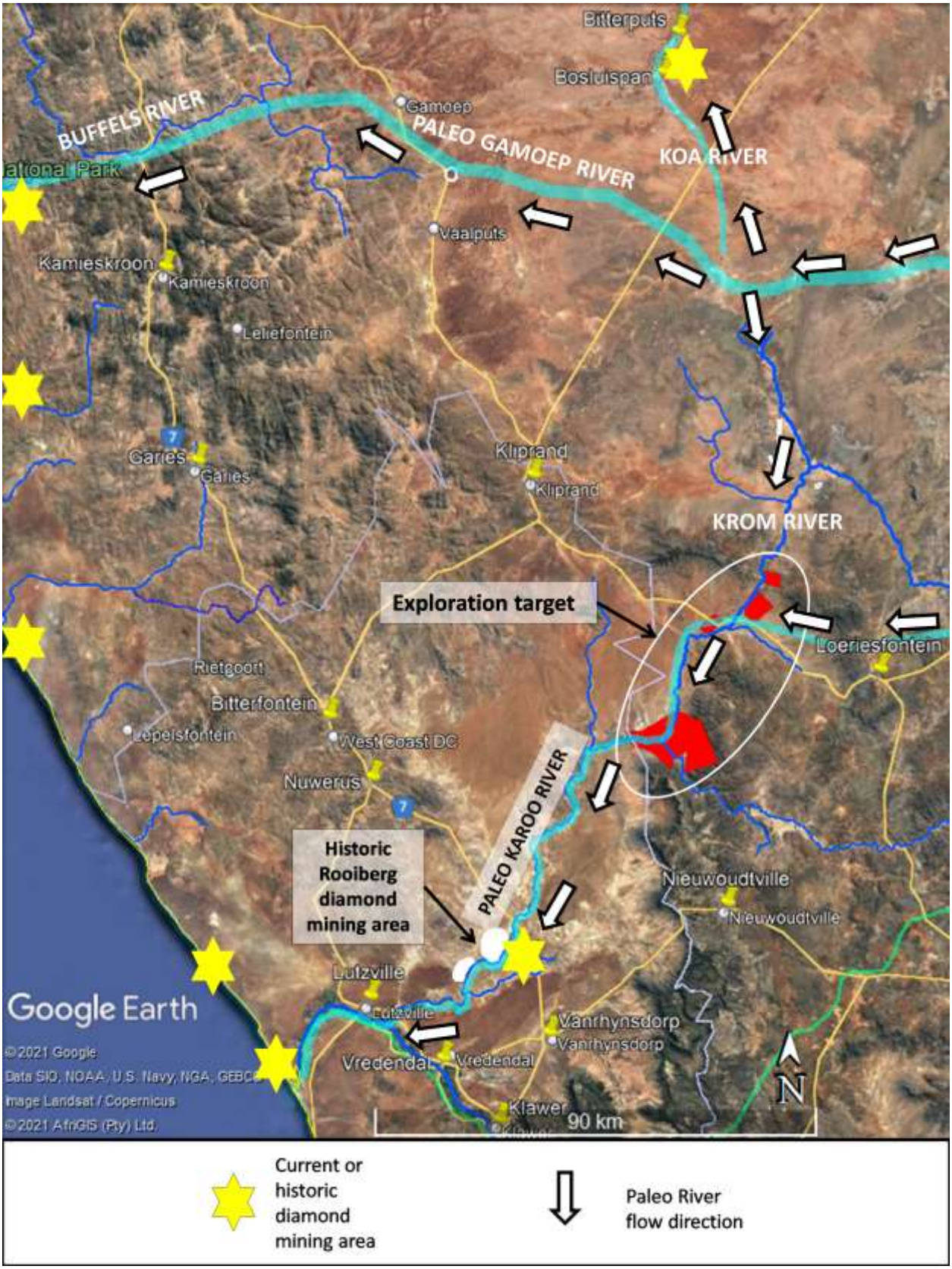


Figure 7: Map showing Palaeo Rivers / diamond transport routes

4.4 DESCRIPTION OF THE ACTIVITIES TO BE UNDERTAKEN

4.4.1 DESCRIPTION OF PLANNED NON-INVASIVE ACTIVITIES:

In terms of the prospecting proposed in this application the following non-invasive activities are planned:

Phase 0 – Application period for Land Use Approval

Prospecting rights require a Land Use approval in terms of LUPA (previously LUPO). Unfortunately this Land Use application requires the use of Environmental Authorisation as motivation for that application. As a result, we have seen several applications for Prospecting Right which have had to be renewed before any work has even progressed because of the absence of the Land Use Right. As a result, based on past experience, we have included a 9 month period in the Prospecting Programme to cover this aspect.

Phase 1 is made up of the non-invasive prospecting methods. These are as follows:

- ***Phase 1a***: Desktop analysis (Satellite imagery, available mapping, literature review, etc). This phase has already been initiated through a literature review of geological articles and study of aerial photos etc. The synthesis of this information and the use of the information gained from this prospecting cycle will provide the full picture of the deposit as required by the applicants.
- ***Phase 1b***: Geophysical Electromagnetic Survey is conducted through the passing of electricity through two points in the veld. The aim of such survey is to determine any anomalies which may be present in the underlying geology. This phase will be conducted on foot using portable Ground Penetrating Radar or Electromagnetic Survey Equipment. This phase merely requires the carrying of the two machines into the veld and the passing of the electric current through the underlying sediments/ore body. No samples are taken and no digging is required.

  The information gained from further Electromag surveys will provide information for the siting of the further drilling (excluding the infill drilling contemplated as Phase 2b)) and future bulk sampling positions. Amendment to both the Prospecting Work Programme and Environmental Management Plan as well as renewal of prospecting right application will be lodged with the DMRE to cater for these inputs should it be required.

Phase 2 is made up of invasive prospecting methods and is described in Para 4.3.2 below.

Phase 3 is a non-invasive decision making phase during which the future of the site will be decided. Three options exist, depending on the prospecting results achieved:

a. If prospecting yields negative results, then the operation will be discontinued, the site will be decommissioned and closure application will be lodged
b. If prospecting yields inconclusive results and further investigation is required to fully understand the deposit, then a prospecting right renewal application will be lodged. The applicants are aware that in terms of current legislation, such renewal may only take place once for a maximum period of 3 years. Note that the renewal application may include application for bulk sampling by way of pitting or trenching, only if a Section 102 application is also lodged.

c. If prospecting yields positive results and full mining of the site is contemplated, then a mining right application will be lodged. In terms of current legislation, the holder of the prospecting right has exclusive right to apply for the mining right.

4.4.2 DESCRIPTION OF PLANNED INVASIVE ACTIVITIES:

Phase 1b: Conclude final agreements with contractors

Phase 2a: Site establishment. As discussed, all the major site requirements will be located in Loeriesfontein, however there is still a requirement for some logistical facilities on site and these include:

1. Ablutions (chemical toilets)
2. Possible Water header tank. Potable water will be purchased from town
3. Possible (but unlikely) tool & equipment tent

While site establishment is underway, the survey control points will also be delineated in the veld.

Phase 2b: Scoping / Scout Drilling

Phase 2b consists of the drilling of approximately 99 holes to average depth of 10m along the traverses as shown in figures 8-11. The holes are to be located at a spacing of ±200m along each traverse. Phase 2c consists of the drilling of as yet undetermined number of holes on a grid pattern in the areas which showed good results in Phase 2b. Such drilling normally takes place along the same traverses but at a spacing of 30 - 50m. NO INFILL DRILLING will be permitted without additional public input.

Note that the RC drilling method description and environmental management aspects described herein have been compiled on the back of experience in drilling in other areas and after Environmental Audit of actual drilling at those projects to tweak these aspects.

Pre- drilling:

Phase 2b is initiated by the convening of the appropriate persons to conduct the following tasks:

- Locate the positions of the probe drill holes
- Locate and mark access routes to the drill sites
- Educate / train the staff conducting the prospecting on environmental issues (the details of which are discussed in Para 36)

Drilling method

Probe drilling will be conducted by 6-inch (150mm) percussion drill rig (using reverse circulation sampling), similar to Photo 1 below, with the aim of determining the nature and extent of alluvial gravels. Probe drilling will initially be conducted on a 200m spacing along traverse lines (phase 2b) in delineated areas as shown in figures 8-11 across tentatively identified alluvial terraces or palaeo channels[1] followed by possible infill drilling (phase 2c) at selected areas only and on a grid with interval of ±30-50m to more accurately determine the extent of the suitable gravels encountered.

[1] These potential channels were identified through aerial photo and satellite interpretation

The percussion probe drill method requires the following equipment gaining access to the drill site in the veld:

- Truck mounted percussion drill rig
- Truck mounted compressor (i.e. second vehicle) supplying air by means of max. 50m hose to the drill rig.
- Occasional access is required by fuel trailer to refuel the compressor
- No access by water tanker – drilling will be dry
- Additional access as required by geologist, surveyor etc.

Photo 1: Photo showing expected scale of equipment to access veld (actual drill rig may vary) (Photo Source: Truckandtrailer.co.za)

Drilling will comprise the following activities:

- Surveyor (in consultation with geologist, contractor, landowner and any other parties determined by the public participation process) to mark out the proposed traverses through marking of each proposed hole (spaced at 200m) with a stake. The location of such holes to be accurately mapped in case it is selected for further prospecting later.
- The traverse will as far as possible be accessed by using existing farm tracks. No new formal roads being developed in this phase but the traverse will be accessed by one pass of at least 2, possibly 3 trucks (i.e. drill rig, compressor truck and maybe the fuel trailer) and say 5 LDV trips along the traverse, traveling in each other's tracks.
- The drilling contractors take samples every meter and theses are kept in marked bags to be logged by the geologist.
- Once the hole has been drilled and the geologist has logged the information required, then the hole will be backfilled by spade and the hole covered by a rock if required.

The depth of holes is expected to be no deeper than 10m on average.

The following factors apply to the drilling and rehabilitation method:

- No topsoil removal will occur prior to drilling
- The disturbed area at each drill site measures approximately 120m²
- Drilling will be dry and no water will be used.
- In rehabilitation of the tracks the following must be considered:
  - The tracks result from pressure of the tyres or tracks of the vehicles pushing the topsoil downwards and out to the side and in to the center, resulting in the 2 furrows and "middelmannetjie". The proper rehabilitation of that track therefore requires:
    - That the compressed sand in the track be loosened
    - That the sand to the sides and middelmannetjie be replaced in the furrow.
  - Experience has shown that the only way to achieve proper rehabilitation of this impact is through the use of a team of workers with rakes to loosen the soil within the furrow and then to cover with the sand from the sides of the tracks. Scarification of the track by tractor pulled plough or scarifier does not provide satisfactory results according to the landowners and farmers who accompanied us on the site visits during the Groen River Environmental Audits.

Phase 2c: Infill Drilling

This will be followed by phase 2c step out or infill drilling on a 30-50m grid to more accurately delineate the alluvial terrace or palaeo-channel. For the purposes of this report we will assume that 100 such holes will be required. The infill drilling will be preceded by additional input from regsitered I&APs and relevant State Departments / NGOs.

4.4.3 DESCRIPTION OF PRE-/FEASIBILITY STUDIES

(Activities in this section includes but are not limited to: initial, geological modelling, resource determination, possible future funding models, etc)

The following reports / studies will be required during the prospecting exercise with the full feasibility report being required at the end of the prospecting period.

1. Synthesis of analysis of existing information / historical results after Phases 1a
2. Reporting on results of Electromagnetic Study after Phase 1b
3. Reporting on results of initial phases drilling after Phases 2b (which report will include recommendations on any future drilling or bulk sampling that may be required).
4. Reporting on results of public input if infill drilling is required
5. Reporting on results of infill drilling and recommendations for future actions (i.e. Final consideration of results (as phase 3b).

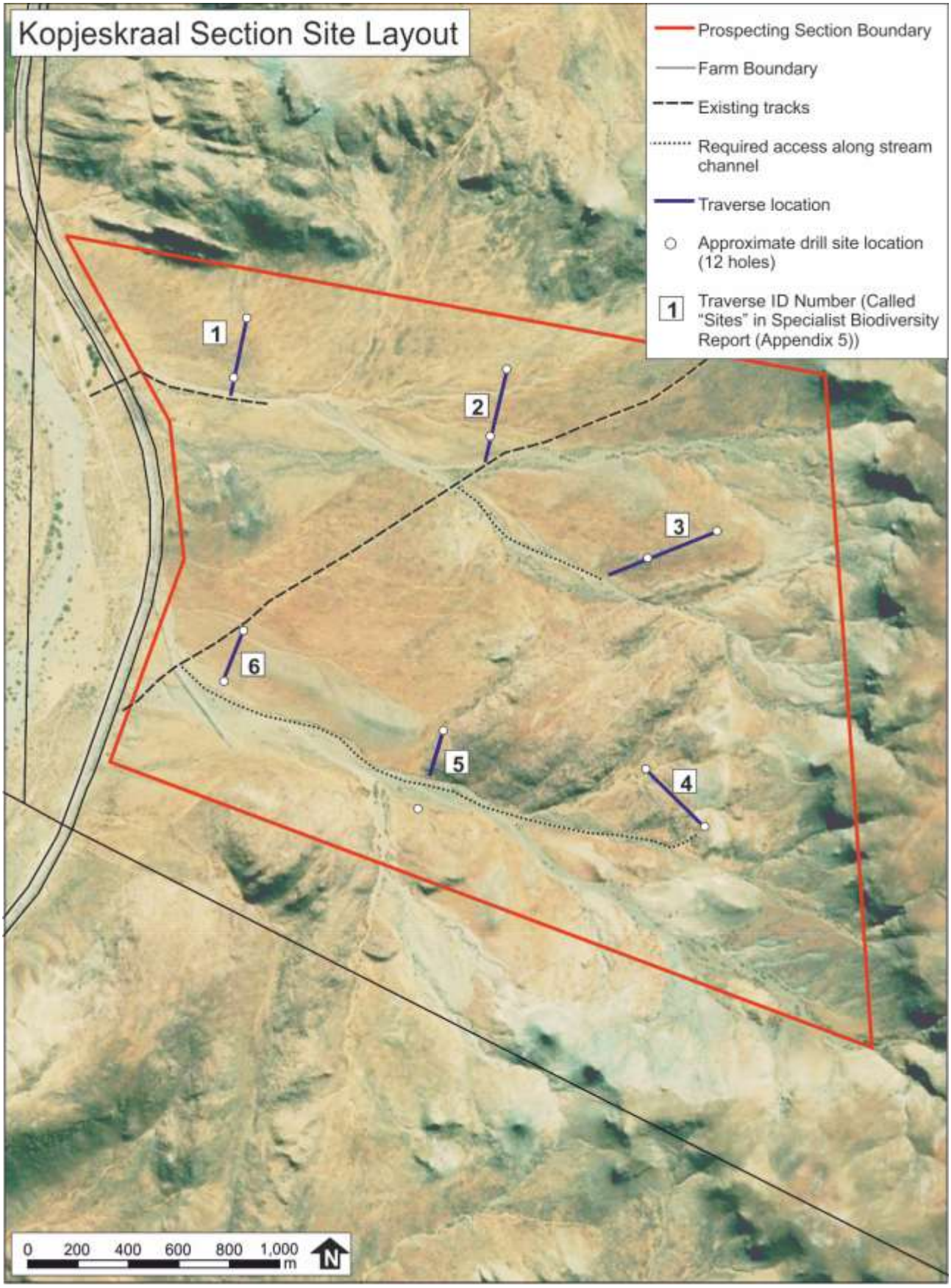


Figure 8: Kopjeskraal Section: Proposed drill hole localities (Approximate)

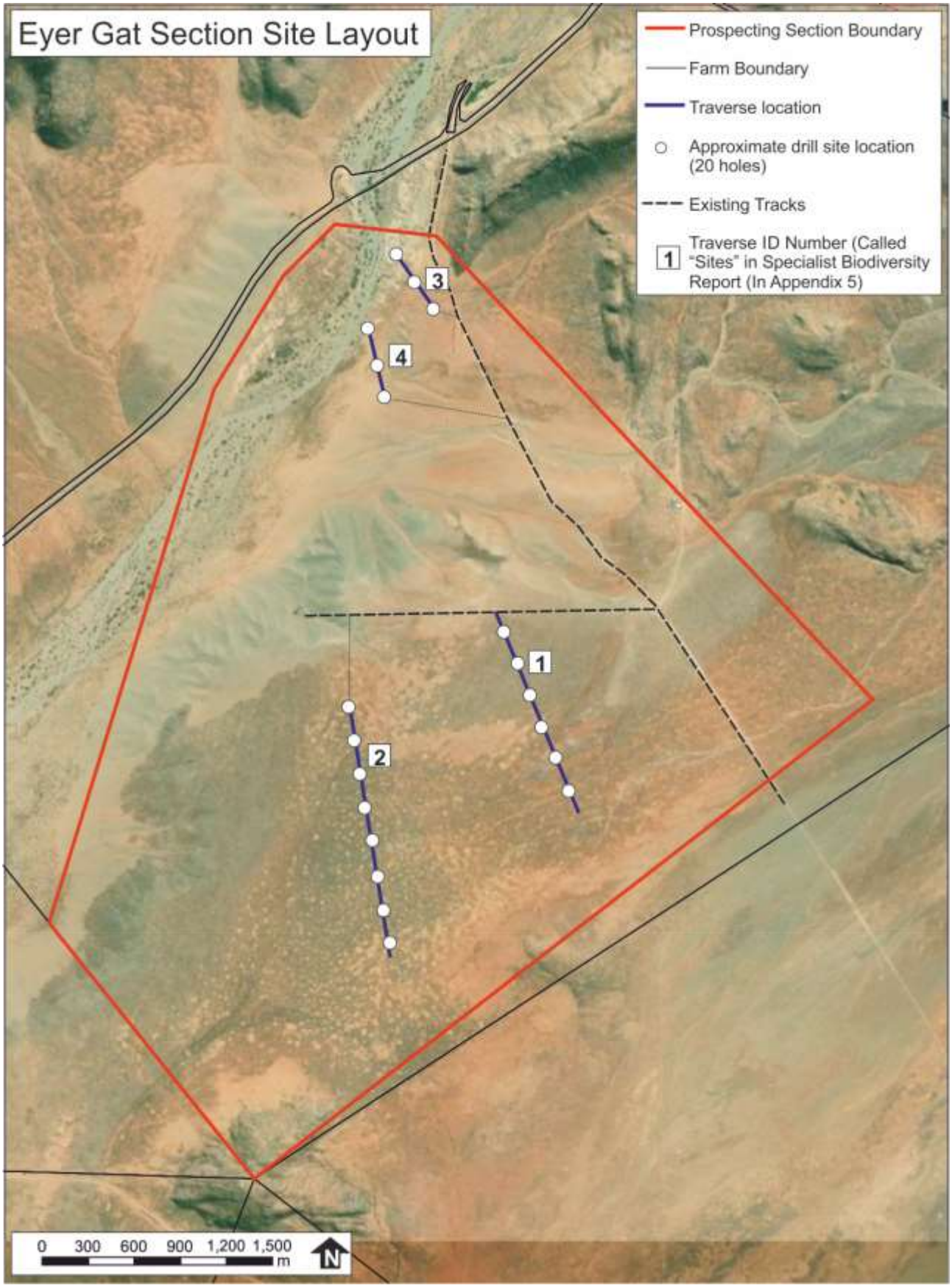


Figure 9: Eyer Gat Section: Proposed drill hole localities (Approximate)

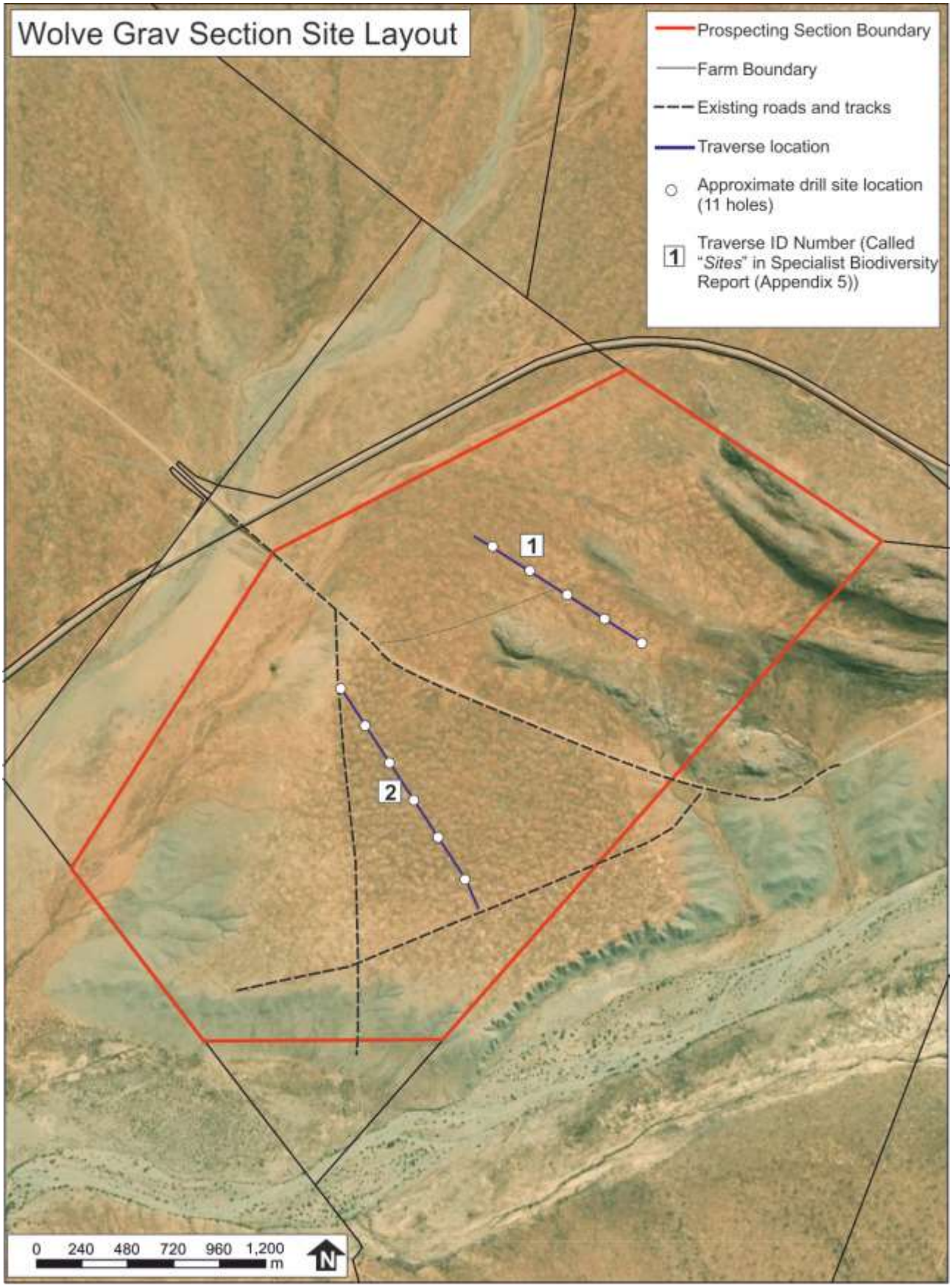


Figure 10: Wolve Grav Section: Proposed drill hole localities (Approximate)

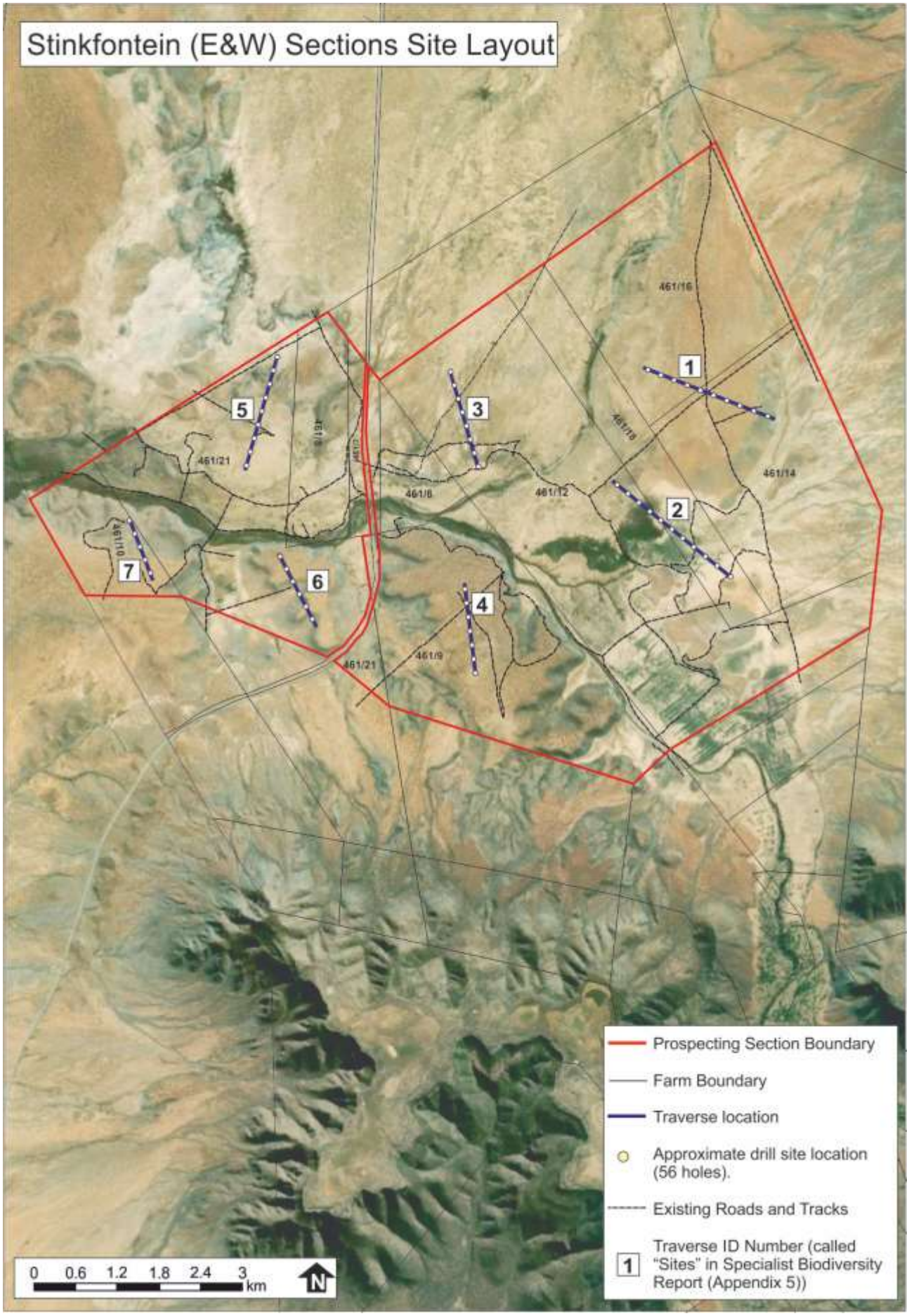


Figure 11: Stinkfontein East and West Section: Proposed drill hole localities (Approximate)

4.4.4 Access roads:

Note that access will simply entail use of existing roads to the traverse through the veld. The proposed traverses are shown in Figure 8-11 as well as the existing roads and tracks that will be used to gain access to the traverses.

5 Policy and Legislative Context

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT (A description of the policy and legislative context within which the development is proposed)	REFERENCE WHERE APPLIED (i.e. Where in this document has it been explained how the development complies with and responds to the legislation and policy context)	HOW DOES THIS DEVELOPMENT COMPLY WITH AND RESPOND TO THE POLICY AND LEGISLATIVE CONTEXT
National Environmental Management Act	Entire document including public participation	Environmental Authorization from DMR as competent authority
NEMA Regulations	Application	Governs listed activities and content of reports
Mineral and Petroleum Resources Development Act	Template for documentation	DMR application and process
Mapping of WCBSP (from SANBI website)	Vegetation / Biodiversity	Specialist study will be required
Municipality's SDF and IDP	Need and Desirability (Para 9.1)	End Use informant
National Water Act	Any NWA Section 21 application or general authorisation	Water Use Licence application – not required in this case
National Heritage Resources Act	Para 23.1.2	Relevant applications to Heritage Authority
EIA Guideline and Information Document Series' "Guideline on Need and Desirability	Need and Desirability (Para 9.1)	Guideline for information utilized in this document
EIA Guideline 5 Assessing alternatives and impacts	Cumulative Impact Assessment (Para 9.2)	Guideline for information utilized in this document
NEMWA	Not applicable to this application	Not applicable
Hazardous Substances Act, 1973 (Act 15 of 1973)	Hazardous Materials Handling	The measures proposed must take the Act into account.
Noise and dust regulations and recommendations	Noise and dust reduction measures	The mitigation measures proposed take the requirements into account.
NEM: AQA	Not applicable to this application	Not applicable.
Land Use Planning Act, 2014 (Act No. 13 of 2014)	Not applicable until after EA has been (if) granted.	A land use application will be required
National Dust Control Regulations (Government Notice No. R. 827 of 1/11/2013)	Dust control	Dust control measures to be implemented and monitoring required
List of waste management activities promulgated in GN No. 921 of 29 November 2013 (as amended);	Waste Management	Application for waste licence NOT required
National Waste Information Regulations promulgated in GN No. R. 625 of 13 August 2012	Waste Management	Waste handling protocol to be described in EMP.
Waste Classification and Management Regulations promulgated in GN No. R. 634 of 23 August 2013	Waste Management	Waste handling protocol to be described in EMP.

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT (A description of the policy and legislative context within which the development is proposed)	REFERENCE WHERE APPLIED (i.e. Where in this document has it been explained how the development complies with and responds to the legislation and policy context)	HOW DOES THIS DEVELOPMENT COMPLY WITH AND RESPOND TO THE POLICY AND LEGISLATIVE CONTEXT
National Norms and Standards for the Storage of Waste promulgated in GN No. 926 of 29 November 2013	Waste Management	Waste handling protocol to be described in EMP.
Regulations Regarding the Planning and Management of Residue Stockpiles and Residue Deposits From a Prospecting, Mining, Exploration or Production Operation. Govt Notice R632 2015	Mine residue handling	No residue will result from this prospecting operation.
Regulation 16(1)(b)(v) of the EIA Regulations, 2014 (as amended)	Requires that application for EA must be go together with web based Screening Tool	4 x Screening tools have been lodged with the application. Should any party require copies, then these can be dispatched.

6 Need and Desirability & Cumulative Impact of Proposed Activities.

6.1 Need and Desirability Analysis

The 2017 EIA Guideline and Information Document Series' "Guideline on Need and Desirability" will be used to consider this aspect in the Mining Phase of the operation should it go ahead.

The proposed eventual land use for the site depends on the results of the prospecting. Two options exist:

1) If the prospecting results reveal suitable nature and depth of the material, then a Mining Right will be applied for at DMRE with appropriate Mine Plan based on prospecting results and within a comprehensive EIA process. But remember when reading this document that this application is for prospecting and is NOT the application for the Mining Right. Should a Mining Right ever be contemplated, then that application would result in a completely different set and scale of impacts. A full and detailed impact assessment would be required for every aspect of the environment. This scale and type of impact which is assessed in this (or any) Prospecting Right is vastly different and cannot be used to adjudicate possible future mining.
2) If the prospecting results are not favourable for a mine development, then no further action will take place in terms of this application.

In either case, the drill holes will be rehabilitated in terms of the provisions of EMP and / or closure plans – Refer Appendix 6 for copy of Closure Plan.

Need refers to timing of a project whilst desirability refers to the placing of the activity. The first port of call in considering need and desirability is a determination of how the proposed project fits in with the Municipal Integrated Development Plan (IDP), Zoning Plan and the Spatial Development Framework (SDF).

A Spatial Development Framework could not be located for the Hantam Municipality but generally the Spatial Planning Categories (SPC) applicable in the case isolated rural hinterland are compatible with the CBA Mapping for the area. In this case that means that portions of the site ***could*** be considered:

- *Core areas* (i.e. CBA 1 and CBA2)
- *Buffer Areas* would most likely coincide with Ecological Support Area (ESA),
- Whilst the remainder is classified as *Agricultural Areas: Extensive Agriculture* being the Other Natural Areas.

The designation of areas as Core and Buffer does not preclude any development but it does require that Specialist Biodiversity input be obtained as part of the assessment process.

6.1.1 Securing ecological sustainable development and use of natural resources

Securing ecological sustainable development and use of natural resources

<table>
<tr><th>1.</th><th colspan="2">How will this development (and its separate elements/aspects) impact on the ecological integrity of the area?</th></tr>
<tr><td>1.1.</td><td colspan="2">How were the following ecological integrity considerations taken into account:</td></tr>
<tr><td>1.1.1.</td><td>Threatened Ecosystems</td><td rowspan="2">The proposal entails the drilling of 99 holes along 18km of traverses (about 2.5m wide) through 5 identified Prospecting Sections. Although it may sound like a significant disturbance, the total disturbance area has been calculated as being 5.75ha out of the 8 796ha application area (i.e 0.07% of the surface area)
1) Figure 6 shows the Critical Biodiversity Area (CBA) mapping for the area. It shows that CBA 1 has been completely avoided but that 63% of the traverses are located in the CBA 2 area, 22% in ESA and 15% in ONA.
2) The closest Protected Area is the Kalk Gat Private Nature Reserve immediately west of Section 5 area. The Knersvlakte Nature Park is located just further than 10km distant to the west.
3) Mucina and Rutherford classifies the veld types as per figure 5, none of which are classified as Critically Endangered, Endangered nor Vulnerable in terms of the NEM:BA listed Ecosystems (GNR 32689).
4) The site is not located in any Geographic Priority area of SKEP (Succulent Karoo Ecosystem Project).
5) The entire Kopjeskraal Section is located inside of the NPAES, whilst the remaining Prospecting Right area sections do fringe the NPAES (as per figure 6)</td></tr>
<tr><td>1.1.2.</td><td>Sensitive, vulnerable, highly dynamic or stressed ecosystems, such as coastal shores, estuaries, wetlands, and similar systems require specific attention in management and planning procedures, especially where they are subject to significant human resource usage and development pressure</td></tr>
<tr><td>1.1.3.</td><td>Critical Biodiversity Areas (“CBAs”) and Ecological Support Areas (“ESAs”),</td><td></td></tr>
<tr><td>1.1.4.</td><td>Conservation targets.</td><td>The vegetation types are not classified as Critically Endangered, Endangered or Vulnerable in terms of NEM: BA. Mucina and Rutherford (2012) record the following in respect of Conservation targets:
<table>
<tr><th></th><th>Area of full extent of Vegetation Type</th><th>Conservation Target</th><th>Protected</th><th>Remaining</th></tr>
<tr><td>Namaqualand Klipkoppe Shrubland</td><td>10 936.11km²</td><td>28%</td><td>5.80%</td><td>95%</td></tr>
<tr><td>Namaqualand Riviere</td><td>854.72km²</td><td>24%</td><td>0.10%</td><td>83.40%</td></tr>
<tr><td>Northern Knersvlakte Vygieveld</td><td>1513.90km²</td><td>28%</td><td>0%</td><td>99.50%</td></tr>
<tr><td>Knersvlakte Shale Vygieveld</td><td>885.07km²</td><td>28%</td><td>0%</td><td>99.60%</td></tr>
<tr><td>Vanrhynsdorp Gannabos Veld</td><td>971.26km²</td><td>28%</td><td>0%</td><td>79.50%</td></tr>
</table></td></tr>
</table>

<table>
<tr><td>1.1.5.</td><td>Ecological drivers of the ecosystem.<table><tr><th></th><th>Length of planned traverses</th><th>Percentage of total length of traverses</th></tr><tr><td>Namaqualand Klipkoppe Shrubland</td><td>935m</td><td>5%</td></tr><tr><td>Namaqualand Riviere</td><td>9 858m</td><td>54%</td></tr><tr><td>Northern Knersvlakte Vygieveld</td><td>2141m</td><td>12%</td></tr><tr><td>Knersvlakte Shale Vygieveld</td><td>2 439m</td><td>13%</td></tr><tr><td>Vanrhynsdorp Gannabos Veld</td><td>2 882m</td><td>16%</td></tr></table></td><td>The site is located in an arid landscape with low rainfall in the order of 147mm with a Mean Annual Potential Evaporation of over 2600mm. Summers are hot but the average temperate for the year is 18.1°C.

Threats: Mucina and Rutherford (2012)
“In addition to the ongoing demand for rangelands (Grazing), land-use pressures from mining and quarrying and the illegal and unsustainable collection of flora (by succulent-growers) and fauna such as reptiles (for the specialist pet trade) is placing these ecosystems under increasing pressure. Fracking and climate change are likely future threats to some vegetation types” [although it is noted that fracking is not possible in these granitic and gneissic bedrock environment (not Karoo sediments)]</td></tr>
<tr><td>1.1.6.</td><td>Environmental Management Framework</td><td>No EMF could be sourced from the Hantam Municipality</td></tr>
<tr><td>1.1.7.</td><td>Spatial Development Framework,</td><td>A Spatial Development Framework could not be located for the Hantam Municipality but generally the Spatial Planning Categories (SPC) applicable in the case isolated rural hinterland are compatible with the CBA Mapping for the area. In this case that means that portions of the site could be considered:
Core areas (i.e. CBA 1 and CBA2)
Buffer Areas would most likely coincide with Ecological Support Area (ESA),
Whilst the remainder is classified as Agricultural Areas: Extensive Agriculture being the Other Natural Areas.
The designation of areas as Core and Buffer does not preclude any development but it does require that Specialist Biodiversity input be obtained as part of the assessment process.</td></tr>
<tr><td>1.1.8.</td><td>Global and international responsibilities relating to the environment (e.g. RAMSAR sites, Climate Change, etc.).</td><td>None known.</td></tr>
</table>

1.2.	How will this development disturb or enhance ecosystems and/or result in the loss or protection of biological diversity? What measures were explored to firstly avoid these negative impacts, and Where these negative impacts could not be avoided altogether, what measures were explored to minimise and remedy (including offsetting) the impacts? What measures were explored to enhance positive impacts	Ken Coetzee, 2021: "There is very little risk in terms of biodiversity impact. If the recommended mitigatory measures are effectively implemented, all of the issues relating to plants and animal sensitivity will be adequately mitigated. The greatest risk relating to the drilling operation will largely be restricted to the Kopjeskraal and Stinkfontein drill sites which are within CBA 2 designated areas. At both sites the actual prospecting disturbance will be localized with no impact on the surrounding CBA 2 designated area. The proposed prospecting operation will have no impact on landscape connectivity nor will it contribute to the fragmentation of vegetation types or animal habitats". Mr K Coetzee has conducted specialist study and has proposed several mitigation measures (including avoidance) in order to minimise the impacts.
1.3.	How will this development pollute and/or degrade the biophysical environment? What measures were explored to firstly avoid these impacts, and Where impacts could not be avoided altogether, what measures were explored to minimise and remedy (including offsetting) the impacts? What measures were explored to enhance positive impacts?	Specialist input was sought to determine the nature of impact on biodiversity in the area. That specialist concluded: "…the proposed prospecting drilling operation, and its associated access infrastructure, will have a localized and temporary impact on the natural biodiversity of the site". The only other real risk of pollution to the site and surrounds is through hydrocarbon pollution. All mitigation and monitoring efforts aimed at minimising or preventing any negative impacts are addressed in the EMP which contain full Hydrocarbon policy (in part 32.3). The aim of the rehabilitation programme will be to maximise the return of the affected sites to the pre-prospecting land capability once activities have been completed.
1.4.	What waste will be generated by this development? What measures were explored to firstly avoid waste, and where waste could not be avoided altogether, what measures were explored to minimise, reuse and/or recycle the waste? What measures have been explored to safely treat and/or dispose of unavoidable waste?	Minimal domestic waste is generated from this operation. Only small quantities of domestic waste will emanate from this site and this will typically be in the form of lunch wrapper, cool-drink bottles, etc. The waste will be retained in the cab of the vehicle and disposed of in Loeriesfontein town or at the contractors yard in town at the end of the working day.
1.5.	How will this development disturb or enhance landscapes and/or sites that constitute the nation's cultural heritage? What measures were explored to firstly avoid these impacts, and where impacts could not be avoided altogether, what measures were explored to minimise and remedy (including offsetting) the impacts? What measures were explored to enhance positive impacts?	The Draft BAR was submitted to SAHRA for comment. We await comment.

1.6.	How will this development use and/or impact on non-renewable natural resources? What measures were explored to ensure responsible and equitable use of the resources? How have the consequences of the depletion of the non-renewable natural resources been considered? What measures were explored to firstly avoid these impacts, and where impacts could not be avoided altogether, what measures were explored to minimise and remedy (including offsetting) the impacts? What measures were explored to enhance positive impacts?	Prospecting per se does not impact on the non-renewable resource that is being prospected (especially given the lack of bulk sampling as in this case) In terms of equitable use of the resource, the applicant has met all the legal requirements of the mining charter, the application is subject to all Mineral (MPRDA) and Environmental (NEMA) legislation and the public participation associated therewith. The application is also subject to input from several commenting authorities .
1.7.	How will this development use and/or impact on renewable natural resources and the ecosystem of which they are part? Will the use of the resources and/or impact on the ecosystem jeopardize the integrity of the resource and/or system taking into account carrying capacity restrictions, limits of acceptable change, and thresholds? What measures were explored to firstly avoid the use of resources, or if avoidance is not possible, to minimise the use of resources? What measures were taken to ensure responsible and equitable use of the resources? What measures were explored to enhance positive impacts?	None. Given the absolutely low carrying capacity of the veld and the small scale of the development, there will be no jeopardy in respect of carrying capacity, limits of acceptable changes and thresholds. The operation will uses absolutely minimal water (drinking water only) and fuel. The applicant has / will continue to meet all the requirements of the MPRDA and Mining Charter.
1.7.1.	Does the proposed development exacerbate the increased dependency on increased use of resources to maintain economic growth or does it reduce resource dependency (i.e. de-materialized growth)? (note: sustainability requires that settlements reduce their ecological footprint by using less material and energy demands and reduce the amount of waste they generate, without compromising their quest to improve their quality of life)	This operation will not lower the dependency on use of resources to maintain economic growth. The resources it does use are diesel and labour (and to a very limited degree; water). Waste generation is limited.

1.7.2.	Does the proposed use of natural resources constitute the best use thereof? Is the use justifiable when considering intra- and intergenerational equity, and are there more important priorities for which the resources should be used (i.e. what are the opportunity costs of using these resources against a proposed development alternative?)	NA to this Prospecting Right application.
1.7.3.	Do the proposed location, type and scale of development promote a reduced dependency on resources	No.
1.8.	How were a risk-averse and cautious approach applied in terms of ecological impacts	
1.8.1.	What are the limits of current knowledge (note: the gaps, uncertainties and assumptions must be clearly stated)?	The draft BAR was lodged with the Heritage Authorities (on SAHRIS) to determine whether any Heritage Studies were required. The EAP determined that specialist input was required in respect of biodiversity and this was duly commissioned and is included in full in Appendix 5 and has been incorporated into this reporting under the relevant headings
1.8.2.	What is the level of risk associated with the limits of current knowledge?	Given the small scale of activities (4.56ha traverses and 1.19ha drill sites), the risk is assessed as very low.
1.8.3.	Based on the limits of knowledge and the level of risk, how and to what extent was a risk-averse and cautious approach applied to the development?	Given the limits of knowledge in respect Heritage, it was required that the Heritage authorities be consulted in the initial commenting phase. The Draft BAR was submitted to SAHRA for comment. We await their comments and requirements.
1.9.	How will the ecological impacts resulting from this development impact on people's environmental right in terms following:	
1.9.1.	Negative impacts: e.g. access to resources, opportunity costs, loss of amenity (e.g. open space), air and water quality impacts, nuisance (noise, odour, etc.), health impacts, visual impacts, etc. What measures were taken to firstly avoid negative impacts, but if avoidance is not possible, to minimise, manage and remedy negative impacts?	The negative impacts have been identified in this document. Measures taken to avoid, minimise, manage and remedy negative impacts as well as monitoring are contained in the EMP section of this document.
1.9.2.	Positive impacts: e.g. improved access to resources, improved amenity, improved air or water quality, etc. What measures were taken to enhance positive impacts?	Proposed measures taken to enhance positive impacts are contained in the EMP section of this document.

1.10.	Describe the linkages and dependencies between human wellbeing, livelihoods and ecosystem services applicable to the area in question and how the development's ecological impacts will result in socioeconomic impacts (e.g. on livelihoods, loss of heritage site, opportunity costs, etc.)?	The economic base in this area is grazing and some cultivation along the Krom River banks. The proposed small scale prospecting cannot result in any negative socio economic impact. The temporary loss of 4.56ha traverses and 1.19ha drill sites in a +8500ha application area must be seen as insignificant. The ecological impact will not diminish any other persons or group of persons' potential livelihood.
1.11.	Based on all of the above, how will this development positively or negatively impact on ecological integrity objectives/ targets/ considerations of the area?	At this stage of the process, it is clear that if the site is properly managed during its operational phase and decommissioning rehabilitation is conducted to a high level, then the residual impact will be insignificant and the site will function to its pre-prospecting capability.
1.12.	Considering the need to secure ecological integrity and a healthy biophysical environment, describe how the alternatives identified (in terms of all the different elements of the development and all the different impacts being proposed), resulted in the selection of the "best practicable environmental option" in terms of ecological considerations?	Not applicable
1.13.	Describe the positive and negative cumulative ecological/biophysical impacts bearing in mind the size, scale, scope and nature of the project in relation to its location and existing and other planned developments in the area?	Provisional cumulative impact has been described as insignificant on all aspects of the ecology (as described in para 6.2)

6.1.2 Promoting justifiable economic and social development

2.	Promoting justifiable economic and social development	
2.1.	What is the socio-economic context of the area, based on, amongst other considerations, the following considerations?:	
2.1.1.	The IDP (and its sector plans' vision, objectives, strategies, indicators and targets) and any other strategic plans, frameworks of policies applicable to the area,	The IDP targets economic growth and socio-economic development. This prospecting per se does not significantly generate local economic growth to any significant degree as in this case it will use contractors to conduct the work and such operation will be a over a relatively short term. Wherever local labour can be used (for instance in rehabilitation of the site), then such use will be maximised.
2.1.2.	Spatial priorities and desired spatial patterns (e.g. need for integrated of segregated communities, need to upgrade informal settlements, need for densification, etc.),	Not applicable
2.1.3.	Spatial characteristics (e.g. existing land uses, planned land uses, cultural landscapes, etc.), and	The EMP will contain full description of the proposed rehabilitation of the site so that it can best integrate into the surrounding wilderness / grazing land.
2.1.4.	Municipal Economic Development Strategy ("LED Strategy").	The Municipality area is characterised by low employment rates and virtually any economic development has the potential for large multiplier effects.
2.2.	Considering the socio-economic context, what will the socio-economic impacts be of the development (and its separate elements/aspects), and specifically also on the socio-economic objectives of the area?	
2.2.1.	Will the development complement the local socio-economic initiatives (such as local economic development (LED) initiatives), or skills development programs?	Unlikely for such small scale and temporary operation.
2.3.	How will this development address the specific physical, psychological, developmental, cultural and social needs and interests of the relevant communities	
2.4.	Will the development result in equitable (intra- and inter-generational) impact distribution, in the short- and long-term? Will the impact be socially and economically sustainable in the short- and long-term?	The prospecting for this resource will NOT impact on any future generation's environment to any significant degree.
2.5.	In terms of location, describe how the placement of the proposed development will:	
2.5.1.	result in the creation of residential and employment opportunities in close proximity to or integrated with each other	NA

2.5.2.	reduce the need for transport of people and goods	NA
2.5.3.	result in access to public transport or enable non-motorised and pedestrian transport (e.g. will the development result in densification and the achievement of thresholds in terms public transport),	NA
2.5.4.	compliment other uses in the area,	Provided rehabilitation occurs as per the EMP, then the impact will be insignificant.
2.5.5.	be in line with the planning for the area,	Provided rehabilitation occurs as per the EMP, then the impact will be insignificant.
2.5.6.	for urban related development, make use of underutilised land available with the urban edge,	Not applicable
2.5.7.	optimise the use of existing resources and infrastructure	Not applicable.
2.5.8.	opportunity costs in terms of bulk infrastructure expansions in non-priority areas (e.g. not aligned with the bulk infrastructure planning for the settlement that reflects the spatial reconstruction priorities of the settlement),	Not applicable.
2.5.9.	discourage "urban sprawl" and contribute to compaction/densification,	Not applicable.
2.5.10.	contribute to the correction of the historically distorted spatial patterns of settlements and to the optimum use of existing infrastructure in excess of current needs,	Not applicable.
2.5.11.	encourage environmentally sustainable land development practices and processes	Provided rehabilitation occurs as per the EMP, then the impact will be insignificant.
2.5.12.	take into account special locational factors that might favour the specific location (e.g. the location of a strategic mineral resource, access to the port, access to rail, etc.),	The location has been chosen because of its expected geological suitability.
2.5.13.	the investment in the settlement or area in question will generate the highest socio-economic returns (i.e. an area with high economic potential),	Not applicable.
2.5.14.	impact on the sense of history, sense of place and heritage of the area and the socio-cultural and cultural-historic characteristics and sensitivities of the area, and	The Draft BAR was submitted to SAHRA for comment. We await their comment.
2.5.15.	in terms of the nature, scale and location of the development promote or act as a catalyst to create a more integrated settlement?	Not applicable.
2.6.	How were a risk-averse and cautious approach applied in terms of socio-economic impacts?	
2.6.1.	What are the limits of current knowledge (note: the gaps, uncertainties and assumptions must be clearly stated)?	None

2.6.2.	What is the level of risk (note: related to inequality, social fabric, livelihoods, vulnerable communities, critical resources, economic vulnerability and sustainability) associated with the limits of current knowledge?	There is no risk to these socio-economic aspects through the continued operation at this site.
2.6.3.	Based on the limits of knowledge and the level of risk, how and to what extent was a risk-averse and cautious approach applied to the development?	Not applicable.
2.7.	How will the socio-economic impacts resulting from this development impact on people's environmental right in terms following	
2.7.1.	Negative impacts: e.g. health (e.g. HIV-Aids), safety, social ills, etc. What measures were taken to firstly avoid negative impacts, but if avoidance is not possible, to minimise, manage and remedy negative impacts	The negative impacts have been identified in part 10 of this document. Measures taken to avoid, minimise, manage and remedy negative impacts are detailed in the EMP section of this document.
2.7.2.	Positive impacts. What measures were taken to enhance positive impacts?	See line item 2.7.1 above
2.8.	Considering the linkages and dependencies between human wellbeing, livelihoods and ecosystem services, describe the linkages and dependencies applicable to the area in question and how the development's socio-economic impacts will result in ecological impacts (e.g. over utilisation of natural resources, etc.)?	The impact on natural resources is very low in the long term (provided all mitigation and rehabilitation measures are implemented).
2.9.	What measures were taken to pursue the selection of the "best practicable environmental option" in terms of socio-economic considerations	The following aspects contribute / will contribute to the best practical environmental option: 1) Proposed operational rehabilitation 2) Decommissioning rehabilitation 3) Minimal disturbance footprint
2.10.	What measures were taken to pursue environmental justice so that adverse environmental impacts shall not be distributed in such a manner as to unfairly discriminate against any person, particularly vulnerable and disadvantaged persons (who are the beneficiaries and is the development located appropriately)? Considering the need for social equity and justice, do the alternatives identified, allow the "best practicable environmental option" to be selected, or is there a need for other alternatives to be considered?	There is no unfair discrimination against any person as a result of the proposed mining. The company meets all its mining charter requirements.

2.11.	What measures were taken to pursue equitable access to environmental resources, benefits and services to meet basic human needs and ensure human wellbeing, and what special measures were taken to ensure access thereto by categories of persons disadvantaged by unfair discrimination?	All legislation has been adhered to.
2.12.	What measures were taken to ensure that the responsibility for the environmental health and safety consequences of the development has been addressed throughout the development's life cycle?	All Prospects are subject to Health and Safety legislation (Mine Health and Safety Act 29 of 1996). Such prescriptions are not within the ambit of this document but are strictly monitored by DMRE.
2.13.	What measures were taken to:	
2.13.1.	Ensure the participation of all interested and affected parties.	Refer Part 8.2 for description of completed and future Public Participation
2.13.2.	Provide all people with an opportunity to develop the understanding, skills and capacity necessary for achieving equitable and effective participation.	Refer Part 8.2 for description of completed and future Public Participation
2.13.3.	Ensure participation by vulnerable and disadvantaged persons.	Refer Part 8.2 for description of completed and future Public Participation
2.13.4.	Promote community wellbeing and empowerment through environmental education, the raising of environmental awareness, the sharing of knowledge and experience and other appropriate means.	None.
2.13.5.	Ensure openness and transparency, and access to information in terms of the process.	Refer Part 8.2 for description of completed and future Public Participation
2.13.6.	Ensure that the interests, needs and values of all interested and affected parties were taken into account, and that adequate recognition were given to all forms of knowledge, including traditional and ordinary knowledge, and,	Refer Part 8.2 for description of completed and future Public Participation
2.13.7.	ensure that the vital role of women and youth in environmental management and development were recognised and their full participation therein were be promoted.	Refer Part 8.2 for description of completed and future Public Participation
2.14.	Considering the interests, needs and values of all the interested and affected parties, describe how the development will allow for opportunities for all the segments of the community (e.g.. a mixture of low-, middle-, and high-income housing opportunities) that is consistent with the priority needs of the local area (or that is proportional to the needs of an area)?	NA

2.15.	What measures have been taken to ensure that current and/or future workers will be informed of work that potentially might be harmful to human health or the environment or of dangers associated with the work, and what measures have been taken to ensure that the right of workers to refuse such work will be respected and protected?	All mines and prospecting operations are subject to Health and Safety legislation (Mine Health and Safety Act 29 of 1996). Such prescriptions are not within the ambit of this document but are strictly monitored by DMR.
2.16.	Describe how the development will impact on job creation in terms of, amongst other aspects:	
2.16.1.	the number of temporary versus permanent jobs that will be created,	The Prospect will not generate any new jobs as contractors will be sued to conduct the actual drilling. However, there may be opportunity to employ locals to conduct any rehabilitation which may be required.
2.16.2.	whether the labour in the area will be able to take up the job opportunities (i.e. do the required skills match the skills available in the area),	Yes
2.16.3.	the distance from where labourers will have to travel,	NA
2.16.4.	the location of jobs opportunities versus the location of impacts (i.e. equitable distribution of costs and benefits), and	NA.
2.16.5.	the opportunity costs in terms of job creation (e.g. a mine might create 100 jobs, but impact on 1000 agricultural jobs, etc.).	The proposed Prospecting operation will not take any jobs away in any other sector (eg tourism).
2.17.	What measures were taken to ensure:	
2.17.1.	that there were intergovernmental coordination and harmonisation of policies, legislation and actions relating to the environment, and	Refer Part 8.2 for future description of Public Participation which includes all relevant State Departments at all levels of governance
2.17.2.	that actual or potential conflicts of interest between organs of state were resolved through conflict resolution procedures	Not applicable
2.18.	What measures were taken to ensure that the environment will be held in public trust for the people, that the beneficial use of environmental resources will serve the public interest, and that the environment will be protected as the people's common heritage?	Environmental impact has been assessed to be insignificant to moderate in all aspects of the environment provided rehabilitation takes place as per the EIA/EMP. The proposed project was subject to extensive public participation to ensure all public are aware of and have input into the planning and approval process.
2.19.	Are the mitigation measures proposed realistic and what long-term environmental legacy and managed burden will be left?	The management of impact is the responsibility of the applicant with monitoring and auditing largely by independent parties. The Mineral legislation requires that Closure be granted before the applicant can relinquish responsibility for the site. Such closure process is arduous and requires enforced participation by and satisfaction of relevant State Departments and applies to all disturbances whether generated by the incumbent or not. Refer Appendix 6 for copy of Closure Plan

2.20.	What measures were taken to ensure that the costs of remedying pollution, environmental degradation and consequent adverse health effects and of preventing, controlling or minimising further pollution, environmental damage or adverse health effects will be paid for by those responsible for harming the environment?	In terms of operational control of environmental impact and pollution, the EMP must prescribe measures to be put in place to monitor and then mitigate / manage or avoid any known or unexpected impact. In addition, all holders are responsible to supply a calculation to determine the costs of Immediate Closure of the site. Such calculation is based on DMR Guideline and the value of the fund must be provided to the DMR either in form of cash or by bank Guarantee. Should the holder “disappear”, then the fund is used by the State to rehabilitate the site.
2.21.	Considering the need to secure ecological integrity and a healthy bio-physical environment, describe how the alternatives identified (in terms of all the different elements of the development and all the different impacts being proposed), resulted in the selection of the best practicable environmental option in terms of socio-economic considerations?	The only feasible alternative applicable to this application is the no go option.
2.22.	Describe the positive and negative cumulative socio-economic impacts bearing in mind the size, scale, scope and nature of the project in relation to its location and other planned developments in the area?	Refer Para 6.2

6.2 Cumulative Impact Assessment

The assessment of cumulative impacts on a site specific basis is often a complex operation. The aim of this impact analysis is ultimately to determine at which point the combined impacts from several operations (similar or dissimilar) in the area will affect the environment or part thereof to such a negative degree that the project should not be allowed to proceed.

The following is an amended procedure sourced from http://www.eiatoolkit.ewt.org.za/documents/DEAT/guidelines/ AT_EIA_Guideline5_Assessing_alternatives_and_impacts.doc

Types of cumulative impacts

Additive impact: Impacts of the same nature from different operations (e.g. excessive groundwater abstraction from several operations in the same area result in a severe drawdown effect).

Interactive impact: where a cumulative impact is the result of a combination of different impacts to cause a new kind of impact. This kind of impact can be:

- Countervailing – the net adverse effect is less than the sum of the individual impacts (e.g. pumping clear water into a polluted water resource).
- Synergistic – when the impacts work together to develop a sum of different impacts results in an impact which is greater than the individual impacts.

Methodology used in assessing cumulative impact/s

- Determine extent of cumulative impacts:
  - Identify potentially significant cumulative impacts associated with the proposed activity
  - Establish the geographic scope of the assessment
  - Establish the timeframe of the analysis
  - Identify other activities affecting the environmental resources of the area
- Describe the affected environment:
  - Characterise the resources identified above in terms of their response to change and ability to withstand stress
  - Define a baseline condition that provides a measuring point for the environmental resources that will be acted upon
- Assess the cumulative impacts:
  - Determine the magnitude or significance of cumulative impacts
- Recommend mitigation measures.

The nature of prospecting activities for this project with the small disturbance footprint, there is no risk of any significant negative cumulative impact as a result of this proposed prospecting exercise.

7 Motivation for the overall preferred site, activities and technology alternative.

7.1 Overall Preferred Site Alternative (Motivation)

Not applicable as the prospecting is place-bound by the occurrence of sought-after suitable geological characteristics.

7.2 Technology Alternative selected (Motivation)

Non-invasive option selected consists of hand held ground penetrating radar (GPR) and/ or hand held electromagnetic survey. This is opposed to aerial survey by helicopter, crop-sprayer type plane or drone, all of which may (or may not have) have impact on avian, faunal and livestock on site.

The selected invasive prospecting methods that are described in para 4.3.1 were selected to determine the nature of the material and are based on tried and tested methods of prospecting. The drilling is primarily aimed at identifying the presence of suitable possibly diamondiferous gravels and but also allows for the taking of samples.

7.3 Activity Alternative (Motivation)

Not applicable.

8 Full description of the process followed to reach the proposed preferred alternatives within the site.

NB!! – This section is about the determination of the specific site layout and the location of infrastructure and activities on site, having taken into consideration the issues raised by interested and affected parties, and the consideration of alternatives to the initially proposed site layout.

8.1 Details of the development footprint alternatives considered.

8.1.1 The location where it is proposed to undertake the activity

There can be no alternative location to these place bound minerals. The existence of the deposit has been suspected for some time but has never been sufficiently quantified.

8.1.2 The type of activity to be undertaken;

Invasive prospecting by the selected RC drilling method is the best method to prove presence of the diamondiferous gravels. It also results in the least impact (when compared to say trial pitting or bulk sampling).

8.1.3 The design or layout of the activity

The proposed drill traverses have been selected by qualified geologist. The selected drill hole locations will provide for an accurate indication of the location of potentially diamondiferous gravels. The aim has been to minimise the number of drill holes and the number of drill holes has been reduced from the original 298 locations to the current 99 drill holes.

The drill line traverses have been laid out to avoid any impact on areas designated as CBA1. It is impossible to avoid CBA2 areas.

8.1.4 The technology to be used in the activity

The proposed remote sensing by is by hand held GPR or EM survey equipment. There will be no seismic blasting. Aerial surveys have been avoided because of cost and potential impact on avian, faunal and livestock life.

In terms of RC drilling, this technology has been proven to produce accurate results in this application for decades and no alternatives can be assessed.

8.1.5 The operational aspects of the activity

None.

8.1.6 The option of not implementing the activity

The aspect of no go project goes against the principle of optimization of resource as espoused in the MPRDA but specialist input obtained in respect of the expected impact and mitigation required for the site concluded that "…the proposed prospecting drilling operation, and its associated access infrastructure, will have a localized and temporary impact on the natural biodiversity of the site".

8.2 Details of the Public Participation Process Followed

The process was initiated with the identification of I&AP's originally using the list included in the DMR template as a guide. Windeed and landowner knowledge of application area farms and surrounding landowners (Figure 12) was utilised to obtain landowners details as well as contact information. Other I&AP's were identified because of their position as State Departments, Local Authorities, NGO's or community representation.

Landowners were visited by the applicant in order to introduce the applicant and the proposed operation.

Surrounding landowners were initially contacted by telephone as an introduction, to ensure the correct contact details and preferred method of correspondence, whereupon all parties were provided with a copy of the draft BAR/EMP with covering letter.

The broader community was alerted through newspaper advert and A2 notices placed in Loeriesfontein, Nieuwoudtville and on site. In addition, the local Ward Councillor was specifically consulted.

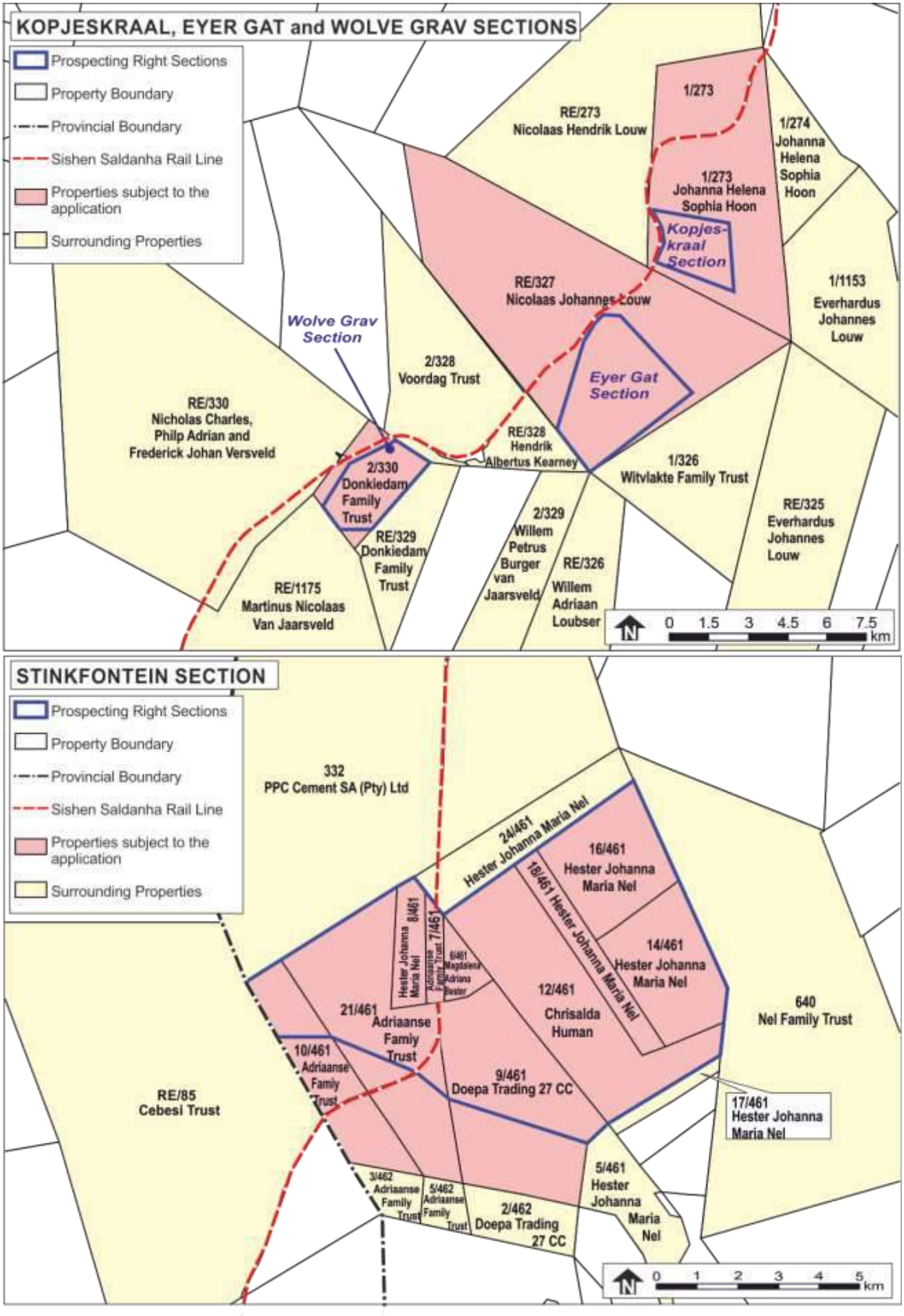


Figure 12: Landowners and Surrounding Landownership

8.3 Summary of issues raised by I&APs

Note the following in respect of the information presented below:

1) Appendix 2 contains copies of posters, newspaper adverts and correspondence sent to all Parties. It also includes proof of submission where required.
2) Appendix 3 contains a record of all correspondence received.
3) **We have been reminded of the prescription of the POPI Act and have not included any contact details of the respondents who registered as I&AP's. Should the DMRE require their contact details for any verification process, then it will be supplied to them**.

Interested and Affected Parties		**Date Comments Received**	**Issues raised**	**EAPs response to issues as mandated by the applicant**	**Para in this report where the issues / responses were incorporated.**
Landowners:	How Notified				
Kopjeskraal Section					
Portion 1 of Kopjeskraal 273 Johanna Helena Sophia Hoon	Visit	10/11/2021	None in respect of application.		1
Eyer Gat Section					
Remainder of Eyer Gat 327 Nicolaas Johannes Louw	Visit	11 November 2021	None in respect of application.		2
Wolve Grav Section					
Portion 2 of Wolve Grav Water 330 Donkiedam Family Trust Gawie Rossouw	Visit	18 November 2021	None in respect of application.		3
Stinkfontein East and West					
Portion 6 of Stinkfontein 461 Magdalena Adriana Bester In process of ownership transfer – sent to attorneys: Becker Bergh and More Incorporated 054 337 9100 jacomien@bbmupington.co.za	Email				4

Interested and Affected Parties		Date Comments Received	Issues raised	EAPs response to issues as mandated by the applicant	Para in this report where the issues / responses were incorporated.
Portion 9 of Stinkfontain 461 Doepa Trading 27 CC Riaan van der Merwe	Visit	11 November 2021	If water is lost due to drilling, then the holder must drill boreholes until water is found to ±4000l/hr.		5
Portion 10 and 21 of Stinkfontein 461 Adriaanse Family Trust – Mr D Adriaanse	Visit	10/11/2021			6
Portion 12 of Stinkfontein 461 HJM Nel	Visit	10/11/2021			7
Portions 14, 16 and 18 of Stinkfontein 461 Hester Johanna Maria Nel	Visit	10/11/2022	None in respect of application.		8
Portion 7 of Stinkfontein 461 Adriaanse Family Trust -	Visit	10/11/2021			9
Portion 8 of Stinkfontein 461 Hester Maria Nel	Visit	10/11/2021			10
Landowners or lawful occupiers on adjacent properties – Clockwise from North					
Northern Sections					
Remainder of farm 273 Nicolaas Hendrik Louw					
Portion 1 of farm 274 Johanna Helena Sophia Hoon	Visit	10/11/2021	None in respect of application.		
Portion 1 of Farm 1153 & Rem Farm 325 Everhardus Johannes Louw					
Portion 1 of farm 326 Witvlakte Family Trust					
Remainder of farm 326 Willem Adriaan Loubser					
Portion 2 of farm 329 Willem Petrus Burger van Jaarsveld					
Remainder of Farm 328 Hendrik Albertus Kearney					
Remainder of farm 329 Donkiedam Family Trust Gawie Rossouw	Visit	18 Nov 2021	None in respect of application.		

Interested and Affected Parties		Date Comments Received	Issues raised	EAPs response to issues as mandated by the applicant	Para in this report where the issues / responses were incorporated.
Remainder of farmer 1175 Marthinus Nicolaas van Jaarsveld (Tienie Van Jaarsveld _					
Remainder 330 Nicholas Charles, Philip Adrian and Frederick Johan van Jaarsveld. (Tienie Van Jaarsveld _					
Portion 2 of Farm 328 Voordag Trust					
Southern Sections					
Remainder Kanakies 332 PPC Cement SA (Pty) Ltd					
Portion 5 and 21 of Stinkfontein 461 Hester Johanna Maria Nel	Visit	10/11/2022	None in respect of application.		
Remainder 640 Nel Family Trust					
Portion 2 of farm 462 Doepa Trading 27 CC Riaan van der Merwe	Visit	11 Nov 2021	None in respect of application.		
Portion 3 and 5 of Farm 462 Adriaanse Family Trust – Mr D Adriaanse	Visit	10/11/2021	None in respect of application.		
Remainder of farm 85 Kalk Gat Private Nature Reserve Cebesi Trust	Poster on gate	21/07/2022	No contact details available. Left poster with contact details on gate closest to application.		
Municipal Representatives					
Municipality: Hantam Local Municipality Municipal Manager Mr J Swartz jaswartz@hantam.gov.za 027 341 8500					
Municipality: Hantam Local Municipality Environmental / Town Planning Section Ms R Lock lockg@hantam.gov.za 027 341 8500					

Interested and Affected Parties		Date Comments Received	Issues raised	EAPs response to issues as mandated by the applicant	Para in this report where the issues / responses were incorporated.
Ward Councillor: Ward 5 Cllr. Francois Johann Farao Contact Number: 027 341 8500 Email Address: faraofj@gmail.com					
Organs of state and NGO's (Responsible for infrastructure that may be affected Roads, Eskom, Telkom, DWS etc.)					
Department of Mineral Resources: Springbok. Deidre Karsten	Email				
Department Agriculture, Environmental Affairs, Rural Development and Land Reform: Northern Cape. C/O Voortrekker and Magasyn Street Springbok 8240 Tel: 027 718 8800 (053 807 7300) Peter Cloete Email: peter.denc87@gmail.com	Email and courier				
Department of Water and Sanitation: Mr Abe Abrahams: Chief Director: Northern Cape Private Bag X6101 Kimberley 8300 Tel: (053) 830 8800 Cell: 082 883 6741 AbrahamsA@dws.gov.za					
DWS Northern Cape Region 28 Beaconsfield Road Kimberley 8301 Ms V Ramugondo ramugondov@dws.gov.za					
Dept. of Agriculture Forestry and Fisheries(Springbok): 2 Hospital Street, Springbok, 8240 PO Box 18 Springbok, 8240 District Manager Mr Darren Engelbrecht E: darrenlengelbrecht@gmail.com Tel: 027 712 1315					

Interested and Affected Parties		Date Comments Received	Issues raised	EAPs response to issues as mandated by the applicant	Para in this report where the issues / responses were incorporated.
Department of Public Works Ruwayda Baulackay Private Bag X5002, Kimberley, 8300 Tel: 053 838 5202 Cell: 083 459 7602 Email: ruwayda.baulackay@dpw.gov.za	email				
Communities					
Traditional Leaders					
None					
Other Interested and Affected Parties who Registered					

9 Environmental attributes associated with the alternatives.

9.1 Type of environment affected by the proposed activity.

9.1.1 Geology

Refer Para 4.2 and Figure 7 for description of existing understanding of Geological Regime.

Prospecting will not impact on the geology in any way, except to improve the understanding of the local geology.

9.1.2 Topography

The proposed prospecting sections are located in the broad current Krom River Valley at an altitude of about 450m amsl. The valley is surrounded to the North, east and south by the escarpment ranges (such as Langberg in the north, Jakkalsfontein se Kop, Kubiskouberge, Kraalfonteinberg, Eselkop, Middelberg and Bokkeveldberg in the south). These mountains reach a maximum altitude of just over 1000m amsl.

The valley formed through headward erosion (erosion at the origin of a stream channel, which causes the origin to move back away from the direction of the stream flow, lengthening the stream channel) of the surrounding Karoo sediments (Tillites, and Ecca shales). Dolerite intrusions have also played a part in the topographical landscape.

Photo 2: Looking SE from the rail line over the relatively flat alluvial plains toward Jakkalsberg se Kop in the upper right of photo.

Photo 3: Looking SW over the Eyer Gat section toward the Kraalfonteinberg in the distance. This photo is taken just off the Krom River

Photo 4: Looking NW over the flat alluvial plan making up Wolve Grav Section (with the Langberg in the distance).

Photo 5: Stinkfontein east general view of the broad alluvial plain with Bokkeveldberg and Middelberg in the background

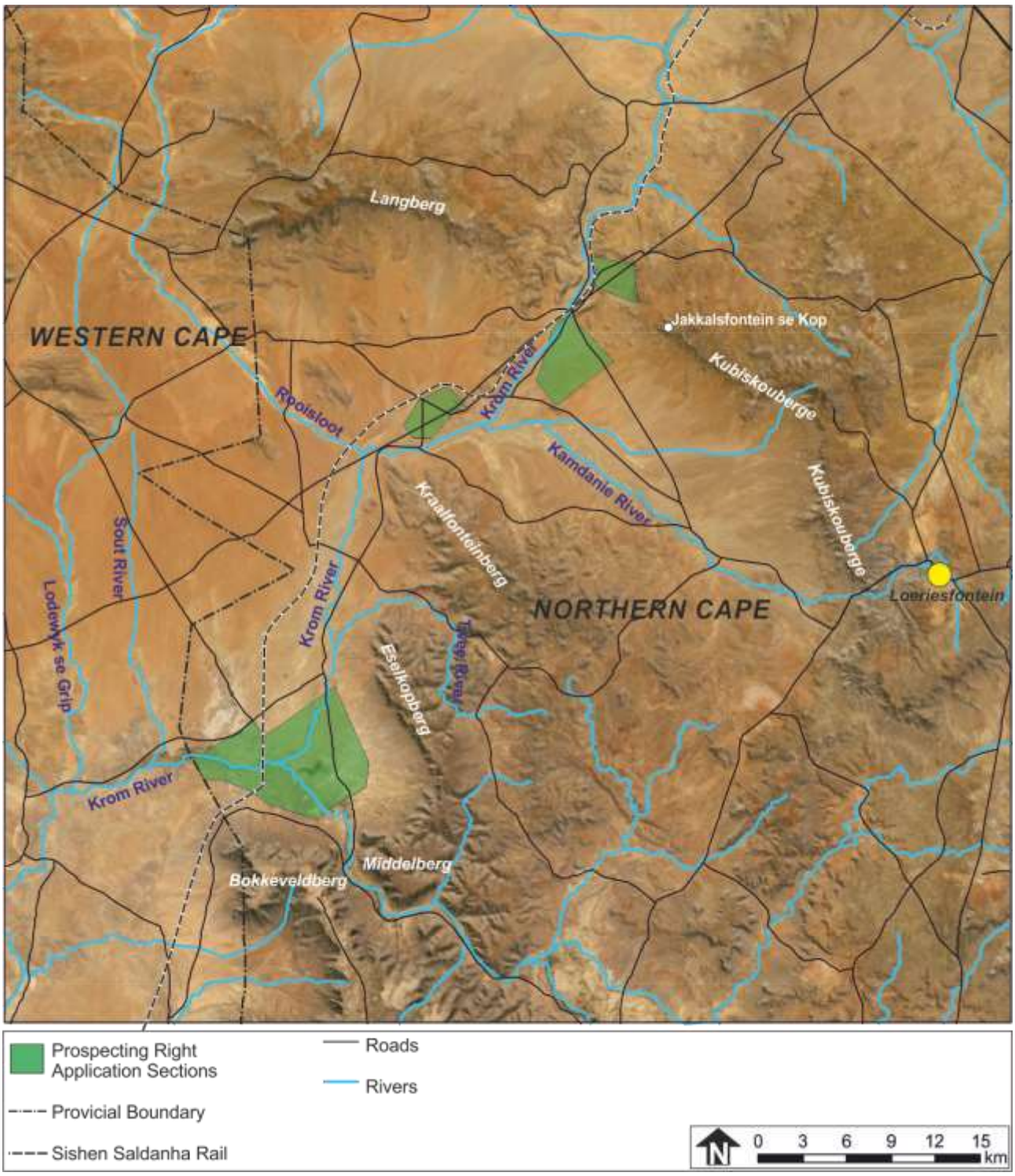


Figure 13: Topographical elements.

9.1.3 Visual Impact

The site is isolated and very difficult to access. Should any physical prospecting take place it is likely that the only visual receptor would be the landowner and the very occasional user of the local unsurfaced roads. The impact would be temporary and insignificant.

9.1.4 Soil

The soils in this broad valley floor are characterised as generally young red-orange alluvial (and colluvial) soils. These are apedal (or have very limited pedological development) and

freely drained soils. The aim of this prospecting application is to determine the presence of potentially diamondiferous gravels below the subsoil layer.

As such, the topsoil is made up of the same material as the subsoil above the alluvial gravels (where such gravels are present), but the upper 300-450m is topsoil with its seed bank and humous content.

Erodibility potential of the soils is medium to high and care must be taken to prevent erosion.

Prospecting will also define the soil profile more accurately.

9.1.5 Land Capability / Agricultural potential

The site is located in the Knersvlakte Homogenous Farming Area. Grazing capacity is very low at between 39- 45ha/large stock unit. The Department of Agriculture, Forestry and Fishing has classified the Land Capability as 05/15 (low to very low), Soil Capability as 03/09 (Low to Very Low), Terrain Capability as 06/09 (Moderate-High) and Climate Capability as 04/09 (Low to Moderate).

The mean annual rainfall in the area is 147mm/a. Notwithstanding the poor current land capabilities and agricultural potential of the site, the prospecting activities will in any event not alter the land or agricultural capabilities of the site.

9.1.6 Natural Vegetation

Refer Figure 5 for map showing vegetation types in the study are and Figure 6 for CBA designation.

Conservation Management Services's Mr K Coetzee was tasked to conduct a specialist biodiversity area study of the area with a brief being to describe the current site condition, assess the impact of the proposed works and propose mitigation measures to eliminate or reduce impacts as much as possible. The full study is contained in Appendix 5 with photographs and maps.

The surveys were conducted during early December, soon after the first rains to fall after a severe and extended drought. The normally arid environment was found to be much affected by the drought with up to 80% of the dwarf shrubs and succulent dwarf shrubs in the vegetation either dead or dying (see each of the Site [Traverse] photographs in Appendix 5).

The environment at each of the survey sites can generally be described as highly disturbed, mostly due to the effects of many decades of continuous selecting overgrazing, which has resulted in altered plant species composition across the landscape and the consequent loss of plant diversity. There has also been an overall reduction of plant cover resulting in widespread soil erosion by wind and water.

What little rain does fall in the area is rapidly lost to the environment along eroded rills, gullies and seasonal rivers, which exacerbates the arid conditions because very little of the rainfall actually infiltrates into the soil for the benefit of the plant cover or the replenishment of the groundwater

The table that follows is a summary of the findings of that study in respect of the baseline environment per drilling traverse:

- Refer Figures 8 -11 for identification numbers of each of the traverses described below. Note that the specialist refers to traverses as “sites”.
- Refer Appendix 5 for additional mapping and photographs

Section	Traverse / Site Number	General description	Species observed
Kopjeskraal	1	Soil erosion is widespread, particularly shallow surface erosion, the plants all stand on pedestals, indicating topsoil loss. These conditions are due to recent and past severe overutilization with livestock. Some minor animal diggings were observed.	*Aridaria noctiflora* *Augea capensis* *Eriocephalus brevifolius* *Euphorbia mauritanica* *Galenia fruticosa* *Lycium cinereum* *Malephora purpureo-crocea* *Mesembryanthemum guerichianum* *Mesembryanthemum junceum* *Salsola aphylla* *Zygophyllum leptopetalum* *Zygophyllum retrofractum*
Kopjeskraal	2	Soil erosion is widespread, particularly shallow surface erosion, the plants all stand on pedestals, indicating topsoil loss. These conditions are due to recent and past severe overutilization with livestock. Areas of bare soil appear to be capped	*Aridaria noctiflora* *Augea capensis* *Eriocephalus brevifolius* *Euphorbia mauritanica* *Galenia fruticosa* *Lycium cinereum* *Malephora purpureo-crocea* *Mesembryanthemum guerichianum* *Mesembryanthemum junceum* *Stipagrostis namaquensis* *Zygophyllum leptopetalum* *Zygophyllum retrofractum*
Kopjeskraal	3	Severe wind erosion is evident which can be seen in the hummocking (sand dunes forming around plants). These conditions are due to recent and past severe overutilization with livestock and a severe reduction of plant cover making the soil surface susceptible to wind erosion	*Aloe dichotoma* *Augea capensis* *Brownanthus sp.* *Dideltia carnosa var. carnosa* *Drosanthemum sp.* *Eriocephalus brevifolius* *Eriocephalus ericoides* *Euphorbia rhombifolia* *Hoodia gordonii* *Lycium cinereum* *Osteospermum sinuatum* *Pentzia incana* *Pteronia glabrata* *Ruschia cradockensis* *Ruschia robusta* *Salsola aphylla* *Satcocaulon crassicaule* *Wiborgia muronata* *Zygophyllum leptopetalum*
Kopjeskraal	4	Site relatively stable, minor surface soil erosion	Aloidendron dichotomum Augea capensis Blepharis capensis Crassula muscosa Dideltia carnosa var. carnosa Eriocephalus spinescens Galenia fruticosa Hoodia gordonii Lycium cinereum Malephora sp. Mesembryanthemum guerichianum Mesembryanthemum junceum Moquinella rubra Pentzia incana Ruschia cradockensis Ruschia robusta

			Stipagrostis ciliata Stipagrostis namaquensis Stipagrostis uniplumis Zygophyllum leptopetalum Zygophyllum retrofractum
Kopjeskraal	5	Sandy substrates severely eroded with a reduced plant cover.	*Augea capensis* *Blepharis capensis* *Drosanthemum sp.* *Eriocephalus brevifolius* *Euphorbia mauritanica* *Lycium cinereum* *Malephora sp.* *Mesembryanthemum guerichianum* *Mesembryanthemum junceum* *Phyllobolus nitidus* *Pteronia glabrata* *Ruschia robusta* *Ruschia sp.* *Stipagrostis obtuse* *Stipagrostis uniplumis* *Zygophyllum retrofractum*
Kopjeskraal	6	Sandy plain with clear signs of wind erosion due to the general loss of the protective plant cover. Large areas are completely devoid of any plant cover. There is a high rate of plant die-off.	Aridaria noctiflora Augea capensis Brownanthus sp. Eriocephalus brevifolius Lycium cinereum Malephora purpureo-crocea Mesembryanthemum guerichianum Mesembryanthemum junceum Othonna sp. Ptereonia glabrata Stipagrostis namaquensis Stipagrostis obtuse Zygophyllum leptopetalum Zygophyllum lichtensteinianum Zygophyllum retrofractum
Eyer Gat	1 & 2	Plants are on pedestals indicating severe surface soil erosion. The vegetation is severely overutilized. 40 to 50% of the dwarf shrubs appear to be completely dead. There was no sign of any wildlife in the area	Augea capensis Dideltia carnosa var. carnosa Drosanthemum lique Enneapogon cenchroides Eriocephalus brevifolius Euphorbia sp. Hoodia gordonii Limeum aethiopicum Lycium cinereum Malephora sp. Mesembryanthemum guerichianum Mesembryanthemum junceum Osteospermum sinuatum Othonna sp. Salsola sp. Tetragonia fruticosa Zygophyllum leptopetalum Zygophyllum retrofractum Zygophyllum simplex
Eyer Gat	3 & 4	Sandy floodplain dunes along a drainage. Highly disturbed by repeated flooding and severely invaded by alien Prosopis glandulosa	*Aridaria noctiflora* *Atriplex vestita* *Brownanthus sp.* *Dideltia carnosa var. carnosa* *Lycium cinereum* *Mesembryanthemum junceum* *Phyllobolus nitidus* *Prosopis glandulosa* *Salsola aphylla*
Wolwe Grav	1 & 2	Sites generally appear to be very dead with 80% of the shrubs dead or almost dead. Plants are all on pedestals indicating topsoil erosion, bare soil surfaces are capped indicating a very low rate of rainfall infiltration	*Aridaria noctiflora* *Augea capensis* *Eriocephalus brevifolius* *Lycium cinereum* *Malephora sp.* *Mesembryanthemum guerichianum* *Ruschia robusta*

Stinkfontein	1	Vegetation severely degraded, evidence of wind erosion, bare areas are capped and impervious. The Gannabosveld is in a relatively good condition.	*Aridaria noctiflora* *Augea capensis* *Eriocephaslus brevifolius* *Galenia fruticosa* *Gomphocarpus fruticosus* *Mesembryanthemum guerichianum* *Mesembryanthemum Junceum* *Phyllobolus nitidus* *Prosopis glandulosa* *Rischia robusta* *Salsola aphylla*
Stinkfontein	2	Site alongside a seasonal river which is invaded by alien plants Prosopis glandulosa, Nicotiana glauca and Salsola kali. Site otherwise severely eroded in alluvial sands.	*Aridaria noctiflora* *Eriocephalus brevifolius* *Mesembryanthemum guerichianum* *Prosopis glandulosa* *Ruschia robusta* *Salsola aphylla*
Stinkfontein	3	This site lies within a seasonal sodic wetland area or floodplain which appears to be in a relatively good condition despite the very low plant diversity	*Euclea undulata* *Lycium cinereum* *Salsola aphylla* *Salsola flexuosum*
Stinkfontein	4	This site lies on a terrace gravel plain overlooking the Doornrivier. It appears to have been severely affected by the past drought, with approximately 50% of the dwarf shrubs dead. The low plant cover can be attributed to severe past overutilization with livestock and drought	*Aridaria noctiflora* *Brownanthus sp.* *Ruschia robusta*
Stinkfontein	5	Situated on a low sandy river terrace, this site is severely disturbed. The site is severely eroded by both wind and water and hummocks created by wind erosion are typical of the site as is fairly large areas completely devoid of any plant cover. Past (and present) overutilization with livestock is certainly the cause of the current poor condition.	*Aridaria noctiflora* *Atriplex vestita* *Augea capensis* *Cladoraphis spinosa* *Eriocephalus brevifolius* *Lycium cinereum* *Malephora purpureo-crocea* *Malephora sp.* *Phyllobolus nitidus* *Prosopis glandulosa* *Salsola flexuosum*
Stinkfontein	6 & 7	Situated on river terraces, these sites both appear to be in a relatively poor condition. This is probably due to a combination of prolonged drought and historical overgrazing. At least 50% of the dwarf shrubs were found to be dead and many of those still alive also appear to be dying. The drainages between and closer to the railway line are invaded by the alien tree Prosopis glandulosa	*Aloidendron dichotomum* *Aridaria noctiflora* *Galenia fruticosa* *Lycium cinereum* *Malephora purpureo-crocea* *Malephora sp.* *Mesembryanthemum guerichianum* *Phyllobolus nitidus* *Prosopis glandulosa* *Ruschia robusta* *Salsola flexuosum* *Zygophyllum retrofractum*

In the assessment of the biodiversity sensitivity, Mr K Coetzee noted the following:

"Mucina and Rutherford (2006) class the Vanrhynsdorp Gannabosveld as Vulnerable with none of it conserved formally. They state that transformation for cultivation and open-

cast gypsum mining currently affects about 20% of the vegetation type (see Table 1 [*of Appendix 5*]).

The Ghaap (*Hoodia gordonii*), which occurs at drill traverses[2], 3 and 4 of Kopjeskraal and 1 and 2 of Eyer Gat is Red Listed in the Data Deficient category. This means that although the plant is classified as Data Deficient (which means that very little is known about it), it is nevertheless Red Listed, indicating that there is cause for concern about the plant's conservation status. The various species of Hoodia are indiscriminately harvested for the manufacture of so-called "organic" appetite suppressants, hence the concern for their status (see Plate 31 *[in Appendix 5]*).

In addition to the Red Listed Categories for plants, protection is also given to plants in terms of Schedules 3 and 4 of the Western Cape Nature Conservation Laws Amendment Act (3) of 2000. Schedule 3 of the act lists endangered plants, none of which occur on the study site. Schedule 4 lists protected flora, none of which occur on the study sites.

In terms of the vegetation cover it can thus be stated that the traverses 3 and 4 of Kopjeskraal and traverses 1 and 2 of Eyer Gat are sensitive as they do contain a Red Listed plant species, even if only classed as Data Deficient. Traverse 1 of Stinkfontein is also considered as sensitive because the vegetation type in which it occurs (Vanrhynsdorp Gannaveld) is considered to be Vulnerable.

Exactly how important these classifications of "conservation-worthiness" are in terms of the proposed prospecting application depends on whether the potential for negative impact can be effectively mitigated and whether the prospecting activity will have any long-term effect on the conservation of the balance of the property, beyond the proposed drill traverses.

Figure 6 shows the conservation status of the general prospecting area and it shows that some of the proposed prospecting traverses lie within Critical Biodiversity Areas (CBA) and Ecological Support Areas (ESA).

PROPOSED DRILL TRAVERSE LOCALITIES	**BIODIVERSITY CLASSIFICATION**	**RELEVANCE TO ACTUAL DRILL TRAVERSES**
Kopjeskraal	Critical Biodiversity Area 2	Yes (all 6 drill traverses)
Eyer Gat	Ecological Support Area	Yes (drill traverses 1,3 & 4)
	Critical Biodiversity Area 2	No (no drill traverses)
	Other natural areas	Yes (drill traverse 2)
Wolwe Grav	Ecological Support Area	Yes (drill traverse 2)
	Other natural areas	Yes (drill traverse 1)
Stinkfontein	Critical Biodiversity Area 1	No (no drill traverses)
	Critical Biodiversity Area 2	Yes (all 7 drill traverses)
	Ecological Support Area	No (no drill traverses)
	Other natural areas	No (no drill traverses)

[2] IMPORTANT: Mr K Coetzee refers to drill sites. This should in fact be read as drill traverses and not the actual site of drilling. These have been changed in the body of the text but not in the original appendix.

From Table 2 it is clear that all six Kopjeskraal drill traverses and all seven Stinkfontein drill traverses lie within areas classed as Critical Biodiversity Area 2. None of the drill traverses are within Critical Biodiversity Area 1 category areas.

At Kopjeskraal the CBA 2 classified area extends far beyond the drill sites across the landscape. The prospecting drilling is thus unlikely to have any wider or regional negative impact on the CBA 2 as a biodiversity target beyond the actual drill sites.

Although classed as CBA 2, the actual historical land use (agricultural grazing) has had a lasting negative impact on the integrity of the landscape and it is considered unlikely that the CBA 2 classification will stand up to detailed review.

The situation is much the same at the Stinkfontein drill sites, the CBA 2 classified area extends far beyond the drill sites across the landscape. The prospecting drilling is thus unlikely to have any wider or regional negative impact on the CBA 2 as a biodiversity target beyond the actual drill sites. Although classed as CBA 2, the actual historical land use (agricultural grazing) has had a lasting negative impact on the integrity of the landscape and it is considered unlikely that the CBA 2 classification will stand up to detailed review.

9.1.7 Animal Life

There are no specialised habitats at either of the study areas, flat sand and gravel substrates with a very sparse and a somewhat degraded vegetation cover are typical of the prospecting sites.

The most significant habitat features, in terms of vertebrate fauna in the study area are the drainages which provide cover in typical *Salsola aphylla* (ganna) shrublands and the dense stands of larger shrubs and alien trees *(Prosopis glandulosa)* along the watercourses.

Very few actual observations of animals were made and little sign of animal activity was observed and they were limited to the following:

1. Aardvark diggings into termite nests *(Orycteropus afer*).
2. Small animal digging activity, probably mongooses *(Galerella or Cynictis).*
3. Cape hare observed *(Lepus capensis)*
4. Common duiker droppings *(Sylvicapra grimmia)*
5. Pied crows observed *(Corvus albus)*
6. Karoo korhaan observed and heard *(Eupodotis vigorsii)*
7. Namaqua sandgrouse observed and heard *(Pterocles Namaqua)*
8. Rock kestrel observed *(Falco tinnunculus)*
9. Tent tortoise shell found *(Psammobates tentorius trimeni)*
10. Aardwolf droppings found *(Proteles cristatus)*

All of the above animals have widespread distributions and fall into the Least Concern Red list category".

Vast expanses of the same vegetation surrounding the site provide a habitat suitable for species typical of the area. These include small buck, rodents (rats, mice, shrews etc.), reptiles (snakes) birds and insects. The large scale of the habitat type when compared to the limited extent and temporary nature of the proposed activities negates any significance of any impact in this regard.

A fauna search and chase programme will be conducted for especially less mobile reptiles focusing on snakes and tortoises for their relocation to nearby areas of similar existing habitat prior to drilling.

9.1.8 Surface Water

The Prospecting Right Application area is located in the Olifants-Doorn Water Management area in 3 Quaternary Drainage Basins as follows as per Figure 14 below:

- Kopjeskraal and Eyer Gat Sections in Quaternary Basin E31E
- Wolve Grav Section in Quaternary Basin E31H
- Stinkfontein Section straddles 3 Drainage Basins viz. E31H, E33A and E32E

These channels are episodic and some may be accessed/ traversed as part of the prospecting operation. No drilling will be permitted in any stream channel or sodic wetland area (as identified by K Coetzee at Stinkfontein Traverse ("site") number 3). A 32m buffer will be retained in respect of any *drilling* contemplated from any stream channel or sodic wetland.

The area has been subject to significant drought in recent years.

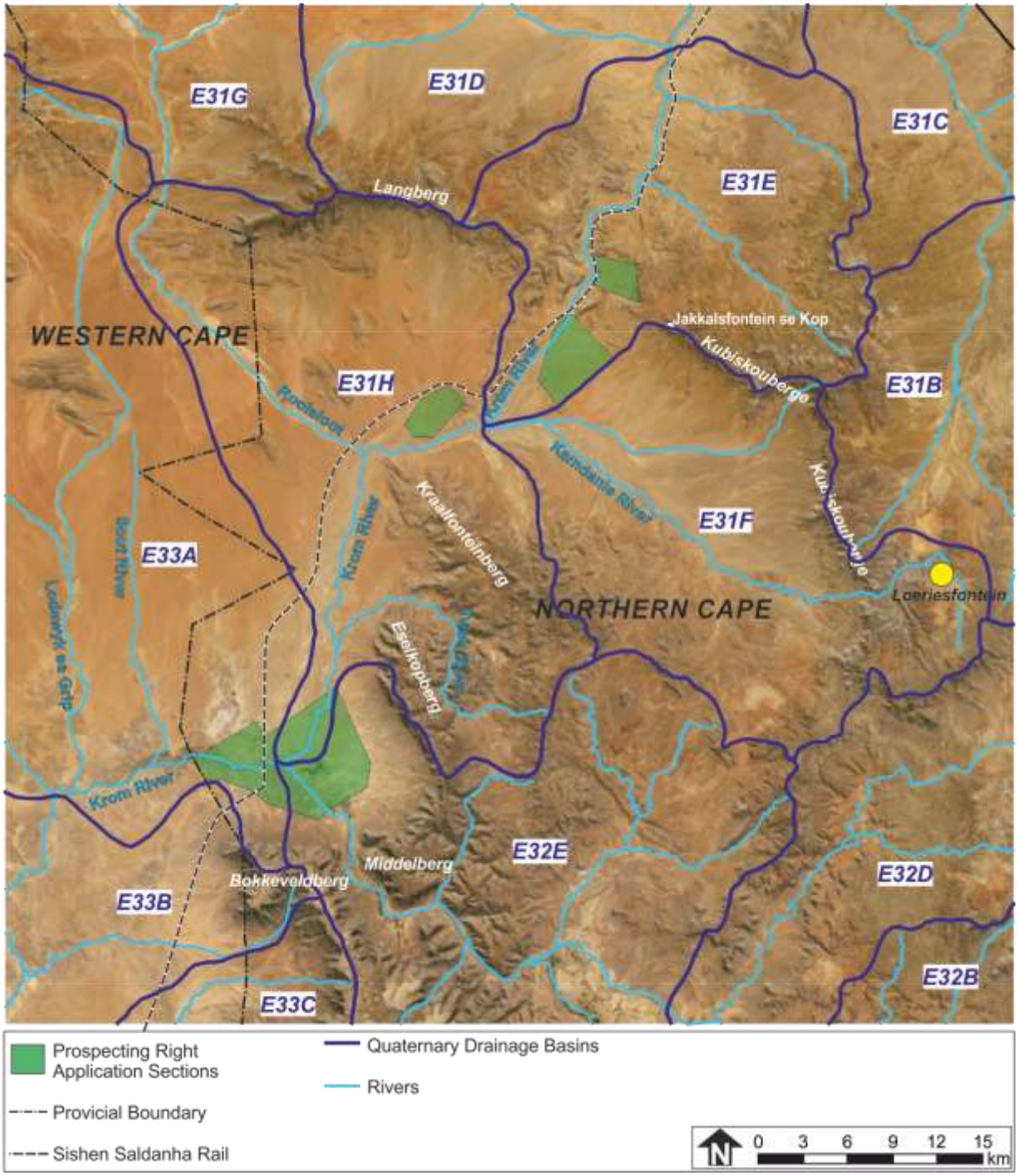


Figure 14: Surface Water Regime

9.1.9 Ground Water

The local population is reliant on the groundwater and the recent prolonged drought which has resulted in the drying up of some boreholes and the lowering of the water table.

Cape Farm Mapper shows the following in respect of the Groundwater:

- The aquifer type is “Intergranular and Fractured”
- Yield is low at 0.1-05 l/s
- The aquifer is classified as “Poor” in the case of the Kopjeskraal, Eyer Gat and Wolve Graf Sections with a Susceptibility rating of Least, but classified as “Minor” aquifer type in the case of the Stinkfontein Sections with a Susceptibility rating of “Low”
- In terms of Vulnerability the entire areas’ groundwater is classified as Least Vulnerable, but it is noted that the landowners in the area use groundwater almost exclusively as a water source.
- Depth to Groundwater is determined to be between 27 and 32m although it is noted that groundwater table was most likely getting deeper with the recent prolonged drought
- Groundwater recharge occurs at the slowest classified rate – near zero
- Groundwater quality is noted as being poor to very poor with best EC of 170mS/m to a very poor 520mS/m or more.

It is acknowledged that groundwater is very important in the regions, but the shallow nature of prospecting in this round of activities will in no way impact on the groundwater aquifers or regime of the region or local area..

9.1.10 Air Quality (Dust)

Attention is drawn to paragraph 4.8.4 of the extract from SANS regarding recognition that certain enterprises need to operate within “band 3” by virtue of “the practical operation of the enterprise...” provided that the best available control technology is applied for the duration”.

“DUST FALL STANDARDS SANS 1929:2004

4.8 Dust Deposition

4.8.1 General

The four-band scale to be used in the evaluation of dust deposition is given in 4.8.2 and target, alert and action levels indicated in 4.8.3. Permissible margins of tolerance are outlined in 4.8.4 and exceptions noted in 4.8.5.

4.8.2 Evaluation Criteria for Dust Deposition

Dust deposition rates shall be expressed in units of mg m² day-1 over a 30-day averaging period. Dust deposition shall be evaluated against a four-band scale as presented in Table 9.

Table 9 – Four-band scale evaluation criteria for dust deposition

Band number	Band description	DUSTFALL RATE (D) (*mg* /m² /day [1] 30-day average)	Comment
1	Residential	D < 600	Permissible for residential and light commercial.
2	Industrial	600< D < 1 200	Permissible for heavy commercial and industrial.
3	Action	1 200 < D < 2 400	Requires investigation and remediation if two sequential months lie in this band, or more than three occur in a year.
4	Alert	2 400 < D	Immediate action and remediation required following the first exceedance. Incident report to be submitted to relevant authority.

4.8.3 Target, Action and Alert Thresholds are given in Table 10

Table 10 – Target, action and alert thresholds for dust deposition

Level	DUSTFALL RATE (D) (mg/ m² /day [1] 30-day average)	Averaging period	Permitted frequency of exceedances
Target	300	Annual	
Action residential	500	30 days	Three within any year, no two sequential months

Level	DUSTFALL RATE (D) (mg/ m² /day [1] 30-day average)	Averaging period	Permitted frequency of exceedances
Action industrial	1 200	30 days	Three within any year, no two sequential months.
Alert threshold	2 400	30 days	None. First exceedance requires remediation and compulsory report to authorities.

4.8.4 Margin of Tolerance

An enterprise may submit a request to the authorities to operate within Band 3 (ACTION Band), as specified in Table 9, for a limited period, providing that this is essential in terms of the practical operation of the enterprise (for example the final removal of a tailings deposit) and provided that the best available control technology is applied for the duration.

No margin of tolerance will be granted for operations that result in dustfall rates which fall within Band 4 (ALERT Band) as specified in Table 9.

4.8.5 Exceptions

Dustfalls that exceed the specified rates but that can be shown to be the result of some extreme weather or geological event shall be discounted for the purpose of enforcement and control. Such event might typically result in excessive dustfall rates across an entire metropolitan region, and not be localised to a particular operation. Natural seasonal variations, such as dry windy period during the Highveld spring will not be considered extreme events for this definition"

Ambient dust levels in the area pre-prospecting are generally low.

The only existing dust sources in this area results from:

- Dust generated off unvegetated surfaces (particularly during drought conditions) under high winds.
- Vehicles driving on unsurfaced roads.

Potential dust sources at this site will be:

- Vehicles accessing the prospecting site on unsurfaced roadways.
- Very limited to NO dust generated by RC drilling due to the double drill rod method where the sample is 'sucked' up between the walls of the double rod directly into a sample bag.

9.1.11 Noise

Ambient noise levels in the area are low and are associated with the low volume traffic on unsurfaced roads.

Noise generation by the prospecting project will come following sources:

- Vehicles using the unsurfaced roads to access the site. Very low volume of traffic will be generated over a short period.
- Drilling. Merely the noise of its small diesel motor and movement of its supporting vehicles during daylight hours only.

9.2 Description of the current land uses.

9.2.1 On site and surrounding land uses

The overwhelming land use in the Prospecting Right area is vacant Wilderness / Grazing area. Low order farm tracks are located for the farming activities mainly providing access to kraals and watering points. The location of farmsteads in relation to the tracks and roads are as shown in Figures 15 and 16 overleaf.

In respect of surrounding land use, the only infrastructure of any significance is the Sishen Saldanha Rail line which intersects the Stinkfontein section and directly borders the prospecting right sections of Wolve Grav, Kopjeskraal and Eyer Gat.

The closest proposed traverse line is located more than 400m from the Sishen Saldanha Rail Line.

There is a regional overhead powerline intersecting the Stinkfontein section. No drilling will take place within 50m of the centreline of that powerline servitude.

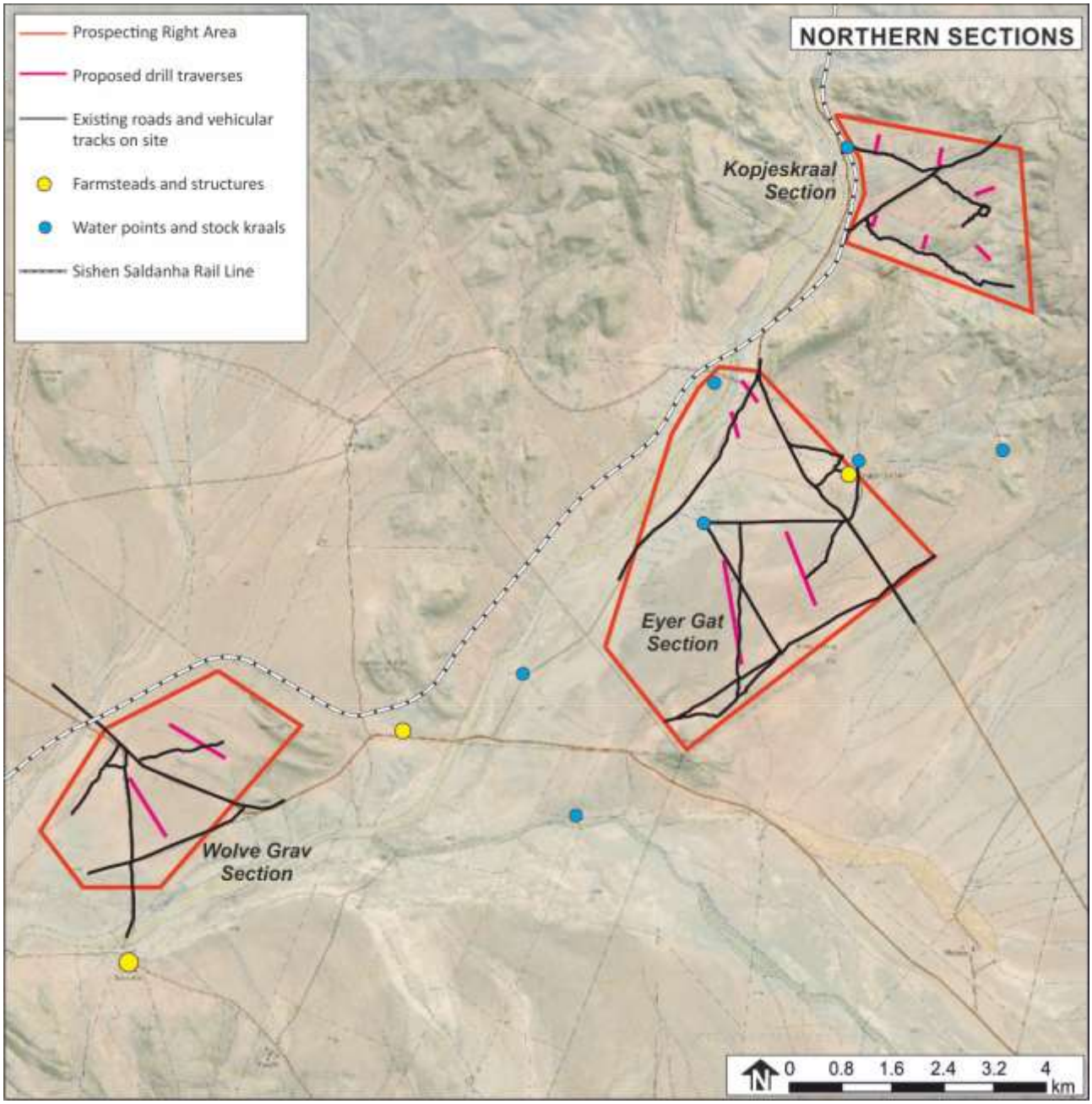


Figure 15: On site and Surrounding Land Uses (Norther Sections)

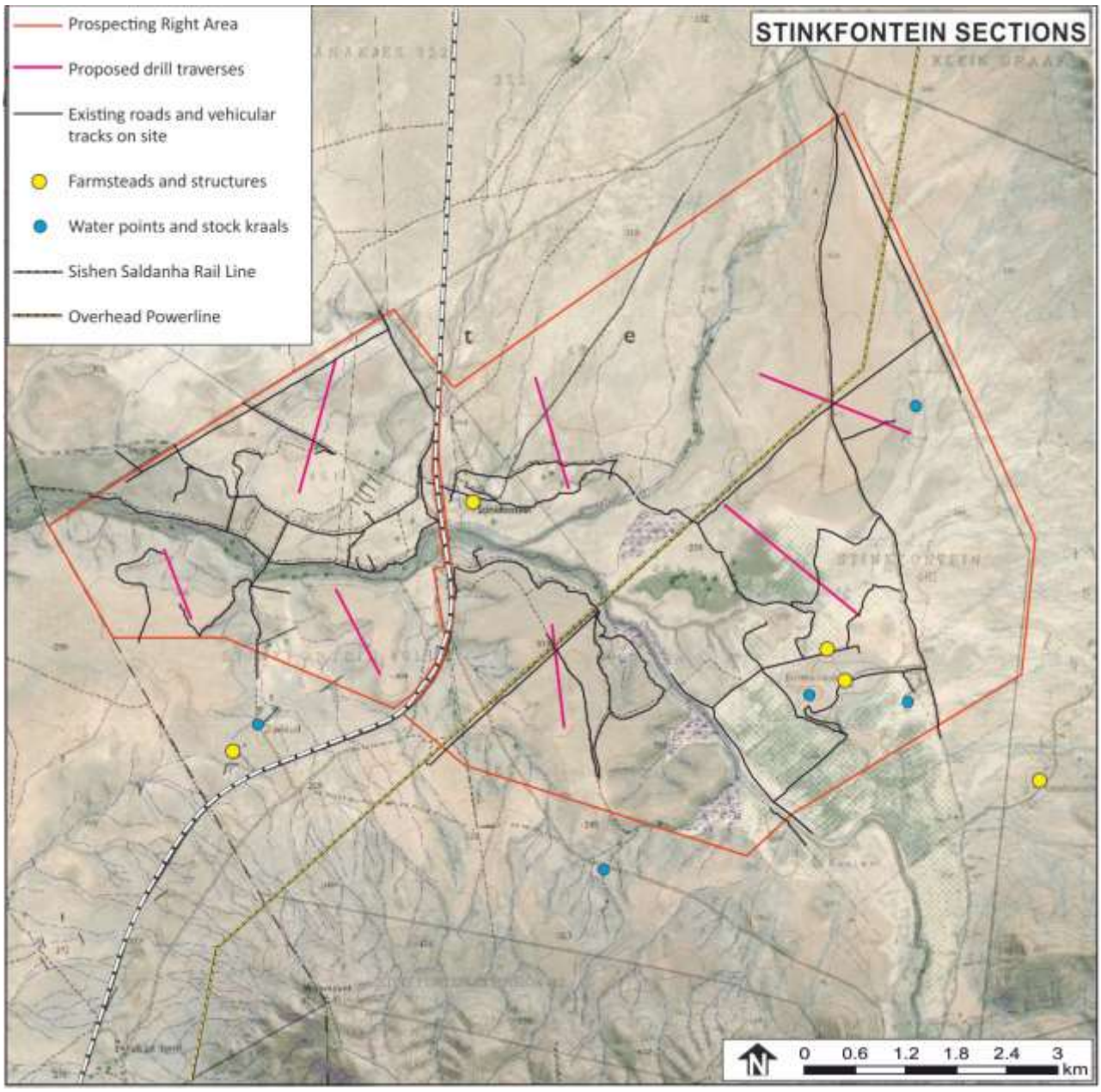


Figure 16: On site and Surrounding Land Uses - Stinkfontein Sections

9.3 Description of environmental features and infrastructure on the site.

Refer para 9.1, 9.2 and para 4.

9.4 Environmental and current land use map.

There is no composite map but the following figures in the report deal with specific aspects of the environment as applicable:

- Figure 1: Locality Plan
- Figure 4: Prospecting Right Application Process Flow Diagram
- Figure 5: Vegetation Classification (Mucina and Rutherford)
- Figure 6: CBA Classification and NPAES
- Figure 7: Map showing Palaeo Rivers / diamond transport routes
- Figure 12: Landowners and Surrounding Landownership
- Figure 13: Topographical elements.
- Figure 14: Surface Water Regime

- Figure 15: On site and Surrounding Land Uses (Norther Sections)
- Figure 16: On site and Surrounding Land Uses - Stinkfontein Sections

10 Impacts & risks identified (Nature, significance, consequence, extent, duration and probability of the impacts)

Note that in the draft Report, only the **potential** impacts identified were the typical impacts which **could conceivably occur** and are known for such activities. This was subject to further analysis later in report and further public participation to identify additional / different impacts. Step one is to identify applicable impacts, as per table below. Second step is to ascribe significance and details as per table thereafter.

10.1 Impact Identification

Activity. **This table identifies potential impacts and differentiates between negative or beneficial impacts.**	Geology	Topography	Soil/ Topsoil	Visual	Land Capability	Vegetation	Animal Life	Surface Water	Groundwater	Noise	Air Quality (Dust)	Social/ Economic	Archaeology/ Cultural	Hydrocarbon	Traffic /Access
Application for Prospecting Right															
1. **Establishment Phase**															
1.1. Office to be established in Loeriesfontein															
1.2. Establish mobile chemical toilet at the traverse															
2. **Operational Phase**															
2.1. Geophysical Survey on foot															
2.2. Marking of traverses and drill sites															
2.3. Access along traverse to drill sites															
2.4. Establish drill at hole position and conduct RC drilling (Max 120m² disturbance site)															
2.5. Rehabilitate drill site															
2.6. Rehabilitate any tracks which may have developed															
3. **Decommissioning Phase**															
3.1. Finalise rehabilitation of drill sites and access traverses															
3.2. Lodge Closure Application															

10.2 Impact rating

The table below does not include description of the beneficial impact of operational monitoring or decommissioning rehabilitation measures (as these should be fairly clear to the reader). The inclusion of these aspects results in an unnecessarily long report.

Activity	Nature of Potential Impact	Extent	Duration	Probability	Post Mitigation Significance	Extent to which impact can cause or be:		
						Reversed	Irreplaceable loss of resource	Avoided, managed or mitigated
Application for Prospecting Right								
1. Establishment Phase								
1.1. Office to be established in Loeriesfontein								
1.2. Establish mobile chemical toilet at the traverse								
1.2.1. Surface Water	Possible impact on surface water in case of leak	Very local	During drilling phase	Low	Insignificant	No	No	Managed
1.2.2. Groundwater	Possible impact on surface water in case of leak	Very local	During drilling phase	Very Low	Insignificant	No	No	Managed
2. Operational Phase								
2.1. Geophysical Survey on foot								
2.2. Marking of traverses and drill sites								
2.3. Access along traverse to drill sites		18.5km x 2.5m wide = 4.56ha						
2.3.1. Soil	Disturbance of soil along drill traverse. Note that no removal of topsoil is contemplated.	18.5km x 2.5m wide = 4.56ha	Until completion of drilling traverse. Up to 2 weeks access and then time to rehabilitate	Definitely	Insignificant	Yes	No	Mitigated
2.3.2. Visual	Vehicles and equipment accessing traverses may be visible from some farmsteads. Also disturbance area may become visible	18.5km x 2.5m wide = 4.56ha	Until completion of drilling traverse. Up to 2 weeks access and then time to rehabilitate	Unlikely	No mitigation feasible but will be insignificant	Yes	No	Can be managed

Activity	Nature of Potential Impact	Extent	Duration	Probability	Post Mitigation Significance	Extent to which impact can cause or be:		
						Reversed	Irreplaceable loss of resource	Avoided, managed or mitigated
2.3.3. Land Capability	Drill traverses may not available to serve Wilderness / Grazing function	18.5km x 2.5m wide = 4.56ha	Until disturbance cleared	Possible	Insignificant	Yes	No	Can be managed
2.3.4. Vegetation	Disturbance of natural vegetation	18.5km x 2.5m wide = 4.56ha	Until revegetation finalised - could be several seasons for sufficient rain	Definite	Insignificant	Yes	No	Requires mitigation
2.3.5. Animal Life	Disturbance of natural vegetation	18.5km x 2.5m wide = 4.56ha	Until revegetation finalised - could be several seasons for sufficient rain	Definite	Insignificant	Yes	No	Requires mitigation
2.3.6. Surface Water	Possible access to stream channels by vehicles and mobile equipment	Minor. Does appear to be fairly common practice in some of the sections where it may be occur.	Very short term	Possible	Insignificant / None	Yes	No	Must be managed
2.3.7. Noise	Noise generated by equipment	Local	On execution	Definite	Low	No	No	Mitigated
2.3.8. Air Quality	Limited dust generated by equipment and vehicles on unsurfaced roads.	Local	On execution	Definite	Insignificant	No	No	Mitigated
2.3.9. Hydrocarbon	Possible fuel / oil leaks from mobile equipment	Local	On execution	Possible	Insignificant	No	No	Managed
2.3.10. Archaeology	Possible disturbance of archaeological artefacts	Site specific	On execution	Unlikely	Insignificant to None	No	No	Must be avoided if such impact does exist
2.4. Establish drill at hole position and conduct RC drilling (Max 120m² disturbance site)								
2.4.1. Soil	Disturbance of soil at drill site. Note that no removal of topsoil is contemplated.	99 holes x 120m² each = 1.19ha	During drilling A few hours per site	Definitely	Insignificant	Yes	No	Mitigated

Activity	Nature of Potential Impact	Extent	Duration	Probability	Post Mitigation Significance	Extent to which impact can cause or be:		
						Reversed	Irreplaceable loss of resource	Avoided, managed or mitigated
2.4.2. Visual	Drill may be visible from some farmsteads. Also disturbance area may become visible	Drill rig on site + 99 holes x 120m² each = 1.19ha	During drilling A few hours per site	Unlikely	No mitigation feasible but will be insignificant	Yes	No	Can be managed
2.4.3. Land Capability	Drill sites not available to serve Wilderness / Grazing function	99 holes x 120m² each = 1.19ha	Until disturbance cleared	Probable	Insignificant	Yes	No	Can be managed
2.4.4. Vegetation	Disturbance of natural vegetation	99 holes x 120m² each = 1.19ha	Until revegetation finalised - could be several seasons for sufficient rain	Definite	Insignificant	Yes	No	Requires mitigation
2.4.5. Animal Life	Disturbance of natural vegetation	99 holes x 120m² each = 1.19ha	Until revegetation finalised - could be several seasons for sufficient rain	Definite	Insignificant	Yes	No	Requires mitigation
2.4.6. Surface Water	No drilling in water course or wetlands	None	NA	Must be avoided	None	Yes	No	None required
2.4.7. Groundwater	None. Drilling to shallow.	None						
2.4.8. Noise	Noise generated by drilling equipment	Local	On execution	Definite	Low	No	No	Mitigated
2.4.9. Air Quality	Limited dust generated by drilling equipment and vehicles.	Local	On execution	Definite	Insignificant	No	No	Mitigated
2.4.10. Hydrocarbon	Possible fuel / oil leaks from mobile equipment	Local	On execution	Possible	Insignificant	No	No	Managed
2.4.11. Archaeology	Possible disturbance of archaeological artefacts	Site specific	On execution	Unlikely	Insignificant to None	No	No	Must be avoided if such impact does exist
2.5. Rehabilitate drill site								
2.5.1. Noise	Noise generated by equipment	Local	On execution	Definite	Low	No	No	Mitigated
2.5.2. Air Quality	Limited dust generated by equipment and vehicles on unsurfaced roads.	Local	On execution	Definite	Insignificant	No	No	Mitigated

Activity	Nature of Potential Impact	Extent	Duration	Probability	Post Mitigation Significance	Extent to which impact can cause or be:		
						Reversed	Irreplaceable loss of resource	Avoided, managed or mitigated
2.5.3. Hydrocarbon	Possible fuel / oil leaks from mobile equipment	Local	On execution	Possible	Insignificant	No	No	Managed
2.6. Rehabilitate any tracks which may have developed								
2.6.1. Noise	Noise generated by equipment	Local	On execution	Definite	Low	No	No	Mitigated
2.6.2. Air Quality	Limited dust generated by equipment and vehicles on unsurfaced roads.	Local	On execution	Definite	Insignificant	No	No	Mitigated
2.6.3. Hydrocarbon	Possible fuel / oil leaks from mobile equipment	Local	On execution	Possible	Insignificant	No	No	Managed
3. Decommissioning Phase								
3.1. Finalise rehabilitation of drill sites and access traverses								
3.1.1. Noise	Noise generated by equipment	Local	On execution	Definite	Low	No	No	Mitigated
3.1.2. Air Quality	Limited dust generated by equipment and vehicles on unsurfaced roads.	Local	On execution	Definite	Insignificant	No	No	Mitigated
3.1.3. Hydrocarbon	Possible fuel / oil leaks from mobile equipment	Local	On execution	Possible	Insignificant	No	No	Managed
3.2. Lodge Closure Application								

11 Methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks.

An initial table was compiled which described each activity (whether listed or not in terms of NEMA), potential impact, significance and duration. Such table was included in the draft reporting and made available to all identified Interested and Affected Parties. Any relevant responses received would then inform a revision of the site layout plan.

The impacts are rated according to nature, extent, duration, probability of occurring and significance.

a) The significance level is based on the following criteria:

Significance		***Criteria***
Negative	Significant (S)	• Recommended level always exceeded with associated widespread community action • Disturbance to areas that are pristine, have conservation value, are important resource to humans and will be lost forever • Complete loss of land capability • Destruction of rare or endangered specimens • May affect the viability of the project
	Moderate (M)	• Moderate measurable deterioration and discomfort • Recommended level occasionally violated – still widespread complaints • Partial loss of land capability • Complete change in species variety or prevalence • May be managed • Is insignificant if managed according to EMP provisions
	Minor/ (I) Insignificant	• Minor deterioration. Change not measurable • Recommended level will rarely if ever be violated • Sporadic community complaints • Minor deterioration in land capability • Minor changes in species variety or prevalence
	Negligible	• An impact will occur but it is barely discernible and not worthy of further investigation
Positive	Minor	• Improvements in local socio-economics
	Significant	• Major improvements in local socio-economics with some regional benefits

b) The **duration** is classified as:
- Permanent (post-closure)
- Life of Mine (LOM)
- Temporary

c) The **probability** is ranked as:
- Definite/Certain
- Possible
- Unlikely

12 The positive / negative impacts that the proposed activity and alternatives will have on the environment and the community.

(Provide a discussion in terms of advantages and disadvantages of the initial site layout compared to alternative layout options to accommodate concerns raised by affected parties)

The proposed prospecting activities will have the following **negative impacts** on the environment and surrounding farmsteads. The impacts which *may* arise will be very insignificant as described below:

Soil and Land Capability:
There may be a temporary negative impact on the wilderness / grazing land capability. The proposed operation could result in up to 5.75ha surface (made up of 1.19ha drill sites and 4.56 traverse access) being disturbed through drilling. This insignificant impact will as far as possible be ameliorated and avoided through location of activities outside of CBA1 and as close as possible to existing tracks and roads. Refer Para 32 for further mitigation.

Visual Impact:
Visual impact is highly unlikely to occur and is insignificant in extent and restricted to short term impact generated by drill associated vehicles and small disturbance footprint in application area. The only possible visual receptor will be any of the farmsteads in and around the prospecting area.

Vegetation and Animal Life:
Specialist study has concluded that the impact on biodiversity will be insignificant and temporary. Refer Appendix 5 for full study.

Surface Water:
There is a potential that access may be required to the larger stream channels (particularly in the Kopjeskraal Section). The access will be limited to 2 of the traverses and it does in any event appear that, even for the landowner, this is the only way to access the eastern portions (of the prospecting right area). The next flow of the stream will eliminate any evidence of disturbance in such stream channel. No drilling is permitted in, or within 32m, of the bank of any stream channel or wetland area.

Groundwater:
The proposed drilling is very shallow in respect to the depth to water table and regional aquifers. It is merely meant to determine the presence of any potentially diamondiferous gravels in / below the alluvial deposits and is not expected to be much deeper than 10m. As such, there is no potential for any impact from the proposed drilling.

Noise and dust:
Very limited impact which will only occur during drilling activities and mitigated by equipment design.

Hydrocarbon Impact:
It is conceivable that oil/fuel leaks may occur from equipment on site as well during fuel transfers which may be required. The EMP does contain measures to firstly avoid, and then mitigate such impacts, should it occur.

Archaeology:
This draft report will be distributed to NCHRA and SAHRA (on the SAHRIS system) for their input in respect of potential archaeological impact. Depending on their requirements it may be required that a specialists study is required or that Letter of Exemption is supplied, provided by specialist. However, at this early stage in the process it appears unlikely that any impact will occur given the (young, in geological terms) alluvial nature of the prospecting target areas.

The only **positive impact** would be the information obtained in respect of the prospecting and the very limited socio-economic impact in respect of drilling contractors and their staff.

13 The possible mitigation measures that could be applied and the level of risk.

(With regard to the issues and concerns raised by affected parties provide a list of the issues raised and an assessment/ discussion of the mitigations or site layout alternatives available to accommodate or address their concerns, together with an assessment of the impacts or risks associated with the mitigation or alternatives considered).

Impact	Possible Mitigation	Level of risk
Topsoil / Soil: No topsoil will be removed from the access tracks or small drilling sites.	All tracks and drill sites will be selected and rehabilitated as per mitigation measures in para 32.7	Level of risk: Low to medium. Reason: The small disturbance footprint at drilling site will not have a significant negative impact especially with the prescribed rehabilitation methods. The drill tracks / traverses may remain a while after prospecting but will eventually disappear provided rehabilitation is conducted as proposed.
Vegetation: Refer Appendix 5 for full study by specialist	1. Avoidance of identified species 2. Sensitive planning and limiting access (especially along drill traverse 1 of Stinkfontein) 3. Post prospecting rehabilitation of disturbances	Level of Risk: Low. Reason: Specialist indicates that impact will be low and temporary./ Landowners have been approached (by S le Roux) for suggestions in respect of Rehabilitation and these measures have been incorporated into measures prescribed in para 32
Land Capability	All access roads and drill sites will be rehabilitated by light raking of any disturbed areas - see line item above	Level of risk: Low Reason: The relatively small disturbance footprint along access roads and at drilling site will not have a significant negative impact

Impact	Possible Mitigation	Level of risk
Dust impact from the operation	Limit speed on internal roads as well as access roads to the site	Must in any event be controlled in terms of employee health regulations
	If dust result in any complaints from surrounding parties (highly unlikely especially in light of the wet drilling required for the core), then activities must cease until weather conditions are more favourable.	
Noise	The impacts of noise must limited more because of employee health reasons than for any impact on surrounding land users or land use	Must be controlled in terms of employee health regulations
	All vehicles must be equipped with working silencers	
Waste / Hydrocarbon impact	Any transfer of fuel must take place using suitable funnels and pumping equipment	Risk is low given small scale of the activities.
	Staff to be trained in respect of hydrocarbon pollution and contamination clearing methodologies to be employed	
	Separate waste streams and handle accordingly	

14 Motivation where no alternative sites were considered.

In respect of the entire Prospecting Right area, the only alternative that was assessed was in respect of the size of the application area and the farms to include in such application. The final decision was guided by an initial interpretation of existing topographical and geological mapping which showed potential diamondiferous gravels throughout the headward weathering valley. The selected Prospecting Sections have been specifically selected by the applicant geologist to provide the most representative information of the geological conditions over the entire area.

Geology is place bound and no alternative location can be considered.

15 Statement motivating the alternative development location within the overall site.

The location of the drill traverses has been determined primarily by their ability to provide representative information for a wider ranging area and then by:

1) Avoidance of any CBA1 area as mapped in Figure 6.
2) Location of the traverse to be as close as possible or to intersect existing tracks in the area so as to limit the length of disturbance through traverse use.

16 Full description of process undertaken to identify, assess and rank the impacts and risks the activity will impose on the preferred site through the life of the activity.

(Including (i) a description of all environmental issues and risks that are identified during the environmental impact assessment process and (ii) an assessment of the significance of each issue and risk and an indication of the extent to which the issue and risk could be avoided or addressed by the adoption of mitigation measures.

Refer para 10.2.

17 Assessment of each identified potentially significant impact and risk

(This section of the report must consider all the known typical impacts of each of the activities (including those that could or should have been identified by knowledgeable persons) and not only those that were raised by registered interested and affected parties)

Refer also table in para 10.2 which lists each impact associated with the proposed activities.

18 Summary of specialist reports.

The screening tool which accompanied the application is a Department of Environment Affairs online generated report based on the application area intersection with certain online GIS layers. That tool recommended that the following specialist studies be undertaken but does state that it is the EAPs responsibility to confirm the list and to motivate whether such specialist studies will be required. The table below indicates the specialist studies recommended and a reason/ motivation why such specialists study is being considered or not as part of this Environmental Authorisation:

Ref	Study suggested	Comment
1	Agricultural Impact Assessment	The screening tool denotes the agricultural sensitivity of the area as "very high" given the lands proximity to the Krom River. Notwithstanding the land capability designation, the prospecting activities will not alter the land or agricultural capabilities. Thus, NO SPECIALIST ASSESSMENT will be conducted for Agricultural Impact. The insignificant impact of prospecting can be completely mitigated through proposed rehabilitation actions. In addition, the landowners are aware of the scope of prospecting and are satisfied that the prospecting continue.
2	Archaeological and Cultural Heritage Impact Assessment	The Screening tool report does not classify the Archaeological and Cultural Heritage sensitivity of this area. This draft report will be forwarded to SAHRA and NCHRA via the SAHRIS portal, for their decision on any future study requirement.
3	Paleontology Impact Assessment	The Screening tool report does not classify the Palaeontological sensitivity of this area. This draft report will be forwarded to SAHRA and NCHRA via the SAHRIS portal, for their decision on any future study requirement.
4	Terrestrial Biodiversity Impact Assessment	The Screening tool report classifies the Terrestrial Biodiversity sensitivity of this area as "Very High". Given the location of the site in such classification, a specialist has been called upon and the results of such study are included in this report. Refer Appendix 5 for copy of the report.

Ref	Study suggested	Comment
5	Aquatic Biodiversity Impact Assessment	The Screening tool report does not classifies the Aquatic Biodiversity sensitivity of this area. There are water courses in the Prospecting Right area. The small drilling footprint with no logistical facilities or new roads planned will not lead to any Aquatic Biodiversity impacts at prospecting stage. Thus, NO SPECIALIST ASSESSMENT will be conducted at prospecting stage. No drilling is permitted in, or within 32m, of the bank of any stream channel or wetland area.
6	Noise Impact Assessment	The site is located within a fairly remote agricultural with low ambient noise levels. Consequently, any noise generated by moving vehicles and drilling will result in an impact within the context of other land uses. However, with the on-site land users being so dispersed, this impact is highly unlikely to manifest at any surrounding land user. In addition, the entire drilling programme is likely to be fairly short lived at any one site and will only take place during working hours. Accordingly, a Noise Impact Assessment is not warranted and NO SPECIALIST ASSESSMENT will be conducted.
7	Radioactivity Impact Assessment	Not applicable in this proposed prospecting.
8	Plant Species Assessment	The Screening tool report Plant Species theme classifies sensitivity of this area as "Medium". Given the location of the site in such classification, a specialist has been called upon and the results of such study are included in this report. Refer Appendix 5 for copy of the report.
9	Animal Species Assessment	The Screening tool report Animal Species theme does not classify sensitivity of this area. However, the animal life has been included as part of the biodiversity assessment conducted by specialist (as attached in Appendix 5).

LIST OF STUDIES UNDERTAKEN	RECOMMENDATIONS OF SPECIALIST REPORTS	RECOMMENDATIONS THAT HAVE BEEN INCLUDED IN THE EIA REPORT.
Stinkfontein Prospect Biodiversity Sensitivity Study for Prospecting Drilling Sites – Refer Appendix 5 for full study	"It can be concluded that the proposed prospecting drilling operation, and its associated access infrastructure, will have a localized and temporary impact on the natural biodiversity of the site. There is very little risk in terms of biodiversity impact. If the recommended mitigatory measures are effectively implemented, all of the issues relating to plants and animal sensitivity will be adequately mitigated. The greatest risk relating to the drilling operation will largely be restricted to the Kopjeskraal and Stinkfontein drill sites which are within CBA 2 designated areas. At both sites the actual prospecting disturbance will be localized with no impact on the surrounding CBA 2 designated area. The proposed prospecting operation will have no impact on landscape connectivity nor will it contribute to the fragmentation of vegetation types or animal habitats. The spectacular dwarf succulent endemism that is generally associated with the Knersvlakte part of Namaqualand is generally associated with quartz pebble fields and other rocky areas (Van Wyk & Smith, 2001).. The more-sandy areas (such as those of the Loeriesfontein study sites) have a less specialized flora and consist of the more widespread plant species. This was found to be the case during this survey as no pebble or rocky areas occurred at the proposed drill sites resulting in lower risk in terms of narrowly endemic plant species"	Throughout report but mitigation specifically included in Part 32

19 Environmental impact statement

19.1 Summary of the key findings of the environmental impact assessment

Provided rehabilitation measures and other mitigation measures are put in place then the impact of the proposed operation will be insignificant (low) and temporary.

Soil: Experience in other prospecting activities has shown that the removal of all vegetation and topsoil prior to accessing the site creates more disturbance than merely accessing the sites. Some plants do get disturbed or break but may recover afer the disturbance in a much shorter timespan than when the area entirely denuded. It does however still require that some rehabilitation (as proposed in para 32.2) does take place.

Visual Impact: Visual impact is insignificant and restricted to short term impact generated by drill associated vehicles and small disturbance footprint in application area. It depends on the drill site location but given the extreme isolation of farmsteads on and surrounding the site, this impact is highly unlikely to manifest.

Land Capability: There will be temporary and insignificant impact on the land capability of the affected areas.

Vegetation and animal life impact: The small scale of activities and the lack of impact of the operation as well as the location of sites outside of any CBA1 and the implementation of the mitigation measures proposed in para 32.2, will result in a very low if any impact on vegetation. – See also Appendix 5.

Dust: Very limited impact which will only occur during limited period of drilling activities.

Hydrocarbon Pollution impact: Could conceivably occur through leaks of mobile equipment or during fuel dispensing to drill whilst on site. Hydrocarbon Management Protocol is in place in the EMP

Heritage Impact: This draft report will be forwarded to SAHRA and NCHRA via the SAHRIS portal, for their decision on any future study requirement.

19.2 Final Site Map

Refer Figures 8-11.

19.3 Summary of the positive and negative impacts and risks of the proposed activity and identified alternatives.

Given that no feasible alternatives have been identified at this stage, the positive and negative impacts of the proposed activity as described in this document are described below:

Negative impacts / risk to the environment:

1) Soil / Land Capability / Vegetation and Animal Life: Temporary and insignificant impact will occur as a result of the proposed drilling operations, especially in light of the proposed rehabilitation proposed in para 32.
2) Visual impact: There will be no residual visual impact provided the proposed rehabilitation contemplated in this document is adhered to.
3) Dust and noise impact from equipment on site. Impact will be low and only for the short duration of activities in the prospecting area.
4) Potential for Hydrocarbon pollution (Subject to hydrocarbon management protocol as contained in Para 32.4 hereto)
5) Groundwater and Surface Water: None

The **only positive impact** would be the information obtained in respect of the prospecting, and insignificant socio-economic impact in respect of drilling contractor and staff.

20 Proposed impact management objectives and the impact management outcomes for inclusion in the EMPr;

Based on the assessment and where applicable the recommendations from specialist reports, the recording of proposed impact management objectives, and the impact management outcomes for the development for inclusion in the EMPr as well as for inclusion as conditions of authorisation**.**

Impact Management Objectives:
The overall objective is to limit the impact of activities by implementing all the prescribed rehabilitation methods as prescribed in the EMP.

The objective is to return the site so that it is indistinguishable from the rest of the surrounding environment and to allow current uses to continue post prospecting. In addition, it is an objective that the disturbance area is kept to an absolute minimum.

The *impact management outcomes* to be included in the EMP, therefore:

i. Immediate rehabilitation of disturbed area of each drill site (and if required each access track) to limit impact on land capability.
ii. Access to no go areas (everything outside of the drill sites and outside of the Prospecting Right area, and the appropriate vegetation or heritage areas) must be prevented through environmental education of all staff members.
iii. Limiting of dust and noise impact on surrounding users.
iv. Avoidance of any impact in respect of hydrocarbon pollution.

21 Aspects for inclusion as conditions of Authorisation.

None.

22 Description of assumptions, uncertainties & gaps in knowledge.

The location of the site in an area classified in the Screening Tool as having high terrestrial biodiversity sensitivity, the location of CBAs within the Prospecting Right areas and the proximity of the Private Nature Reserve as well as the proximity of the NPAES have necessitated specialist input in this regard. Refer Appendix 5 for copy of such study.

23 Reasoned opinion as to whether the proposed activity should or should not be authorised

23.1 Reasons why the activity should be authorized or not.

There is no reason why the activity should not be authorised. The proposed prospecting has been planned to eliminate any significant impacts. The impacts which may occur are all insignificant. These impacts possibly relate to land capability / vegetation, noise, dust, hydrocarbon pollution and visual impact.

23.2 Conditions that must be included in the authorisation

1) All prescriptions of the EMP must be adhered to by the applicant.

24 Period for which the Environmental Authorisation is required.

5 years excluding aftercare phase.

Phase	**Activity**	**Timeframe** (in months)	**Timeframe for outcome** (deadline for the expected outcome)
0	Application period for Land Use approval[3]	9	9
1a	Collation of all available information (Analysis of Aerial photography, Analysis of Satellite Imagery, Sourcing and Purchasing of other Geological Information)	9	9
1b	Geophysical Survey work	2	11
2a	Conclude final agreements with contractors	1	10
2a	Site establishment (Coordinated from an Office in Loeriesfontein)	2	12
2b	Management and driller to select borehole locations (based on Figures 8-11 layout)	2	14
2b	Applicant undertakes induction training (to be specified in upcoming EMP)	1	15
2b	Conduct initial drilling	18	33
2c	Determine requirement and location of infill drilling if contemplated	6	39
2c	Conduct close spaced infill drilling if contemplated	12	51
3a	Record and Analysis:	6	57
3b	Consider results and decide on course of action	3	60

[3] Prospecting rights require a Land Use approval in terms of LUPA (previously LUPO). Unfortunately this Land Use application requires the use of Environmental Authorisation as motivation for that application. As a result, we have seen several applications for Prospecting Right which have had to be renewed before any work has even progressed because of the absence of the Land Use Right. As a result, based on past experience, we have included a minimum 9 month period in the Prospecting Programme to cover this aspect.

25 Undertaking

Confirm that the undertaking required to meet the requirements of this section is provided at the end of the EMPr and is applicable to both the Basic assessment report and the Environmental Management Programme report.

Confirmed. Refer Part 38

26 Financial Provision

In terms of decommissioning rehabilitation the amount to be provided by Bank Guarantee is R 177 787.

26.1 Explain how the aforesaid amount was derived.

Provision for the quantum has been determined on a costing for each activity of rehabilitation as the Master Rates from the MPRDA cannot be applied in these specific circumstances. Refer Table 26.1 Quantum Calculation overleaf.

Table 26.1: Rehabilitation Quantum Calculation.

Decommissioning Phase			
1	The will be no diesel tank, bund and apron		
2	Remove all plant and equipment from sites		
3	There will be no on site logistical containers: Office, stores, personnel amenities and workshop		
4	Access roads = 18.5km x 2.5m wide = 4.56ha	R15 000/ha	R68 400
5	Light rake any disturbed areas at each drill site immediately after drilling (99 holes at 120m² each = 1.19ha)	R28 000/ha	R33 320
6	Conduct final performance assessment and lodge Closure Application	R25 000	R25 000
		Subtotal 1	**R126 720**
12% Ps & Gs			R15 206
10% contingency			R12 672
		Subtotal 2 excl. VAT	**R154 598**
		VAT @ 15%	**R23 189**
		TOTAL Incl. VAT	**R177 787**

26.2 Confirm this amount can be provided for from operating expenditure.

(Confirm that the amount, is anticipated to be an operating cost and is provided for as such in the Mining work programme, Financial and Technical Competence Report or Prospecting Work Programme as the case may be).

The applicant confirms herewith that the amount can be (and will be) provided from operating expenditure.

27 Specific Information required by the competent Authority

27.1 Compliance with the provisions of sections 24(4)(a) and (b) read with section 24 (3) (a) and (7) of the National Environmental Management Act (Act 107 of 1998). The EIA report must include the:-

27.1.1 Impact on the socio-economic conditions of any directly affected person.

The main positive impact arises out of the knowledge of geological suitability of the material to possibly enable future Mining Right application.

In respect of land restitution, it is known that Land Claims have been lodged in respect of Portions 6 and 8 of Stinkfontein 461. The land has apparently (according to recent landowners) been sold but transfer has not yet taken place. All correspondence in respect of these properties have been forwarded to the lawyers / attorneys who act on behalf of the land claimants.

27.1.2 Impact on any national estate referred to in section 3(2) of the National Heritage Resources Act.

(Provide the results of Investigation, assessment, and evaluation of the impact of the mining, bulk sampling or alluvial diamond prospecting on any national estate referred to in section 3(2) of the National Heritage Resources Act, 1999 (Act No. 25 of 1999) with the exception of the national estate contemplated in section 3(2)(*i*)(vi) and (vii) of that Act, attach the investigation report as Appendix and confirm that the applicable mitigation is reflected herein).

This draft report will be distributed to NCHRA and SAHRA (on the SAHRIS system) for their input in respect of potential archaeological impact. Depending on their requirements it may be required that a specialists study is required or that Letter of Exemption is supplied, provided by specialist. However, at this early stage in the process it appears unlikely that any impact will occur given the (young, in geological terms) alluvial nature of the prospecting target areas.

28 Other matters required in terms of sections 24(4)(a) & (b) of the Act.

(the EAP managing the application must provide the competent authority with detailed, written proof of an investigation as required by section 24(4)(b)(i) of the Act and motivation if no reasonable or feasible alternatives, as contemplated in sub-regulation 22(2)(h), exist.

This draft report will be distributed to NCHRA and SAHRA (on the SAHRIS system) for their input in respect of potential archaeological impact. Depending on their requirements it may be required that a specialists study is required or that Letter of Exemption is supplied, provided by specialist. However, at this early stage in the process it appears unlikely that any impact will occur given the (young, in geological terms) alluvial nature of the prospecting target areas.

PART B

ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

29 Draft environmental management programme.

29.1 Details of the EAP,

(Confirm that the requirement for the provision of the details and expertise of the EAP are already included in PART A, section 1(a) herein as required).

Yes. Refer Para 1.1.

29.2 Description of the Aspects of the Activity

(Confirm that the requirement to describe the aspects of the activity that are covered by the draft environmental management programme is already included in PART A, section (1)(h) herein as required).

Yes. Refer Para 4.1 to 4.2.

29.3 Composite Map

There is no composite map but the following figures in the report deal with specific aspects of the environment as applicable:

- Figure 1: Locality Plan
- Figure 4: Prospecting Right Application Process Flow Diagram
- Figure 5: Vegetation Classification (Mucina and Rutherford)
- Figure 6: CBA Classification and NPAES
- Figure 7: Map showing Palaeo Rivers / diamond transport routes
- Figure 12: Landowners and Surrounding Landownership
- Figure 13: Topographical elements.
- Figure 14: Surface Water Regime
- Figure 15: On site and Surrounding Land Uses (Norther Sections)
- Figure 16: On site and Surrounding Land Uses - Stinkfontein Sections

29.4 Description of impact management objectives including management statements

29.4.1 Determination of closure objectives.

The overall objective is to limit the impact of activities by implementing all the prescribed rehabilitation methods as prescribed in the EMP.

The objective is to return the site so that it is indistinguishable from the rest of the surrounding environment to allow current uses. In addition, it is an objective that the disturbance area is kept to an absolute minimum.

The *impact management outcomes* to be included in the EMP, therefore:

i. Immediate rehabilitation of disturbed area of each drill site as well as the drill traverse when finalised to limit impact on land capability.

ii. Access to no go areas (everything outside of drill sites, drill traverses and outside of the Prospecting Right area, and the appropriate vegetation or heritage no go areas) must be prevented through environmental education of all staff members.

iii. Limiting of dust and noise impact on surrounding users.

iv. Avoidance of any impact in respect of hydrocarbon pollution.

Refer Appendix 6 for copy of Closure Plan.

29.4.2 Volumes and rate of water use required for the operation.

None. Only limited drinking water will be brought in bottles as required.

29.4.3 Has a water use licence has been applied for?

None required.

30 Impacts to be mitigated in their respective phases

Activity	Nature of Impact	Extent	Mitigation Measures	Compliance with Standards	Time period for implementation
Application for Prospecting Right					
1. Establishment Phase					
1.1. Office to be established in Loeriesfontein					
1.2. Establish mobile chemical toilet at the traverse					
1.2.1. Surface Water	Possible impact on surface water in case of leak	Very local	Prevention through contractor maintenance	Contract	Life of operation
1.2.2. Groundwater	Possible impact on surface water in case of leak	Very local	Prevention through contractor maintenance	Contract	Life of operation
2. Operational Phase					
2.1. Geophysical Survey on foot					
2.2. Marking of traverses and drill sites					
2.3. Access along traverse to drill sites					
2.3.1. Soil	Disturbance of soil along drill traverse. Note that no removal of topsoil is contemplated.	18.5km x 2.5m wide = 4.56ha	Do not remove topsoil. The removal of the topsoil for such short duration activity will result in unnecessary impact. All vehicles to stay in track	EMP prescription (Para 32.2)	Traverse development and use
2.3.2. Visual	Vehicles and equipment accessing traverses may be visible from some farmsteads. Also disturbance area may become visible	18.5km x 2.5m wide = 4.56ha	Visual impact will be removed when equipment is removed from site and traverse rehabilitated	EMP Prescription	After drilling (Decommissioning rehabilitation)
2.3.3. Land Capability	Drill traverses may not available to serve Wilderness / Grazing function	18.5km x 2.5m wide = 4.56ha	Full land capability will be restored when the area has rehabilitated	EMP Prescription	After drilling (Decommissioning rehabilitation)
2.3.4. Vegetation	Disturbance of natural vegetation	18.5km x 2.5m wide = 4.56ha	Full land capability will be restored when the area has rehabilitated	EMP prescription (Para 32.2)	After drilling (Decommissioning rehabilitation)

Activity	Nature of Impact	Extent	Mitigation Measures	Compliance with Standards	Time period for implementation
2.3.5. Animal Life	Disturbance of natural vegetation	18.5km x 2.5m wide = 4.56ha	Full land capability will be restored when the area has rehabilitated	EMP prescription (Para 32.2)	After drilling (Decommissioning rehabilitation)
2.3.6. Surface Water	Possible access to stream channels by vehicles and mobile equipment	Minor. Access does appear to be fairly common practice in some of the sections where it may be occur.	Avoid where possible	EMP prescription	During drilling
2.3.7. Noise	Noise generated by equipment	Local	The only feasible noise reduction measure is to ensure that all vehicle silencers are operational	NOISE: SANS 0103-1983 & MHSA in respect of Personnel Exposure	Life of operation
2.3.8. Air Quality	Limited dust generated by equipment and vehicles on unsurfaced roads.	Local	None likely to be required given the small scale of the equipment / operation and slow rate of progress	DUST FALL STANDARDS: SANS 1929:2004 & MHSA in respect of Personnel Exposure	NA
2.3.9. Hydrocarbon	Possible fuel / oil leaks from mobile equipment	Local	Monitoring and Hydrocarbon Management methods	As per para 32.3	On occurrence
2.3.10. Archaeology	Possible disturbance of archaeological artefacts. Unlikely given alluvial nature of soils.	Site specific	Dependent on outcome of SAHRA response and the requirement for any specialists study (if any)	EMP standards	On occurrence
2.4. Establish drill at hole position and conduct RC drilling (Max 120m² disturbance site)					
2.4.1. Soil	Disturbance of soil at drill site. Note that no removal of topsoil is contemplated.	99 holes x 120m² each = 1.19ha	Do not remove topsoil. The removal of the topsoil for such short duration activity will result in unnecessary impact. All activities to stay within demarcated area during drilling	EMP prescription (Para 32.2)	Traverse development and use
2.4.2. Visual	Drill may be visible from some farmsteads. Also disturbance area may become visible	Drill rig on site + 99 holes x 120m² each = 1.19ha	Visual impact will be removed when equipment is removed from site and drill site rehabilitated	EMP Prescription	After drilling (Decommissioning rehabilitation)
2.4.3. Land Capability	Drill sites not available to serve Wilderness / Grazing function	99 holes x 120m² each = 1.19ha	Full land capability will be restored when the area has rehabilitated	EMP Prescription	After drilling (Decommissioning rehabilitation)
2.4.4. Vegetation	Disturbance of natural vegetation	99 holes x 120m² each = 1.19ha	Full land capability will be restored when the area has rehabilitated	EMP prescription (Para 32.4)	After drilling (Decommissioning rehabilitation)

Activity	Nature of Impact	Extent	Mitigation Measures	Compliance with Standards	Time period for implementation
2.4.5. Animal Life	Disturbance of natural vegetation	99 holes x 120m² each = 1.19ha	Full land capability will be restored when the area has rehabilitated	EMP prescription (Para 32.2)	After drilling (Decommissioning rehabilitation)
2.4.6. Surface Water	No drilling in water course	None	Avoid	EMP prescription (Para 32.2)	During drilling
2.4.7. Groundwater	None. Drilling to shallow..	None	None required	NA	NA
2.4.8. Noise	Noise generated by drilling equipment	Local	The only feasible noise reduction measure is to ensure that all vehicle silencers are operational	NOISE: SANS 0103-1983 & MHSA in respect of Personnel Exposure	Life of operation
2.4.9. Air Quality	Limited dust generated by drilling equipment and vehicles.	Local	None likely to be required given the small scale of the equipment / operation and slow rate of progress	DUST FALL STANDARDS: SANS 1929:2004 & MHSA in respect of Personnel Exposure	NA
2.4.10. Hydrocarbon	Possible fuel / oil leaks from mobile equipment	Local	Monitoring and Hydrocarbon Management methods	As per para 32.3	On occurrence
2.4.11. Archaeology	Possible disturbance of archaeological artefacts	Site specific	Dependent on outcome of SAHRA response and the requirement for any specialists study (if any)	EMP standards	On occurrence
2.5. Rehabilitate drill site					
2.5.1. Noise	Noise generated by equipment	Local	The only feasible noise reduction measure is to ensure that all vehicle silencers are operational	NOISE: SANS 0103-1983 & MHSA in respect of Personnel Exposure	Life of operation
2.5.2. Air Quality	Limited dust generated by equipment and vehicles on unsurfaced roads.	Local	None likely to be required given the small scale of the equipment / operation and slow rate of progress	DUST FALL STANDARDS: SANS 1929:2004 & MHSA in respect of Personnel Exposure	NA
2.5.3. Hydrocarbon	Possible fuel / oil leaks from mobile equipment	Local	Monitoring and Hydrocarbon Management methods	As per para 32.3	On occurrence
2.6. Rehabilitate any tracks which may have developed					
2.6.1. Noise	Noise generated by equipment	Local	The only feasible noise reduction measure is to ensure that all vehicle silencers are operational	NOISE: SANS 0103-1983 & MHSA in respect of Personnel Exposure	Life of operation

Activity	Nature of Impact	Extent	Mitigation Measures	Compliance with Standards	Time period for implementation
2.6.2. Air Quality	Limited dust generated by equipment and vehicles on unsurfaced roads.	Local	None likely to be required given the small scale of the equipment / operation and slow rate of progress	DUST FALL STANDARDS: SANS 1929:2004 & MHSA in respect of Personnel Exposure	NA
2.6.3. Hydrocarbon	Possible fuel / oil leaks from mobile equipment	Local	Monitoring and Hydrocarbon Management methods	As per para 32.3	On occurrence
3. Decommissioning Phase					
3.1. Finalise rehabilitation of drill sites and access traverses					
3.1.1. Noise	Noise generated by equipment	Local	The only feasible noise reduction measure is to ensure that all vehicle silencers are operational	NOISE: SANS 0103-1983 & MHSA in respect of Personnel Exposure	Life of operation
3.1.2. Air Quality	Limited dust generated by equipment and vehicles on unsurfaced roads.	Local	None likely to be required given the small scale of the equipment / operation and slow rate of progress	DUST FALL STANDARDS: SANS 1929:2004 & MHSA in respect of Personnel Exposure	NA
3.1.3. Hydrocarbon	Possible fuel / oil leaks from mobile equipment	Local	Monitoring and Hydrocarbon Management methods	As per para 32.3	On occurrence
3.2. Lodge Closure Application					

31 Impact Management Outcomes

Activity	MITIGATION TYPE (modify, remedy, control, or stop) through (e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc).	STANDARD TO BE ACHIEVED (Impact avoided, noise levels, dust levels, rehabilitation standards, end use objectives) etc.
Application for Prospecting Right		
1. Establishment Phase		
1.1. Office to be established in Loeriesfontein		
1.2. Establish mobile chemical toilet at the traverse		
1.2.1. Surface Water	Prevent through contract clearing	Impact Avoided
1.2.2. Groundwater	Prevent through contract clearing	Impact Avoided
2. Operational Phase		
2.1. Geophysical Survey on foot		
2.2. Marking of traverses and drill sites		
2.3. Access along traverse to drill sites		
2.3.1. Soil	Limit through non-removal, restriction on extent of activities	Meet pre-prospecting standard
2.3.2. Visual	Limited through distance and small scale of activity. Temporary	Impact minimized
2.3.3. Land Capability	Avoidance if possible. Or Remedy through rehabilitation	Meet pre-prospecting standard
2.3.4. Vegetation	Avoidance if possible. Or Remedy through rehabilitation	Meet pre-prospecting standard
2.3.5. Animal Life	Control through avoidance	Impact avoided
2.3.6. Surface Water	Control through monitoring and access limitation	Impact avoided / minimised.
2.3.7. Noise	Remedy through noise control measures	Noise level standards not breached
2.3.8. Air Quality	Monitor and control through dust control measures if required	Dust level standards not breached
2.3.9. Hydrocarbon	Monitor and control through hydrocarbon management protocol	Impact avoided
2.3.10. Archaeology	Control through monitoring and removal (if required in terms of possible future study)	Impact avoided (or rehabilitation standards)
2.4. Establish drill at hole position and conduct RC drilling (Max 120m² disturbance site)		
2.4.1. Soil	Limit through non-removal, restriction on extent of activities	Meet pre-prospecting standard
2.4.2. Visual	Limited through distance and small scale of activity. Temporary	Impact minimized
2.4.3. Land Capability	Avoidance if possible. Or Remedy through rehabilitation	Meet pre-prospecting standard
2.4.4. Vegetation	Avoidance if possible. Or Remedy through rehabilitation	Meet pre-prospecting standard
2.4.5. Animal Life	Control through avoidance	Impact avoided
2.4.6. Surface Water	Control through monitoring and access limitation	Impact avoided.

Activity	MITIGATION TYPE (modify, remedy, control, or stop) through (e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc).	STANDARD TO BE ACHIEVED (Impact avoided, noise levels, dust levels, rehabilitation standards, end use objectives) etc.
2.4.7. Groundwater	No impact mitigation required	Avoid any impact
2.4.8. Noise	Remedy through noise control measures	Noise level standards not breached
2.4.9. Air Quality	Monitor and control through dust control measures if required	Dust level standards not breached
2.4.10. Hydrocarbon	Monitor and control through hydrocarbon management protocol	Impact avoided
2.4.11. Archaeology	Control through monitoring and removal (if required in terms of possible future study)	Impact avoided (or rehabilitation standards)
2.5. Rehabilitate drill site		
2.5.1. Noise	Remedy through noise control measures	Noise level standards not breached
2.5.2. Air Quality	Monitor and control through dust control measures if required	Dust level standards not breached
2.5.3. Hydrocarbon	Monitor and control through hydrocarbon management protocol	Impact avoided
2.6. Rehabilitate any tracks which may have developed		
2.6.1. Noise	Remedy through noise control measures	Noise level standards not breached
2.6.2. Air Quality	Monitor and control through dust control measures if required	Dust level standards not breached
2.6.3. Hydrocarbon	Monitor and control through hydrocarbon management protocol	Impact avoided
3. Decommissioning Phase		
3.1. Finalise rehabilitation of drill sites and access traverses		
3.1.1. Noise	Remedy through noise control measures	Noise level standards not breached
3.1.2. Air Quality	Monitor and control through dust control measures if required	Dust level standards not breached
3.1.3. Hydrocarbon	Monitor and control through hydrocarbon management protocol	Impact avoided
3.2. Lodge Closure Application		

32 Impact Management Actions

(A description of impact management actions, identifying the manner in which the impact management objectives and outcomes contemplated above will be achieved).

The management of environmental damage as a result of this undertaking consists of the following with detail description below:

1) Selection / Demarcation of location of drill traverses and drilling sites as per para 32.1 below.
2) "Topsoil" and vegetation rehabilitation as per para 32.2 below.
3) Hydrocarbon pollution prevention must take place in accordance with the Hydrocarbon pollution prevention protocol in para 32.3 below.
4) Para 32.4 contains additional methodology / protocol for rehabilitation of the drill sites and traverses

32.1 Demarcation of Activity areas: Demarcation of No-Go areas and No-Go area Management

The proposed location of the drill traverses are as indicated in figures 8-11. These have been selected prior to full and detailed site investigation with the main aim being to avoid any CBA 1 and, as far as possible, any water resource.

They have also been selected in such a way as to minimise the distance from an existing track and in most cases do intersect an existing track to limit disturbance. Existing roads and tracks are as indicated in Figures 8-11.

However, there may be on site considerations which may not have been fully determined in the selection of these traverses and they may have to be slightly altered in alignment (no more than 100m) to cater for these on site considerations. So, the traverse for drill rig to follow must be selected and delineated in consultation with the geologist / applicant, landowner and environmental consultant (and possibly heritage practitioner (if required in terms of future SAHRA requirements).

It is a requirement of the landowners that no drilling take place on steep slopes and that all demarcation take place using wooden stakes and not steel fence droppers. Once a traverse route has been selected it is critical that any vehicular access takes place only on those demarcated routes.

The specialist study (as contained in Appendix 5) also requires the avoidance of the *Hoodia gordonii.* The specialist commented as follows:

> "This Red Listed plant only occurs at four of the drill sites and at relatively low densities. For the purpose of prospecting drilling, it is suggested that the drilling operation should easily be able to avoid the small groups of Hoodia, by moving the drill site a couple of meters away and by ensuring that vehicle access and the drilling operation avoids any form of contact or impact on the groups of Hoodia plants. This should be easy enough to do as Hoodia is an easily identifiable plant and it is a relatively large and striking plant (see Plate 00 [of Appendix 5])".

It is required that surveyor and applicant representative visit each of the drilling position as well as record the exact location by GPS so that proper future geostatistical analysis can be completed.

The no-go areas (i.e. areas outside the Prospecting Right area and the areas outside of drill site and traverse) must form part of the Environmental Induction Training (which forms part of the Environmental Awareness Programme).

The following buffer areas must also form part of the training to the staff:

- 32m from the bank of any water resource except as indicated in terms of the layout plans in this document. No *drilling* is permitted in, or within 32m, of the bank of any stream channel or wetland area.

32.2 Topsoil and Vegetation Handling Methodology

Usually, the management of topsoil is of utmost importance. Without topsoil management, the disturbed area is subject to several other potential long term impacts such as lack of revegetation or extended revegetation time, dust generated off denuded areas and potential visual scarring. It is critical that the importance of topsoil is acknowledged by the applicant and properly managed to enable the eventual rehabilitation /restoration of all areas.

In this case, no topsoil will be removed on the traverses or drilling sites as this EAP's experience in the past has shown that a much higher level of disturbance and higher level of rehabilitation required, results from topsoil and vegetation removal to a berm followed by its replacement after drilling. Accordingly, the drill rig will simply drill on identified sites without vegetation or topsoil removal and immediately after drilling the disturbed area will be lightly raked along with additional measures as more fully described in para 32.4. The measures will be sufficient to manage "topsoil" and vegetation rehabilitation.

No sled mounted drill rig is permissible for use. Reference is made to the significant disturbance which was realised because of the use of a sled in the previous prospecting conducted elsewhere.

32.3 Domestic and Industrial Waste and Hydrocarbon Management Protocol

Note that there will be minimal volumes of domestic and industrial waste emanating from this operation; however the following must to be implemented.

The waste streams that could potentially emanate from this site:

Domestic Waste: Only small quantities of domestic waste will emanate from this site and this will typically be in the form of lunch wrapper, cool-drink bottles, etc. The waste will be retained in the cab of the vehicle and disposed of in Loeriesfontein town at the end of the working day.

Industrial Waste: Although no servicing of any vehicles is permitted in the proposed area, it is possible that emergency repairs may be required. If so, then adequate drip

trays and funnels must be utilised to catch oils from draining or from leaks – see para entitled Emergency Repairs on Site, below.

Ensure that any and all sample bags are removed from site.

Chemical Waste: There will be no chemicals used in the drilling operation (except fuel).

So, the Hydrocarbon Management Protocol for the site includes:

Fuel receipt, storage and dispensing:

There will be no fuel storage facility on this site (for diesel). Diesel (if required) will be brought in as required using small towed bowser and refuelling will take place in field. It is required that suitable funnels connections and drip trays are in place to limit the potential for leaks during such refuelling. The fuel delivery bowser driver must be cautioned to adhere to safe driving speeds and drive cautiously on the prospect and along the access road.

Emergency repairs on site:

In the event of a breakdown with repair being required in the field, the staff should be trained in use of drip trays and suitable funnels (not to drain oil into the veld) for filling and draining of lubricants and the staff shall be provided with such equipment to prevent oil contamination. In addition:

- Used/replaced filters, hoses, belts, cloths, etc. are to be placed in a black bag or plastic drum for return to the equipment provider's facility for disposal in terms of their company industrial waste handling methodology. Used filters are not to be buried at the site of repair.
- In the event of soil contamination, the oil and contaminated soils are to be placed in black disposal bags and transported to suitable facility (such as Vissershok Waste Disposal Facility). There are contractors who provide this service.

Staff Training and Awareness

All staff involved must be made aware of these oil and lubricant procedures. Staff will require instruction in the:

- Deleterious effects of oil / fuel on the environment
- Handling method and reporting procedure (also in terms of emergency plan readiness in case of large oil spill)

General Provisions

- All operators are to check their equipment for leaks and report such leaks on a daily basis. All equipment and vehicles will be maintained in good working order.
- No used oils are to be used as dust suppressants on maneuvering areas.
- All vehicles will be provided with drip trays if parked overnight on site – Note that no personnel will stay overnight at the drill site.
- If spills do occur on the sand, absorbent material such as Drizit or wood shavings are to be placed on top of the spill and removed to waste drums and then to the yard of the equipment provider; this must be disposed of at a suitable hazardous waste facility.

- All contaminated soil/material must also be removed and disposed of or treated with a suitable treatment process.
- Protective gear must be used during clean-up of spills.
- Suitable in-situ water treatment options like microbiological degradation must be implemented.
- There will be an incident management system, including procedures and training, for dealing with incidents for recordal of all Environmental Incidents Report.

Reporting procedure for fuel/oil spills

The reporting procedure in terms of which any person on site who sees an oil/fuel spill occurring must:

- Ensure the safety of any person nearby evacuating such person from the danger area.
- Having assessed the volume of the spills and if safe, then:
  - Report the spill to the office personnel who shall notify the following persons – To be completed in Final BAR:

	Name	**Telephone**
Project Manager	_	
DMR Environmental Division	_	

32.4 Drilling rig access to site, Operation and Rehabilitation requirements

32.4.1 Drill rig access to site

The drill rig will either be truck mounted or delivered to the drill site by a light truck equipped with a hi-up (brick pallet type lift) to be placed on the drill site. NO sled mounted core drill is permitted under any circumstances.

Access / traverse track route to be selected and demarcated as per para 32.1 and absolutely no access outside of the selected route is to be permitted.

32.4.2 Decommissioning rehabilitation to be applied at the drill site

After drilling has been completed the following activities must take place:

1. Removal of all equipment from the site
2. If there is any evidence of Hydrocarbon pollution, then such pollution and contaminated soil must be placed in black bags and removed from site and disposed of as per Hydrocarbon Management protocol in para 32.3
3. Backfilling of any residual drilling residue into the drill hole
4. The site will be rehabilitated by light raking to reinstate disturbed micro-topography and aerate upper soil horizon.
5. These same rehabilitation measures apply to the traverse which would have also been subject to access and disturbance.

Photographic (geotagged, date-stamped) records of each site pre- and post- drilling must be kept as proof of adequate rehabilitation and sent to the competent authority (as part of an Environmental Audit) for their records and review.

In addition, it is critical that contractor staff are educated / trained in environmental issues (the details of the environmental induction are as per Appendix 4).

32.4.3 Other Mitigation measures to be implemented

In addition to the measures described above, the following measures have been required by some landowners in initial discussion and in terms of specialist reporting:

- *Vanrhynsdorp Gannabosveld*: This vegetation type is under threat due to cultivation and open-cast gypsum mining. Drill site 1 at Stinkfontein lies in this vegetation type and negative impact during the prospecting drilling may be difficult to avoid.
  However, if access to the drill site is sensitively planned, and the disturbance of the surrounding area (outside of the drill site) is carefully kept to a necessary minimum, then prospecting drilling can be achieved with the minimum disturbance to the surrounding Vanrhynsdorp Gannabosveld as well as the CBA 2 designated sites. The physical marking of approved access and drilling activity area is recommended as well as inspection during the drilling by the Ecological Control Officer appointed for the entire drilling operation.
- *Ecological Control Officer (ECO*): It is recommended that a suitably qualified ECO be appointed to assist with the access and control at the various drilling sites to guide the drilling operation and to ensure that the least possible disturbance to the site occurs. This is particularly relevant to the Kopjeskraal and Stinkfontein drilling sites which fall within CBA 2 designated areas.
- *Access and site rehabilitation*: It is recommended that, after completion of the prospecting activities, each drill site be provided with suitable physical barriers for the calming of any soil erosion that may be caused by the prospecting activities. Simple drainage gutters and earth berms are all that is needed to slow down the energy of runoff water and these can be made by hand with a spade. Note: These only need to be provided where a slope is in place which may result in surface water flow.

33 Financial Provision

33.1 Describe the closure objectives and the extent to which they have been aligned to the baseline environment.

The overall objective is to limit the impact of activities by implementing all the prescribed rehabilitation methods as prescribed in the EMP.

The objective is to return the site so that it is indistinguishable from the rest of the surrounding environment to allow current uses. In addition, it is an objective that the disturbance area is kept to an absolute minimum.

The *impact management outcomes* to be included in the EMP, therefore:

i. Immediate rehabilitation of disturbed area of each drill site as well as the drill traverse when finalised to limit impact on land capability.

ii. Access to no go areas (everything outside of drill sites, drill traverses and outside of the Prospecting Right area, and the appropriate vegetation or heritage no go areas) must be prevented through environmental education of all staff members.

iii. Limiting of dust and noise impact on surrounding users.

iv. Avoidance of any impact in respect of hydrocarbon pollution.

Refer Appendix 6 for copy of Closure Plan.

33.2 Confirm specifically that the environmental objectives in relation to closure have been consulted with landowner and I&AP's.

The draft document was consulted. Refer Appendix 6 for copy of Closure Plan as distributed with the draft documentation.

33.3 Provide a rehabilitation plan that describes and shows the scale and aerial extent of the main activities, including the anticipated area at the time of closure.

Rehabilitation entails the implementation of the measures prescribed in para 32. The express aim of these rehabilitation methods is to return the site to its pre-prospecting land capability.

33.4 Explain why it can be confirmed that the rehabilitation plan is compatible with the closure objectives.

The rehabilitated surface will match the remainder of the surrounding uses (as per closure objective).

33.5 Calculate and state the quantum of the financial provision required to manage and rehabilitate the environment.

In terms of decommissioning rehabilitation, the Rehabilitation Quantum provision (most likely by Bank Guarantee) is R177 788 as contained in Table 26.1.

Refer to para 26 for detail calculation of the rehabilitation fund.

33.6 Confirm that the financial provision will be provided as determined.

The quantum must be approved by the DMR after which the applicant will provide for the quantum by way of bank guarantee.

34 Mechanisms for monitoring compliance with and performance assessment against the environmental management programme and reporting thereon, including

Activity	Functional requirements for monitoring	Roles and responsibilities for the execution of the monitoring programmes	Monitoring and reporting frequency and time periods for implementing impact management actions
Application for Prospecting Right			
1. Establishment Phase			
1.1. Office to be established in Loeriesfontein			
1.2. Establish mobile chemical toilet at the traverse			
1.2.1. Surface Water	Ensure contractors service and then remove toilets as required	Site foreman	Daily monitoring.
1.2.2. Groundwater	Ensure contractors service and then remove toilets as required	Site foreman	Daily monitoring.
2. Operational Phase			
2.1. Geophysical Survey on foot			
2.2. Marking of traverses and drill sites			
2.3. Access along traverse to drill sites			
2.3.1. Soil	Ensure no unnecessary disturbance along the traverse. Ensure no removal of topsoil.	Site foreman / Operator	Continuously whilst on site
2.3.2. Visual	Ensure no unnecessary disturbance along the traverse. Ensure no removal of topsoil.	Site Foreman	Continuously whilst on site
2.3.3. Land Capability	Ensure no unnecessary disturbance along the traverse. Ensure no removal of topsoil. Stay in demarcated traverse route	Site foreman	Continuously whilst on site
2.3.4. Vegetation	Ensure no unnecessary disturbance along the traverse. Ensure no removal of topsoil.	Site foreman	Continuously whilst on site
2.3.5. Animal Life	Ensure no unnecessary disturbance along the traverse. Ensure no removal of topsoil.	Site foreman	Continuously whilst on site
2.3.6. Surface Water	Maintain set buffers and ensure no access except as permitted in terms of this document	Site foreman	Continuously whilst on site
2.3.7. Noise	Ensure vehicle silencers are in place. No work or heavy vehicle movement after working hours and on weekends	Manager, Operator	Continuously. If shortcomings are noted, then operators and supervisors to be informed and appropriate action to be taken immediately.

Activity	Functional requirements for monitoring	Roles and responsibilities for the execution of the monitoring programmes	Monitoring and reporting frequency and time periods for implementing impact management actions
2.3.8. Air Quality	Visual monitoring of dust direction (and volume) If complaint is received from any quarter, then cease operations until weather more suitable (highly unlikely)	Operator, supervisor. To report to site foreman.	Any dust source identified must be treated accordingly.
2.3.9. Hydrocarbon	Ensure no vehicle or equipment leaks. Ensure that all fuel transfer equipment is correct and present.	Equipment operators	Daily. Implement specification in Para 32.3 if shortcomings identified.
2.3.10. Archaeology	Depends on final SAHRA comment, but will most likely include monitoring ahead of traverse or drill site access	Site foreman / Operator	Continuously whilst on site
2.4. Establish drill at hole position and conduct RC drilling (Max 120m² disturbance site)			
2.4.1. Soil	Ensure no unnecessary disturbance along the traverse. Ensure no removal of topsoil.	Site foreman / Operator	Continuously whilst on site
2.4.2. Visual	Ensure no unnecessary disturbance along the traverse. Ensure no removal of topsoil.	Site Foreman	Continuously whilst on site
2.4.3. Land Capability	Ensure no unnecessary disturbance along the traverse. Ensure no removal of topsoil.	Site foreman	Continuously whilst on site
2.4.4. Vegetation	Ensure no unnecessary disturbance along the traverse. Ensure no removal of topsoil.	Site foreman	Continuously whilst on site
2.4.5. Animal Life	Ensure no unnecessary disturbance along the traverse. Ensure no removal of topsoil.	Site foreman	Continuously whilst on site
2.4.6. Surface Water	Maintain set buffers and ensure no access except as permitted in terms of this document	Site foreman	Continuously whilst on site
2.4.7. Groundwater	No impact. No monitoring necessary	NA	NA
2.4.8. Noise	Ensure vehicle silencers are in place. No work or heavy vehicle movement after working hours and on weekends	Manager, Operator	Continuously. If shortcomings are noted, then operators and supervisors to be informed and appropriate action to be taken immediately.
2.4.9. Air Quality	Visual monitoring of dust direction (and volume) If complaint is received from any quarter, then cease operations until weather more suitable (highly unlikely)	Operator, supervisor. To report to site foreman.	Any dust source identified must be treated accordingly.
2.4.10. Hydrocarbon	Ensure no vehicle or equipment leaks. Ensure that all fuel transfer equipment is correct and present.	Equipment operators	Daily. Implement specification in Para 32.3 if shortcomings identified.

Activity	Functional requirements for monitoring	Roles and responsibilities for the execution of the monitoring programmes	Monitoring and reporting frequency and time periods for implementing impact management actions
2.4.11. Archaeology	Depends on final SAHRA comment, but will most likely include monitoring ahead of traverse or drill site access	Site foreman / Operator	Continuously whilst on site
2.5. Rehabilitate drill site			
2.5.1. Noise	Ensure vehicle silencers are in place. No work or heavy vehicle movement after working hours and on weekends	Manager, Operator	Continuously. If shortcomings are noted, then operators and supervisors to be informed and appropriate action to be taken immediately.
2.5.2. Air Quality	Visual monitoring of dust direction (and volume) If complaint is received from any quarter, then cease operations until weather more suitable (highly unlikely)	Operator, supervisor. To report to site foreman.	Any dust source identified must be treated accordingly.
2.5.3. Hydrocarbon	Ensure no vehicle or equipment leaks. Ensure that all fuel transfer equipment is correct and present.	Equipment operators	Daily. Implement specification in Para 32.3 if shortcomings identified.
2.6. Rehabilitate any tracks which may have developed			
2.6.1. Noise	Ensure vehicle silencers are in place. No work or heavy vehicle movement after working hours and on weekends	Manager, Operator	Continuously. If shortcomings are noted, then operators and supervisors to be informed and appropriate action to be taken immediately.
2.6.2. Air Quality	Visual monitoring of dust direction (and volume) If complaint is received from any quarter, then cease operations until weather more suitable (highly unlikely)	Operator, supervisor. To report to site foreman.	Any dust source identified must be treated accordingly.
2.6.3. Hydrocarbon	Ensure no vehicle or equipment leaks. Ensure that all fuel transfer equipment is correct and present.	Equipment operators	Daily. Implement specification in Para 32.3 if shortcomings identified.
3. Decommissioning Phase			
3.1. Finalise rehabilitation of drill sites and access traverses			
3.1.1. Noise	Ensure vehicle silencers are in place. No work or heavy vehicle movement after working hours and on weekends	Manager, Operator	Continuously. If shortcomings are noted, then operators and supervisors to be informed and appropriate action to be taken immediately.
3.1.2. Air Quality	Visual monitoring of dust direction (and volume) If complaint is received from any quarter, then cease operations until weather more suitable (highly unlikely)	Operator, supervisor. To report to site foreman.	Any dust source identified must be treated accordingly.

Activity	Functional requirements for monitoring	Roles and responsibilities for the execution of the monitoring programmes	Monitoring and reporting frequency and time periods for implementing impact management actions
3.1.3. Hydrocarbon	Ensure no vehicle or equipment leaks. Ensure that all fuel transfer equipment is correct and present.	Equipment operators	Daily. Implement specification in Para 32.3 if shortcomings identified.
3.2. Lodge Closure Application			

35 Frequency of Submission of Environmental Audit Reports.

Environmental Audit Report to be submitted on following 2 milestones:

i. On completion of the drilling (basic but thorough assessment with photos to determine if rehabilitation has been conducted at each site) – Internal reporting only
ii. As part of closure application (Full Environmental Audit) - As part of closure documentation lodged to DMR.

Monitoring of the site must also include the following as invitees (especially as part of the final Environmental Audit). They can be invited to attend the monitoring visits by the independent environmental assessor after drilling to determine the success of rehabilitation and recommend additional mitigation measures if required

- Landowner
- Northern Cape Nature Conservation
- Municipal representative
- Any other party interested in dealing with the impact of the prospecting applications Should the landowner wish for any other party to be invited in this regard then the applicant will make such arrangements

36 Environmental Awareness Plan

36.1 Manner in which the applicant intends to inform his or her employees of any environmental risk which may result from their work.

The Applicant will develop an Environmental Awareness/Induction Manual as part of the Environmental Management System to be presented to staff at induction. Provisional course content is included in Appendix 4.

36.2 Manner in which risks will be dealt with in order to avoid pollution or the degradation of the environment.

Refer proposed course documentation in Appendix 4.

37 Specific information required by the Competent Authority

The following reporting must take place:

1) Environmental Audit Report as per Para 35.
2) Reporting on geological findings of prospecting as required in Section 16 of the MPRDA

38 UNDERTAKING

The EAP herewith confirms

a) the correctness of the information provided in the reports

b) the inclusion of comments and inputs from stakeholders and I&APs

c) the inclusion of inputs and recommendations from the specialist reports where relevant; and

d) that the information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested and affected parties are correctly reflected herein.

Signature of the environmental assessment practitioner

SITE PLAN CONSULTING
Name of company

21 January 2022
Date

Appendix 1:

CV of EAP and Declaration

Name: **CRAIG DONALD**

Date of Birth: 26 February 1967

Parent Firm: Site Plan Consulting

Position in Firm: Member

Years with the Firm: Since 1989

Nationality: South African

Qualifications:

Year	Qualification	Institution
1984	Senior Certificate Matriculation	Plumstead High School
1992	National Higher Diploma: Town & Regional Planning (*cum Laude*)	Cape Technikon
1995	Minerals and Metals Extraction short course	Continuing Engineering Education, University of Witwatersrand
1997	National Diploma: Surface Mine Management	Technikon SA
1999	Principles for Environmental Management short course	Environmental Evaluation Unit of University of Cape Town
2003	Masters of Business Administration	University of Cape Town

Languages : English (first language)
Afrikaans (second language)

Key Qualifications:
I have many years practical experience in diverse spatial and mine planning projects after completing a National Higher Diploma in Town and Regional Planning.

After joining Setplan (in 1989), my main involvement was the preparation of environmental management programmes (mainly in surface mining related field) and geographic information systems. In order to obtain a deeper understanding of the relevant issues, I completed a

Surface Mine Management course as well as short courses such as the Environmental Evaluation course run by the EEU of UCT. I completed a part-time MBA at UCT in 2003 and became a member of Site Plan Consulting CC in 2006.

In that time I have developed experience in use of Word, Excel, CorelDraw and ArcView GIS and expanded my tasks as follows.

Main tasks:
The main focus of work experience has been in the licencing, physical and environmental planning, monitoring and closure of surface mining operations. The mines have varied in:

- Size from small sand mines to the largest aggregate or diamond producers,
- Products from clay to diamonds,
- Location from the Alexander Bay to East London/KZN coastal areas as well as inland in Free State and Limpopo
- Scale and type of environmental impact.

In respect of the licencing and physical planning of surface mines, the work entails *inter alia* the compilation of:

- Mining and Prospecting Work Programmes: a detailed mine / prospect plan and project description including cash flow forecast / budget to determine mine's economic viability and cost of prospecting
- Social and Labour Plan: Legislated document required to describe how the mine will maximise its socio-economic impact through enforced education, training and corporate social responsibility programmes for the staff and surrounding community.

In respect of the environmental planning, the work has entailed the compilation of Environmental Management Plans and Programmes in accordance with the requirements of the Mineral and Petroleum Resources Development Act with due regard for National Environmental Management Act (before the amalgamation of these 2 pieces of legislation in December 2014). Such EMP's have been conducted with full public participation and liaison with and full input form specialists as required. Such documents also required the calculation of the financial quantum required for closure / decommissioning activities. This quantum is recalculated on an annual basis once the project is operational.

In respect of monitoring the work involves conducting of environmental audits to measure the level of compliance of actual site conditions against the prescriptions of the EMP. The auditing task also served to highlight any shortcomings in the EMP.

Closure of surface mining operations has entailed the conducting of all public participation and the lodging of all documentation required.

In addition, the work also entails annual updates of Rehabilitation Quantum calculations for almost all of the approved Mining Rights in the list below. These calculations were conducted using both the Guideline of the DMR and as Itemised costs in certain relevant operations.

Relevant Project Experience:

Prospecting Rights (including public participation and compilation of EMPlans (inclusive of EIAs)):

- For Salt on Papendorp Pan as community initiative
- EMPs only for 7 Heavy Mineral Prospects of the West Coast
- Firlands (Gordons Bay) for aggregate
- Zoet and Zuur Diamond pipe (Boshof, Free State)
- Several Alluvial Diamond prospects on West Coast and inland West Coast (Western and Northern Cape)
- Phosphate prospect (Saldanha)
- Aggregate prospect near Oyster Bay in Eastern Cape
- Cobalt, Copper, Molybdenum, Nickel, Lead, Zinc, Silver, Gold & Platinum Group Minerals on 13 farms in the Kenhardt Magisterial District
- Nickel and related minerals on 8 farms near Kliprand
- Kaolin at Langklip (near Saldanha)
- Base minerals around Oena Mine in Northern Cape
- 6 sites for Uranium in the Karoo
- Nickel prospect at Oup near Pofadder
- Commissioners Pan Salt Prospect
- Gypsum prospects near Kimberley, Vanrhysdorp and in the Bushmanland
- Sand sources for Atlantis Foundries (Western Cape)

Mining Permits and Rights (including full Public Participation and compilation of EMPs inclusive of EIAs)

- Caledon Manganese Mining Permit
- Pentlands Granite Quarry Mining Right near Empangeni (KZN)
- Gamohaan Aggregate Quarry near Kuruman
- Cawood Salt Mine at Sout River mouth (Amendment of existing Right)
- Kuipersbult Aggregate Mining Right near Lephalale (Limpopo) as source for Medupi Power station construction
- Dikpens Gypsum Mine Extension (Bushmanland)
- Yserfontein Pan Gypsum mine - update of EMP
- Gypsum Mine for PPC near Vanrhynsdorp
- Transand Aggregate mine near Hartenbosch
- Aggregate and sand mine on municipal owned land in Gansbaai (Permit and Right)
- Sand mining permit near Salmonsdam Nature Reserve, Stanford
- Limestone Mining Right north of Klawer
- Sand Mining permits near Gouritz River / Vlees Bay
- Gecko Fert Phospate Mining Right near Langebaanweg
- Oyster Bay Mining Right application for Aggregate
- Moddergat Sand Mining Right (between Worcester and Villiersdorp)
- Mining Right for Manganese near Swellendam
- Involvement to a greater or lesser degree in at least 50 other Mining Permit and Mining Right applications
- EMP updates / amendments (some of which did not require public participation) for several operations (at least 20).

Environmental Performance /Audit Assessments (monitoring) of the following sites on one off or regular basis. First compiled in terms of MPRDA prescriptions and since December 2014 guided by NEMA requirements:

- Crammix Clay Mine (Brakenfel)
- Botriver Sand mine (Steyns)
- Cawood Salt Mine (Sout River)
- Swellendam Manganese Mine
- Buffelsbank Diamond Mine
- Gecko Fert Phosphate Prospects
- Cape Lime Limestone Mine near Vredendal
- Denron operations (Sand and Aggregate) Knysna / Plettenberg Bay area
- Dimension Stone Mines of Verde Bitterfontein (Namaqualand)
- Limestone quarries in Bredasdorp and Vredendal
- Cawood Salt Mine on West Coast
- 3 x Salt Mines north of Upington
- PPC Gypsum Mine near Vanrhynsdorp
- Lafarge Western Cape operations including Tygerberg, Dorstberg, Peak and Saldanha Quarries
- Various Afrimat aggregate operations throughout the country

Closure Applications (for mining and prospecting operations):

- Gecko Fert Phosphate Prospecting Rights and Mining Permit
- Knysna Whitebridge Quarry
- Denron Funda and Helderwater Quarry – Plettenberg Bay
- Crammix Clay Mine
- Vaale Valley Sand Mine (Mossel Bay)
- Various Dimension Stone bulk samples for Verde Bitterfontein (Namaqualand)
- Bergsig / Farm 292 Closure (Hartenbos)
- Klipfontein Sand Mine (Vlees Bay)
- Welbedagt Gravel Permit (Herbertsdale / Mossel Bay)

"One Environmental System" applications (Post 8 December 2014) all conducted in terms of NEMA process:

- Cape Lime Sand Mine (Schaap Kraal operation) – Afrimat
- Atlantis Foundries Sand Mine – ZLLD Sand Mining (Pty) Ltd
- De Hoek Sand Mining Right – Buy-Line Trading (Pty) Ltd
- Denver Quarry Section 102 (MPRDA)– Afrimat
- Desert Rose Dimension Stone Mine – Application only
- Naroogna Pan Salt Mine – United Salt (Pty) Ltd
- Stanford Quarry Extension – Afrimat
- Bester Calcrete Mining Permit – West Coast Calcrete
- Commissioner Pan Salt Mine – Dwaggas Salt Works (Pty) Ltd
- Lezmin Sand Mine (Gouritz Area) – Lezmin 2021 CC
- Yzerfontein Gypsum Mine (Section 102) – St Gobain Construction Materials (SA)
- Skietkuil Quarry Mining Permit – Skietkuil Quarries CC
- Honingklip Gravel Mining Permit – Western Cape Construction Materials (Pty) Ltd

- Johnsons Clay Brick (Section 102)
- Okiep Dumps Reprocessing Application – O'okiep Copper Company Ltd
- Karoo One / Bo Plaas Sand and Gravel Mining Permit
- Bosluispan Diamond Mine (Section 102 Application) – Kori Diamonds (Pty) Ltd
- Oena Diamond Mine (Section 102 Application) – African Star Minerals

Section 24G Applications:

- Makulu Quarry – Denron
- Swellendam Manganese Mine – Sikhova Environmentally Friendly Building Solutions
- Illegal Waste Disposal Site – Die Kop – Plettenberg Bay

DECLARATION OF THE EAP

I, CRAIG DONALD declare that --

General declaration:

- I act as the independent environmental practitioner in this application
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting environmental impact assessments, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, Regulations and all other applicable legislation;
- I will take into account, to the extent possible, the matters listed in regulation 8 of the Regulations when preparing the application and any report relating to the application;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- I will ensure that information containing all relevant facts in respect of the application is distributed or made available to interested and affected parties and the public and that participation by interested and affected parties is facilitated in such a manner that all interested and affected parties will be provided with a reasonable opportunity to participate and to provide comments on documents that are produced to support the application;
- I will ensure that the comments of all interested and affected parties are considered and recorded in reports that are submitted to the competent authority in respect of the application, provided that comments that are made by interested and affected parties in respect of a final report that will be submitted to the competent authority may be attached to the report without further amendment to the report;
- I will keep a register of all interested and affected parties that participated in a public participation process; and
- I will provide the competent authority with access to all information at my disposal regarding the application, whether such information is favourable to the applicant or not
- all the particulars furnished by me in this form are true and correct;
- will perform all other obligations as expected from an environmental assessment practitioner in terms of the Regulations; and
- I realise that a false declaration is an offence in terms of regulation 71 of the Regulations and is punishable in terms of section 24F of the Act.

Disclosure of Vested Interest (delete whichever is not applicable)

- I do not have and will not have any vested interest (either business, financial, personal or other) in the proposed activity proceeding other than remuneration for work performed in terms of the Regulations;
- ~~I have a vested interest in the proposed activity proceeding, such vested interest being:~~

Signature of the environmental assessment practitioner:

Name of company: Site Plan Consulting

Date: 26 / 07 / 2015

SAPS MAIN ROAD SOMERSET WEST

SOUTH AFRICAN POLICE SERVICE
VISPOL HEAD
2015 -07- 25 0218501303
SOMERSET WEST
AMAPOLISA OMZANTSHI AFRICA

Appendix 2:

Copy of correspondence sent out to I&APs, Newspaper Advert, Poster

(To be completed in Final BAR)

Appendix 3:

COPY OF CORRESPONDENCE RECEIVED

(To be completed in Final BAR)

Appendix 4:

Environmental Awareness/Induction Manual

STINKFONTEIN PROSPECTING PROGRAMME

INDUCTION TRAINING

Environmental management is a team effort. All management and staff are responsible for avoiding environmental damage and ensuring good environment management.

The keys to achieving this are:

- Being aware of the environment and the need to protect it
- Understanding and recognising the things to protect and the do's and don'ts
- Knowing the reporting procedure
- Taking pride in good environmental housekeeping

Legal Requirements

- Requirement of NEMA and MPRDA (the new Minerals and Petroleum Resources Development Act)
  - to have an EMP (Environmental Management Plan) contained within the BAR (Basic Assessment Report

- Additional laws National Water Act
  - use of water
  - discharge of sewage
  - control of Surface water
  - avoidance of groundwater contamination by oils, sewage or other

Why do you need Environmental Management?

It is an integral part of normal good management (Good Housekeeping) on the prospecting site, together with

- Safety
- Efficiency (Productivity)
- Planning (specific activities in specific areas)

The site is part of the larger environment:

- Alien vegetation control
- Poaching and theft of livestock and produce
- Care in the use of chemicals or poisons
- The farm/s which is/are the owner's source of income

Vegetation Sensitivity. Despite avoiding the CBA's the contractors attention is drawn to the importance of preserving vegetation for the following reasons:

- Loss of vegetation leads to erosion by water and wind and that leads to loss of topsoil which then prevents any effort to re-establish vegetation and as a result there will be permanent loss of grazing
- Has value for future generations (our children) –

Staff must be made aware of the CBAs. Even though no invasive prospecting is permitted in these, there is still potential for disturbance by staff members who drive or access the veld in a irresponsible manner.

Integration of the prospecting with surrounding land uses and the need to limit :

- Overall disturbance to a minimum (this is a most critical factor)
- Poaching or hunting : Do not steal sheep or hunt animals as this will be reported to the police as a criminal offence
- Dust
- Water pollution run-off
- No access to no-go areas – very critical
- Must rehabilitate to pre- disturbed quality

Who does the damage to the Environment?

a) Management does damage:

(i) by not being fully informed themselves of the content of the EMP and other decisions/controls

(ii) by not informing the staff of proper procedure and the environmental consequences of incorrect activities

(iii) by not conducting regular monitoring

(iv) by not developing their own personal sensitivity to environmental impact

b) Equipment Operators do damage :

(i) by driving equipment or moving items like pipes or cables outside of demarcated roadways, movement areas. **NB: Always stay in roadways !!!**

(ii) by dumping material in veld (outside of demarcated areas

(iii) by beginning to move material or dump other material before topsoil has been removed

(iv) By not reacting and immediately reporting fuel or oil or hydraulic fluid leaks

c) General Staff:

(i) Use of the veld as a toilet (NOT ALLOWED)

(ii) Littering with lunch wrappings, bottles, cigarette packets etc

(iii) Short-cut walking paths through veld which we want to keep natural

(iv) Causing of fire or failure to report fire or threat of fire as soon as it is seen

What the Staff should be aware of to look out for:

- Allocated storage or dump areas
  - Don't dump anywhere else!!
  - If in doubt ask first!!

- No-go areas:
  - Don't enter these areas and don't drive into them

- Recognise natural veld areas and
  - Don't disturb them

- Don’t drive into them
- Don’t walk through them
- Don’t use them as toilet areas
- Do not dig plants out of the veld to take home or sell

- Recognise alien vegetation
  - Ask about the procedure to control each type

- Oil, fuel or hydraulic leaks
  - As soon as you see these, report them to the operator or the foreman/manager

- Report littering
- Recognise soil erosion and report it
- Recognise silt/mud run-off and report it
- Recognise (know the difference between) domestic waste and industrial waste and use correct bins for oil/fuel polluted items
- Know the refuelling and oil change procedure if you are involved in it to know how to avoid pollution
- Recognise the threat of fire
- Immediately report any threat of fire or fire if seen

Other environmental incidents reporting procedure

These include littering, silt run-off, erosion etc. Report these at end of shift or lunch time to supervisor / manager

Penalties for Environmental Damage

- Fines
- Conditions of employment contract
- Dismissal
- Criminal Prosecution (especially in the case of poaching)

Appendix 5:

SPECIALIST BIODIVERSITY ASSESSMENT

STINKFONTEIN PROSPECT

BIODIVERSITY SENSITIVITY STUDY FOR PROSPECTING DRILLING SITES:

PREPARED FOR SITE PLAN CONSULTING

DECEMBER 2021

CONSERVATION MANAGEMENT SERVICES – KEN COETZEE
4 CHESTNUT STREET, HEATHER PARK,
GEORGE, 6529
TEL / FAX: 044 - 8708472
www.conservationmanagementservices.co.za

CONTENTS

Cover picture - quiver tree or kokerboom *(Aloidendron dichotomum)* on a hillside near to Loeriesfontein.

1. INTRODUCTION

Ken Coetzee of *Conservation Management Services* was appointed by Mr Craig Donald, representing Rooiberg Mining (Pty) Ltd, in December 2021, to carry out a biodiversity sensitivity study for four proposed prospecting drill sites on portions of the farms Kopjeskraal, Eyer Gat, Wolwe Grav and Stinkfontein in the Calvinia Magisterial District district.

The biodiversity sensitivity study is required for an application for a prospecting right: Geophysical Survey and Drilling. The Environmental Authorization application for Prospecting Right, submitted by Site Plan Consulting (2015) was used as the basic reference for the survey.

The site was inspected on 8 and 9 December 2021 to collect physical landscape, biodiversity and land use information and to make a photographic record of the site, with which to inform the biodiversity study.

METHODS USED: The method used was to "criss-cross" the entire proposed prospecting area on foot and to view habitat boundaries and other landscape features from slightly higher points in the landscape. Each of the four survey areas was centred on the fixed survey "drilling lines" provided by the client.

An important consideration is that the surveys were conducted during summer and not during the winter flowering period of the bulk of the local vegetation, which made the identification of many of the plants extremely difficult, particularly the *Mesembryanthemaceae* which are important in the vegetation of the area.

THE STUDY AREA: Figure 1A shows the approximate location of the study areas near to Loeriesfontein in the North-western Cape.

Figure 1B shows the general prospecting application area. Figures 2 to 5 shows the layout of each of the proposed prospecting sites.

<u>Figure 1A</u>: Approximate localities of the proposed prospecting drilling sites West of Loeriesfontein in the Northern Cape.

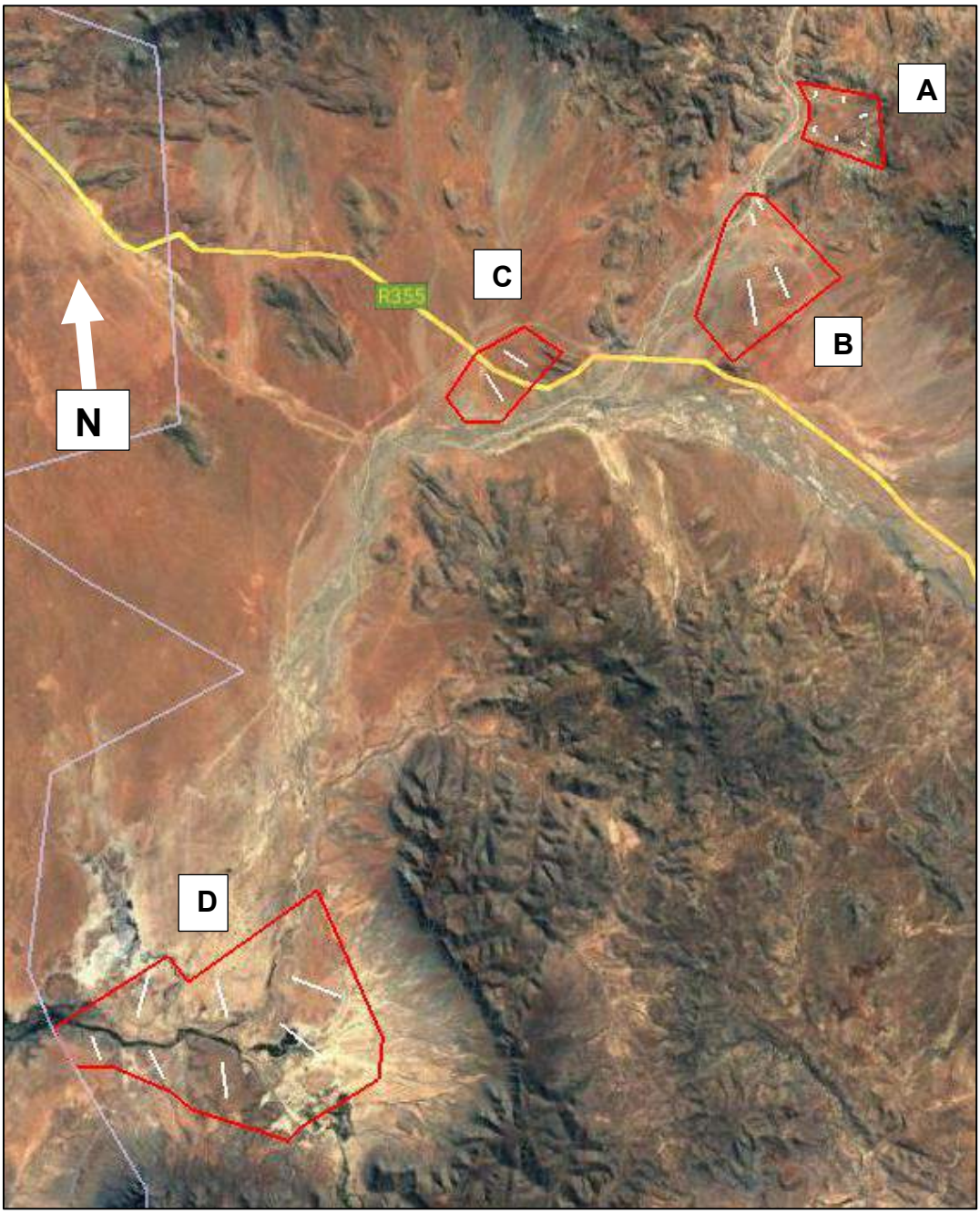


Figure 1B: The layout of the four proposed prospecting sites.

A Kopjeskraal
B Eyer Gat
C Wolwe Grav
D Stinkfontein

1.1 DECLARATION OF INDEPENDENCE AND COMPETENCY

I hereby declare that I, Ken Coetzee trading as Conservation Management Services, comply with all the conditions of PWC: DA&DP for a person appointed in terms of the NEMA EIA Regulations to compile a specialist report, viz:

- I am independent;
- Have the required expertise, including knowledge of the NEMA, the EIA Regulations and any guidelines that have relevance to the proposed activity and specialist input or study;
- Perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- Comply with NEMA, the EIA Regulations and all other applicable legislation;
- Disclose to the applicant, EAP and the Department all material information in the possession of the person that reasonably has or may have the potential of influencing –
  (i) any decision to be taken with respect to the application by the competent authority in terms of these Regulations; or
  (ii) the objectivity of any report, plan or document to be prepared by the person in terms of these Regulations for submission to the competent authority;
- Ensure EIA best practice and clear communication on the methodologies used, and the assumptions, uncertainties and gaps in knowledge; and
- Adhere to the National Environmental Management principles contained in Section 2 of NEMA and the general objectives of Integrated Environmental management contained in Section 23 of NEMA.

1.2 AUTHOR CREDENTIALS

The author of this report, Mr Ken Coetzee, is registered with the South African Council for Natural Scientific Professions (Reg No 400099/08) as a “Professional Natural Scientist”, in the field of Ecological Science. Mr Coetzee is a Master of Technology graduate of the School of Forestry and Nature Conservation of the Nelson Mandela Metropolitan University.

Mr Coetzee has 49 years of relevant experience in the field of nature conservation and management, the most recent 26 years of which were self-employed as a biodiversity specialist consultant, involved in a wide variety of nature conservation, landscape planning, commercial game ranch and other development projects. His particular source of expertise stems from a great deal of experience, which is based on familiarity with the biodiversity of a variety of ecosystems, which was gained through work performed throughout Southern Africa as well as elsewhere in Africa.

2. DESCRIPTION OF THE STUDY AREA

2.1 GENERAL DESCRIPTION OF THE SURVEY AREAS

The surveys were conducted during early December, soon after the first rains to fall after a severe and extended drought. The normally arid environment was found to be much affected by the drought with up to 80% of the dwarf shrubs and succulent dwarf shrubs in the vegetation either dead or dying (see each of the Site photographs).

The environment at each of the survey sites can generally be described as highly disturbed, mostly due to the effects of many decades of continuous selecting overgrazing, which has resulted in altered plant species composition across the landscape and the consequent loss of plant diversity. There has also been an overall reduction of plant cover resulting in widespread soil erosion by wind and water.

What little rain does fall in the area is rapidly lost to the environment along eroded rills, gullies and seasonal rivers, which exacerbates the arid conditions because very little of the rainfall actually infiltrates into the soil for the benefit of the plant cover or the replenishment of the groundwater.

2.2 VEGETATION

According to Mucina & Rutherford (2006), the vegetation type for the area can be classified as follows (see Figure 1C):

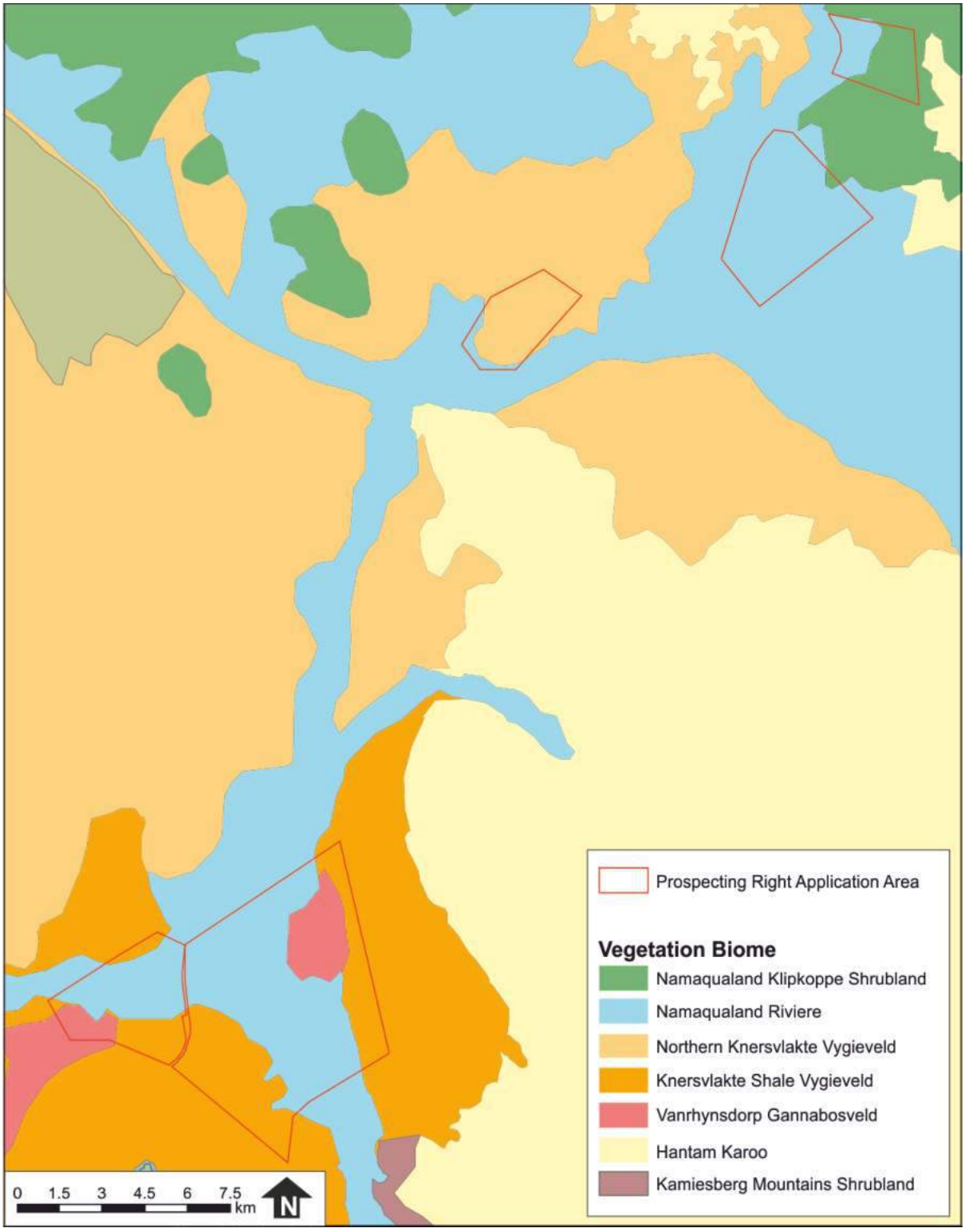
Namaqualind Klipkoppe Shrubland
Namaqualand Riviere
Northern Knersvlakte Vygieveld
Knersvlakte shale Vygieveld
Vanrhynsdorp Gannabosveld

The above vegetation classification is described at each of the proposed drill sites with a list of the plant species found at each site as well as the general ecological condition found at each site.

2.2.1 KOPJESKRAAL DRILL SITES (see Figure 2)

Vegetation types: Almost half of the Western area is classified as Namaqualand Riviere with Namaqualand Klipkoppe Shrubland over the Eastern half of the area.

Site 1: Ecological condition: Soil erosion is widespread, particularly shallow surface erosion, the plants all stand on pedestals, indicating topsoil loss. These conditions are due to recent and past severe overutilization with livestock. Some minor animal diggings were observed.



<u>Figure 1C</u>: The vegetation types of the study area (Mucina & Rutherford, 2006)

Site 1: Plant species observed:

Aridaria noctiflora
Augea capensis
Eriocephalus brevifolius
Euphorbia mauritanica
Galenia fruticosa
Lycium cinereum
Malephora purpureo-crocea
Mesembryanthemum guerichianum
Mesembryanthemum junceum
Salsola aphylla
Zygophyllum leptopetalum
Zygophyllum retrofractum

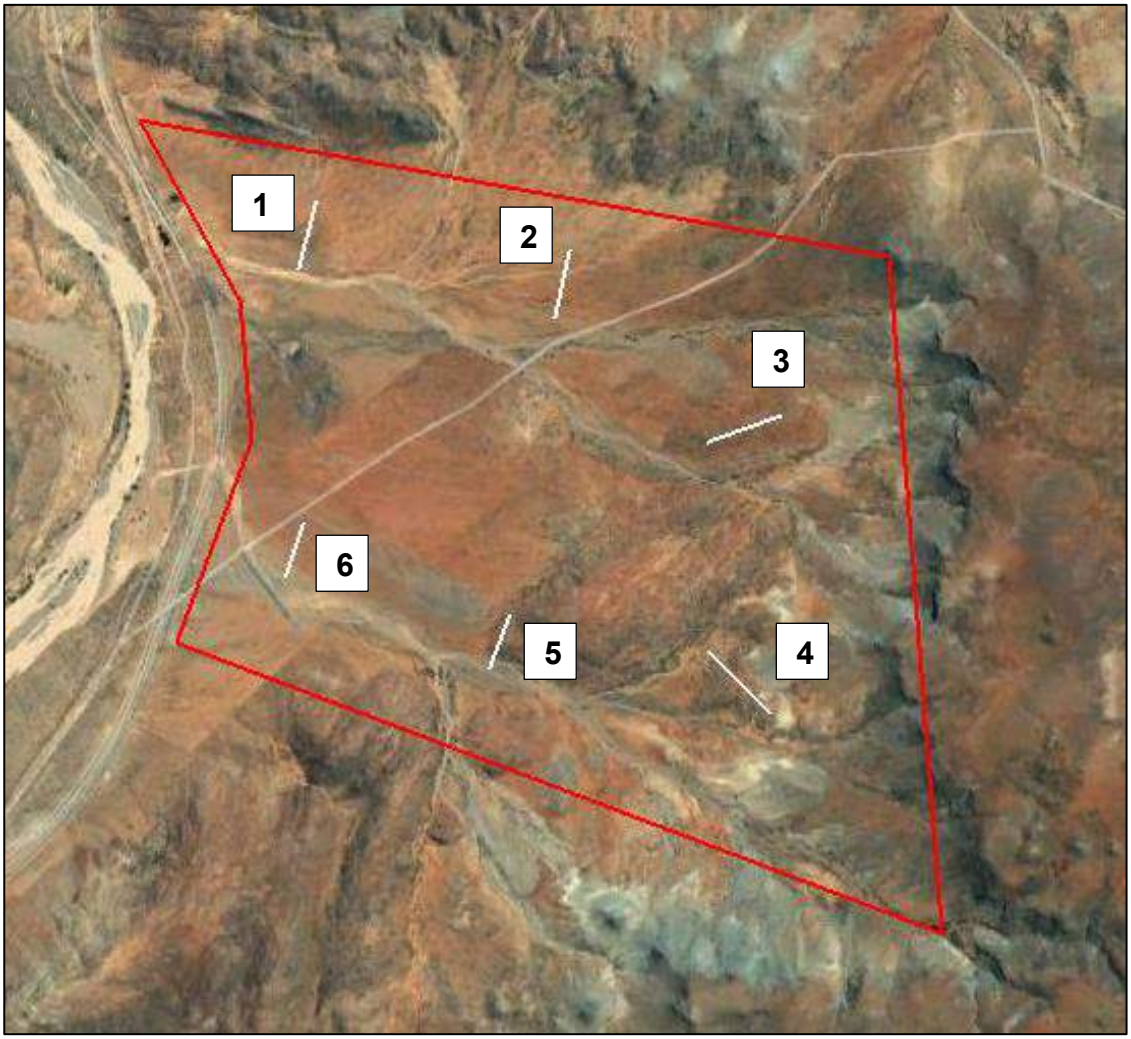


Figure 2: The proposed Kopjeskraal drill sites.

Plate 1: Kopjeskraal Site 1.

Plate 2: Kopjeskraal Site 1.

Site 2: Ecological condition: Soil erosion is widespread, particularly shallow surface erosion, the plants all stand on pedestals, indicating topsoil loss. These conditions are due to recent and past severe overutilization with livestock. Areas of bare soil appear to be capped.

Site 2: Plant species observed:

Aridaria noctiflora
Augea capensis
Eriocephalus brevifolius
Euphorbia mauritanica
Galenia fruticosa
Lycium cinereum
Malephora purpureo-crocea
Mesembryanthemum guerichianum
Mesembryanthemum junceum
Stipagrostis namaquensis
Zygophyllum leptopetalum
Zygophyllum retrofractum

Plate 3: Kopjeskraal Site 2.

Plate 4: Kopjeskraal Site 2.

Site 3: Ecological condition: Severe wind erosion is evident which can be seen in the hummocking (sand dunes forming around plants). These conditions are due to recent and past severe overutilization with livestock and a severe reduction of plant cover making the soil surface susceptible to wind erosion.

Site 3: Plant species observed:

Aloe dichotoma
Augea capensis
Brownanthus sp.
Dideltia carnosa var. carnosa
Drosanthemum sp.
Eriocephalus brevifolius
Eriocephalus ericoides
Euphorbia rhombifolia
Hoodia gordonii
Lycium cinereum
Osteospermum sinuatum
Pentzia incana
Pteronia glabrata
Ruschia cradockensis
Ruschia robusta
Salsola aphylla
Satcocaulon crassicaule
Wiborgia muronata
Zygophyllum leptopetalum

Plate 5: Kopjeskraal Site 3.

Plate 6: Kopjeskraal Site 3.

Site 4: Ecological condition: Site relatively stable, minor surface soil erosion.

Site 4: Plant species observed:

Aloidendron dichotomum
Augea capensis
Blepharis capensis
Crassula muscosa
Dideltia carnosa var. carnosa
Eriocephalus spinescens
Galenia fruticosa
Hoodia gordonii
Lycium cinereum
Malephora sp.
Mesembryanthemum guerichianum
Mesembryanthemum junceum
Moquinella rubra
Pentzia incana
Ruschia cradockensis
Ruschia robusta
Stipagrostis ciliata
Stipagrostis namaquensis
Stipagrostis uniplumis
Zygophyllum leptopetalum
Zygophyllum retrofractum

Plate 7: Kopjeskraal Site 4.

Plate 8: Kopjeskraal Site 4.

Site 5: Ecological condition: Sandy substrates severely eroded with a reduced plant cover.

Site 5: Plant species observed

Augea capensis
Blepharis capensis
Drosanthemum sp.
Eriocephalus brevifolius
Euphorbia mauritanica
Lycium cinereum
Malephora sp.
Mesembryanthemum guerichianum
Mesembryanthemum junceum
Phyllobolus nitidus
Pteronia glabrata
Ruschia robusta
Ruschia sp.
Stipagrostis obtuse
Stipagrostis uniplumis
Zygophyllum retrofractum

Plate 9: Kopjeskraal Site 5.

Plate 10: Kopjeskraal Site 5.

Site 6: Ecological condition: Sandy plain with clear signs of wind erosion due to the general loss of the protective plant cover. Large areas are completely devoid of any plant cover. There is a high rate of plant die-off.

Site 6: Plant species observed

Aridaria noctiflora
Augea capensis
Brownanthus sp.
Eriocephalus brevifolius
Lycium cinereum
Malephora purpureo-crocea
Mesembryanthemum guerichianum
Mesembryanthemum junceum
Othonna sp.
Ptereonia glabrata
Stipagrostis namaquensis
Stipagrostis obtuse
Zygophyllum leptopetalum
Zygophyllum lichtensteinianum
Zygophyllum retrofractum

Plate 11: Kopjeskraal Site 6.

Plate 12: Kopjeskraal Site 6.

2.2.2 Eyer Gat drill sites (see Figure 3)

Vegetation Types: Most of this area falls within the Namaqualand Rieviere vegetation type with only a small area of Namaqualand Klipkoppe Shrubland in the Northeastern part.

Sites 1 & 2: Ecological condition: Plants are on pedestals indicating severe surface soil erosion. The vegetation is severely overutilized. 40 to 50% of the dwarf shrubs appear to be completely dead. There was no sign of any wildlife in the area.

Sites 1 & 2: Plant species observed:

Augea capensis
Dideltia carnosa var. carnosa
Drosanthemum lique
Enneapogon cenchroides
Eriocephalus brevifolius
Euphorbia sp.
Hoodia gordonii
Limeum aethiopicum
Lycium cinereum
Malephora sp.
Mesembryanthemum guerichianum
Mesembryanthemum junceum
Osteospermum sinuatum
Othonna sp.
Salsola sp.
Tetragonia fruticosa
Zygophyllum leptopetalum
Zygophyllum retrofractum
Zygophyllum simplex

Plate 13: Eyer Gat Site 1.

Plate 14: Eyer Gat Site 2.

Sites 3 & 4: Ecological condition: Sandy floodplain dunes along a drainage. Highly disturbed by repeated flooding and severely invaded by alien *Prosopis glandulosa.*

Sites 3 & 4: Plant species observed:

Aridaria noctiflora
Atriplex vestita
Brownanthus sp.
Dideltia carnosa var. carnosa
Lycium cinereum
Mesembryanthemum junceum
Phyllobolus nitidus
Prosopis glandulosa
Salsola aphylla

Plate 15: Eyer Gat Site 3.

Plate 16: Eyer Gat Site 4.

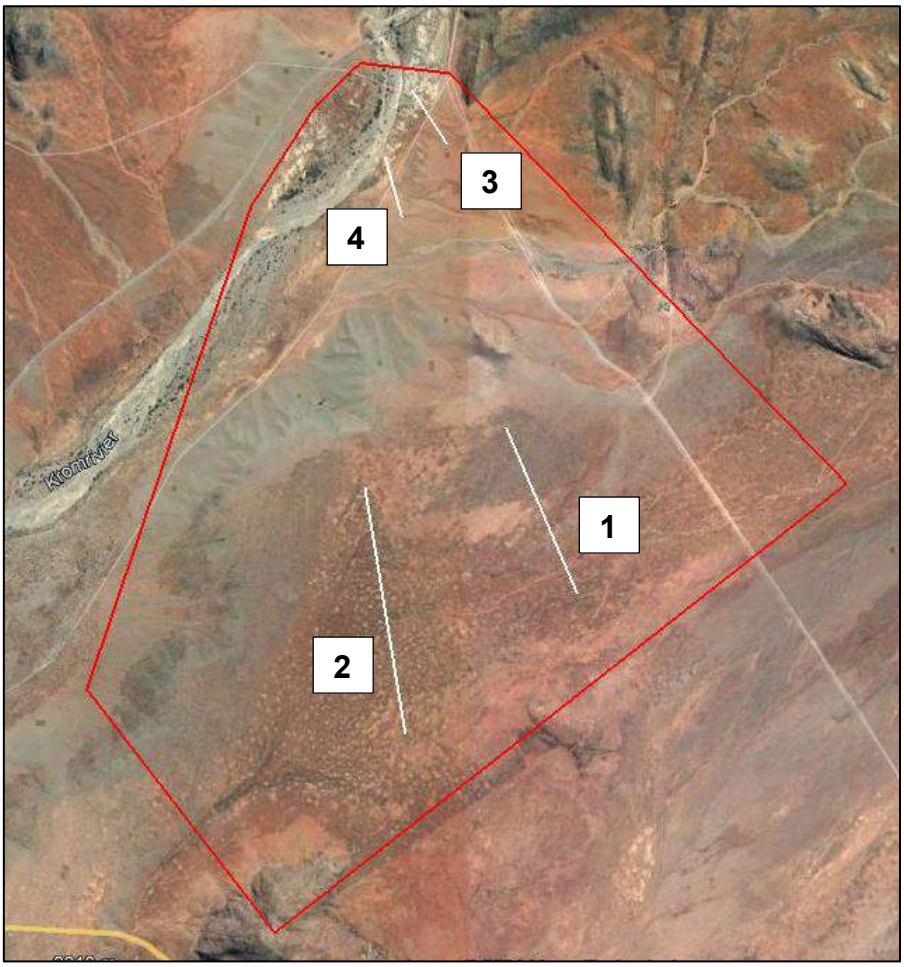


Figure 3: The proposed Eyer Gat drill sites.

2.2.3 Wolwe Grav drill sites (see Figure 4)

Vegetation types: Almost this entire area lies within the Northern Knersvlakte Vygieveld with only a small area of Namaqualand Riviere in the Southwest.

Sites 1 & 2: Ecological condition: Sites generally appear to be very dead with 80% of the shrubs dead or almost dead. Plants are all on pedestals indicating topsoil erosion, bare soil surfaces are capped indicating a very low rate of rainfall infiltration.

Sites 1 & 2: Plant species observed

Aridaria noctiflora
Augea capensis
Eriocephalus brevifolius
Lycium cinereum
Malephora sp.
Mesembryanthemum guerichianum
Ruschia robusta

Plate 17: Wolwe Grav Site 1.

Plate 18: Wolwe Grav Site 2.

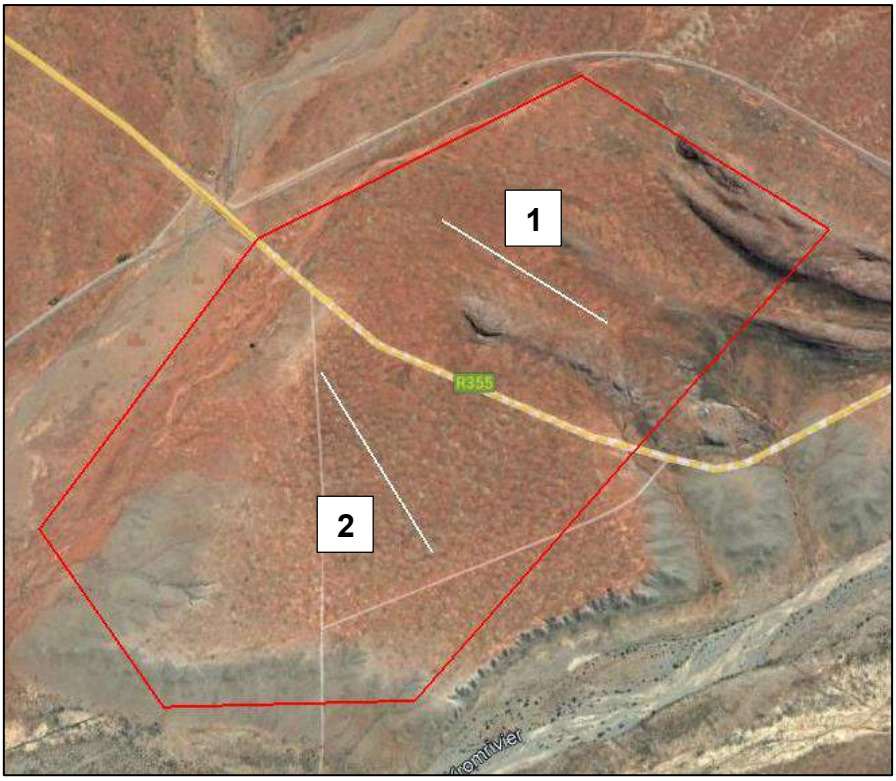


Figure 4: The proposed Wolwe Grav drill sites.

2.2.4 Stinkfontein drill sites (see Figure 5)

Vegetation types: Much of this area lies within the Namaqualand Riviere (sites 2, 3 & 5). Site 1 is in the Vanrhynsdorp Gannabosveld and sites 4, 6 & 7 are in the Knersvlakte Shale Vygieveld.

Site 1: Ecological condition: Vegetation severely degraded, evidence of wind erosion, bare areas are capped and impervious. The Gannabosveld is in a relatively good condition.

Site 1: Plant species observed:
Aridaria noctiflora
Augea capensis
Eriocephaslus brevifolius
Galenia fruticosa
Gomphocarpus fruticosus
Mesembryanthemum guerichianum
Mesembryanthemum Junceum
Phyllobolus nitidus
Prosopis glandulosa
Rischia robusta
Salsola aphylla

Plate 19: Stinkfontein Site 1.

Plate 20: Stinkfontein Site 1.

Site 2: Ecological condition: Site alongside a seasonal river which is invaded by alien plants *Prosopis glandulosa*, *Nicotiana glauca* and *Salsola kali.* Site otherwise severely eroded in alluvial sands.

Site 2: Plant species observed

Aridaria noctiflora
Eriocephalus brevifolius
Mesembryanthemum guerichianum
Prosopis glandulosa
Ruschia robusta
Salsola aphylla

Plate 21: Stinkfontein Site 2.

Site 3: Ecological condition: This site lies within a seasonal sodic wetland area or floodplain which appears to be in a relatively good condition despite the very low plant diversity.

Site 3: Plant species observed

Euclea undulata
Lycium cinereum
Salsola aphylla
Salsola flexuosum

Plate 22: Stinkfontein Site 2.

Plate 23: Stinkfontein Site 3.

Plate 24: Stinkfontein Site 3.

Site 4: Ecological condition: This site lies on a terrace gravel plain overlooking the Doornrivier. It appears to have been severely affected by the past drought, with approximately 50% of the dwarf shrubs dead. The low plant cover can be attributed to severe past overutilization with livestock and drought.

Site 4: Plant species observed

Aridaria noctiflora
Brownanthus sp.
Ruschia robusta

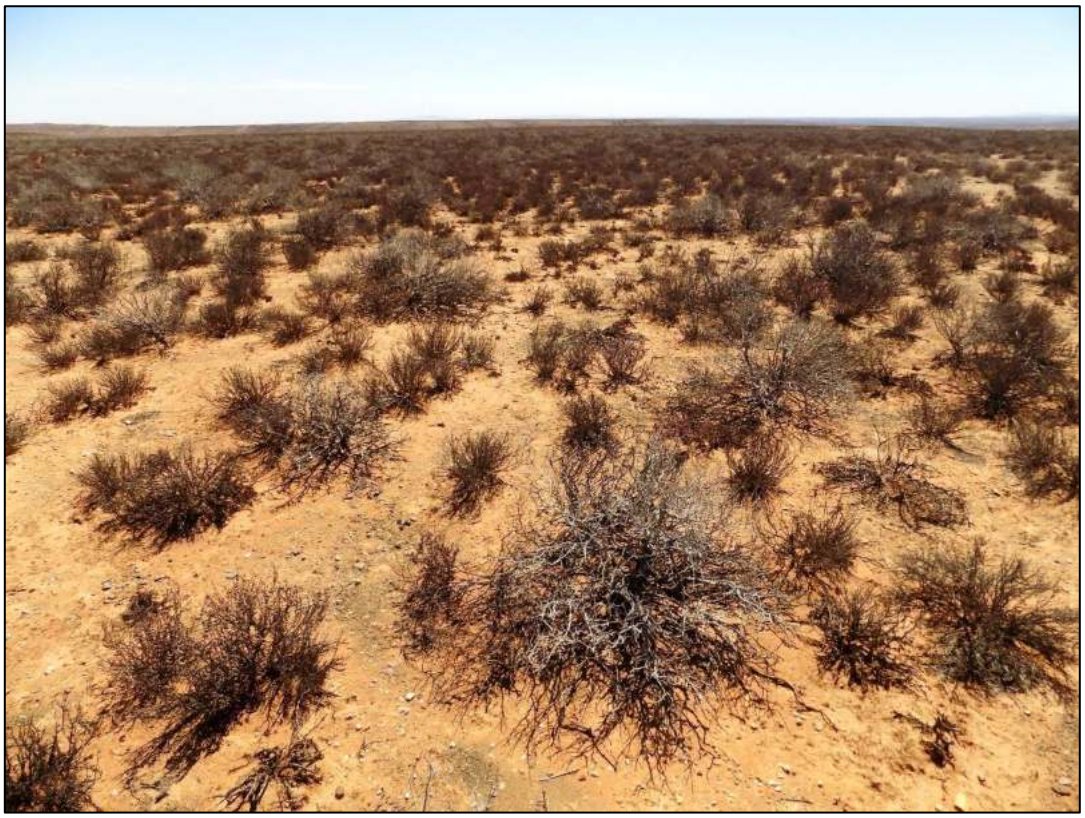


Plate 25: Stinkfontein Site 4.

Plate 26: Stinkfontein Site 4.

Site 5: Ecological condition: Situated on a low sandy river terrace, this site is severely disturbed. The site is severely eroded by both wind and water and hummocks created by wind erosion are typical of the site as is fairly large areas completely devoid of any plant cover. Past (and present) overutilization with livestock is certainly the cause of the current poor condition.

Site 5: Plant species observed

Aridaria noctiflora
Atriplex vestita
Augea capensis
Cladoraphis spinosa
Eriocephalus brevifolius
Lycium cinereum
Malephora purpureo-crocea
Malephora sp.
Phyllobolus nitidus
Prosopis glandulosa
Salsola flexuosum

Plate 27: Stinkfontein Site 5.

Plate 28: Stinkfontein Site 5.

Sites 6 & 7: Ecological condition: Situated on river terraces, these sites both appear to be in a relatively poor condition. This is probably due to a combination of prolonged drought and historical overgrazing. At least 50% of the dwarf shrubs were found to be dead and many of those still alive also appear to be dying. The drainages between and closer to the railway line are invaded by the alien tree *Prosopis glandulosa.*

Sites 6 & 7: Plant species observed

Aloidendron dichotomum
Aridaria noctiflora
Galenia fruticosa
Lycium cinereum
Malephora purpureo-crocea
Malephora sp.
Mesembryanthemum guerichianum
Phyllobolus nitidus
Prosopis glandulosa
Ruschia robusta
Salsola flexuosum
Zygophyllum retrofractum

Plate 29: Stinkfontein Site 6.

Plate 30: Stinkfontein Site 7.

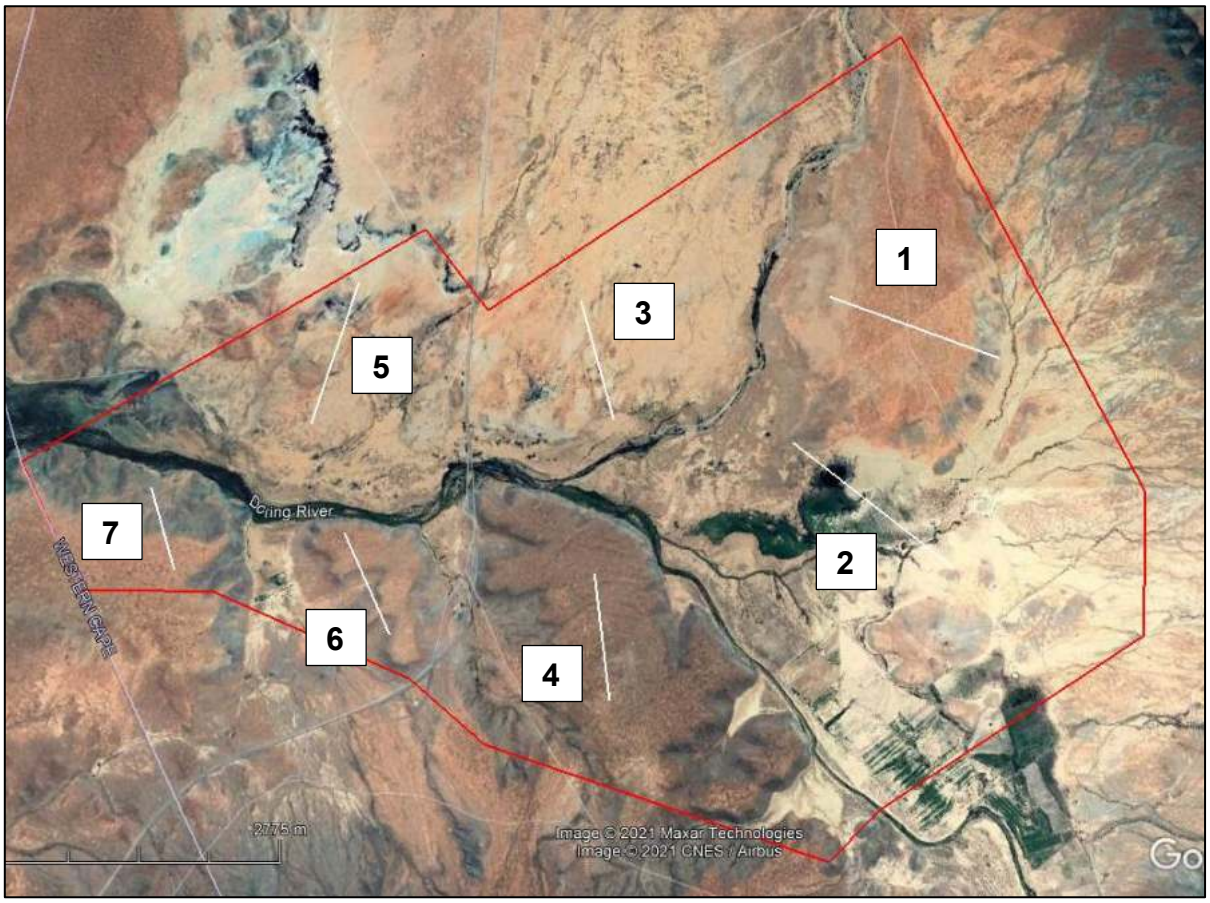


Figure 5: The proposed Stinkfontein drill sites.

2.3 BIODIVERSITY SENSITIVITY

2.3.1 Vegetation:

Mucina and Rutherford (2006) class the Vanrhynsdorp Gannabosveld as Vulnerable with none of it conserved formally. They state that transformation for cultivation and open-cast gypsum mining currently affects about 20% of the vegetation type (see Table 1).

The Ghaap *(Hoodia gordonii),* which occurs at drill sites, 3 and 4 of Kopjeskraal and 1 and 2 of Eyer Gat is Red Listed in the Data Deficient category. This means that although the plant is classified as Data Deficient (which means that very little is known about it), it is nevertheless Red Listed, indicating that there is cause for concern about the plant's conservation status. The various species of *Hoodia* are indiscriminately harvested for the manufacture of so-called "organic" appetite suppressants, hence the concern for their status (see Plate 31).

Plate 31: The ghaap plant *(Hoodia gordonii)* in flower.

In addition to the Red Listed Categories for plants, protection is also given to plants in terms of Schedules 3 and 4 of the Western Cape Nature Conservation Laws Amendment Act (3) of 2000. Schedule 3 of the act lists endangered plants, none of which occur on the study site. Schedule 4 lists protected flora, none of which occur on the study sites.

In terms of the vegetation cover it can thus be stated that the sites 3 and 4 of Kopjeskraal and sites 1 and 2 of Eyer Gat are sensitive as they do contain a Red Listed plant species, even if only classed as Data Deficient. Site 1 of Stinkfontein is also considered as sensitive because the vegetation type in which it occurs (Vanrhynsdorp Gannaveld) is considered to be Vulnerable.

Exactly how important these classifications of "conservation-worthiness" are in terms of the proposed prospecting application depends on whether the potential for negative impact can be effectively mitigated and whether the prospecting activity will have any long-term effect on the conservation of the balance of the property, beyond the proposed drill sites. This is further discussed under the section on Conservation Status and Mitigatory Measures.

Table 1: The sensitivity of the vegetation at the proposed drill sites according to Mucina & Rutherford (2008)

SITE	VEGETATION TYPE	CONSERVATION STATUS	RELEVANCE TO ACTUAL DRILLSITE
Kopjeskraal	Namaqualand Riviere	Least threatened	Yes (sites1,2 & 6)
	Namaqualand Klipkoppe Shrubland	Least threatened	Yes (sites 3,4 & 5)
Eyer Gat	Namaqualand Riviere	Least threatened	Yes (sites 1 to 4)
	Namaqualand Klipkoppe Shrubland	Least threatened	No (no drill sites)
Wolwe Grav	Northern Knersvlakte Vygieveld	Least threatened	Yes (sites 1 & 2)
	Namaqualand Riviere	Least threatened	No (no drill sites)
Stinkfontein	Namaqualand Riviere	Least threatened	Yes (sites 2,3 & 5)
	Vanrhynsdorp Gannabosveld	Vulnerable	Yes (site 1)
	Knersvlakte Shale Vygieveld	Least threatened	Yes (sites 4,6 & 7)

2.3.2 Vertebrate fauna:

There are no specialised habitats at either of the study areas, flat sand and gravel substrates with a very sparse and a somewhat degraded vegetation cover are typical of the prospecting sites.

The most significant habitat features, in terms of vertebrate fauna in the study area are the drainages which provide cover in typical *Salsola aphylla* (ganna) shrublands and the dense stands of larger shrubs and alien trees *(Prosopis glandulosa)* along the watercourses.

Very few actual observations of animals were made and little sign of animal activity was observed and they were limited to the following:

1. Aardvark diggings into termite nests *(Orycteropus afer*).
2. Small animal digging activity, probably mongooses *(Galerella or Cynictis).*
3. Cape hare observed *(Lepus capensis)*
4. Common duiker droppings *(Sylvicapra grimmia)*
5. Pied crows observed *(Corvus albus)*
6. Karoo korhaan observed and heard *(Eupodotis vigorsii)*
7. Namaqua sandgrouse observed and heard *(Pterocles Namaqua)*
8. Rock kestrel observed *(Falco tinnunculus)*
9. Tent tortoise shell found *(Psammobates tentorius trimeni)*
10. Aardwolf droppings found *(Proteles cristatus)*

All of the above animals have widespread distributions and fall into the Least Concern Red list category.

2.3.3 Conservation status:

Figure 6 shows the conservation status of the general prospecting area and it shows that some of the proposed prospecting sites lie within Critical Biodiversity Areas (CBA) and Ecological Support Areas (ESA).

Table 2: Relevance of the actual proposed drilling sites to the biodiversity sensitivity classification.

PROPOSED DRILL SITE LOCALITIES	BIODIVERSITY CLASSIFICATION	RELEVANCE TO ACTUAL DRILL SITES
Kopjeskraal	Critical Biodiversity Area 2	Yes (all 6 drill sites)
Eyer Gat	Ecological Support Area	Yes (drill sites 1,3 & 4)
	Critical Biodiversity Area 2	No (no drill sites)
	Other natural areas	Yes (drill site 2)
Wolwe Grav	Ecological Support Area	Yes (drill site 2)
	Other natural areas	Yes (drill site 1)
Stinkfontein	Critical Biodiversity Area 1	No (no drill sites)
	Critical Biodiversity Area 2	Yes (all 7 drill sites)
	Ecological Support Area	No (no drill sites)
	Other natural areas	No (no drill sites)

From Table 2 it is clear that all six Kopjeskraal drill sites and all seven Stinkfontein drill sites lie within areas classed as Critical Biodiversity Area 2. None of the drill sites are within Critical Biodiversity Area 1 category areas.

At Kopjeskraal the CBA 2 classified area extends far beyond the drill sites across the landscape. The prospecting drilling is thus unlikely to have any wider or regional negative impact on the CBA 2 as a biodiversity target beyond the actual drill sites.

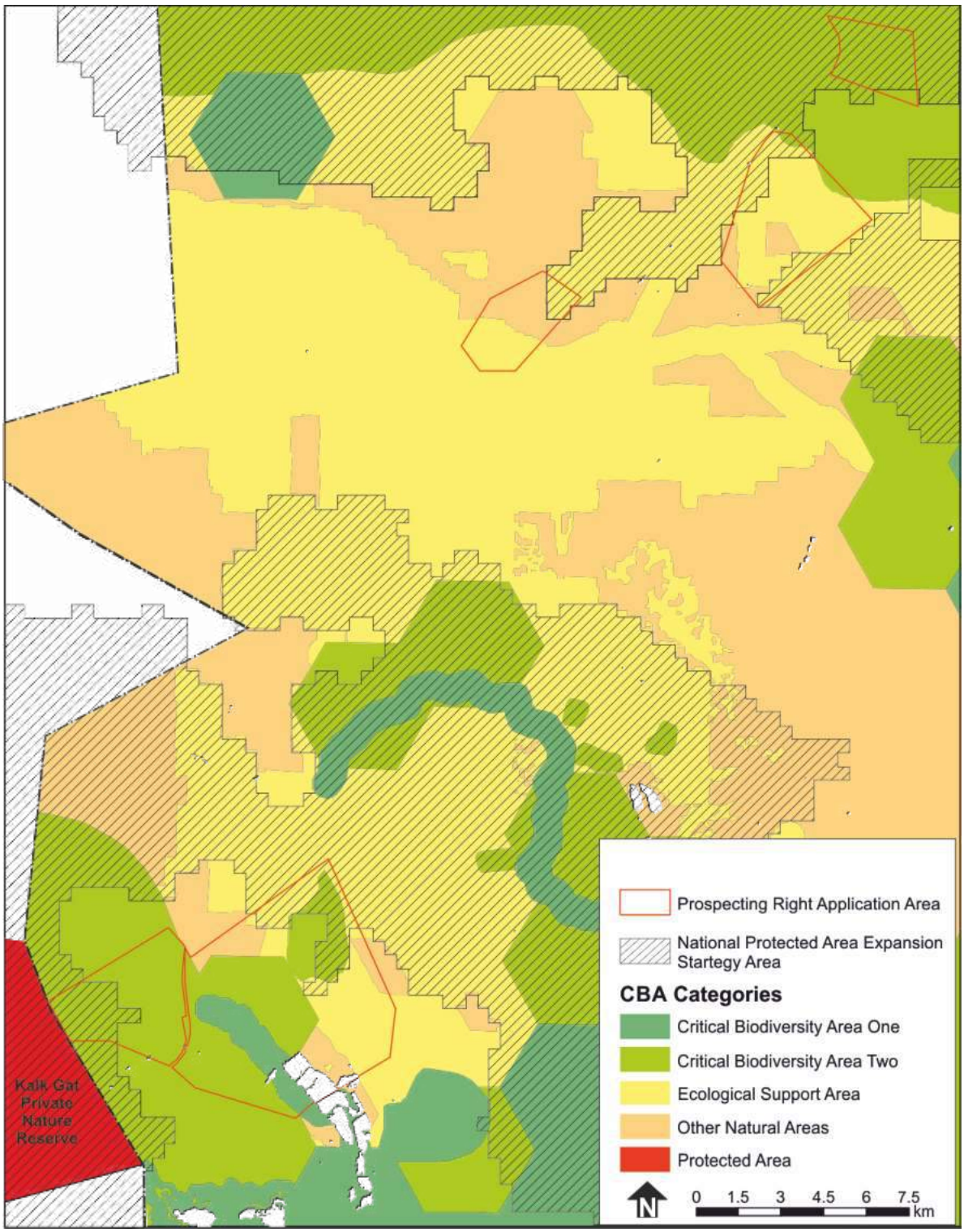


Figure 6: The Conservation Status of the drill sites and surrounding area.

Although classed as CBA 2, the actual historical land use (agricultural grazing) has had a lasting negative impact on the integrity of the landscape and it is considered unlikely that the CBA 2 classification will stand up to detailed review.

The situation is much the same at the Stinkfontein drill sites, the CBA 2 classified area extends far beyond the drill sites across the landscape. The prospecting drilling is thus unlikely to have any wider or regional negative impact on the CBA 2 as a biodiversity target beyond the actual drill sites. Although classed as CBA 2, the actual historical land use (agricultural grazing) has had a lasting negative impact on the integrity of the landscape and it is considered unlikely that the CBA 2 classification will stand up to detailed review.

3. Proposed Mitigatory Measures:

The following mitigatory measures are recommended:

1. *Hoodia gordonii:* This Red Listed plant only occurs at four of the drill sites and at relatively low densities. For the purpose of prospecting drilling, it is suggested that the drilling operation should easily be able to avoid the small groups of *Hoodia,* by moving the drill site a couple of meters away and by ensuring that vehicle access and the drilling operation avoids any form of contact or impact on the groups of *Hoodia* plants. This should be easy enough to do as Hoodia is an easily identifiable plant and it is a relatively large and striking plant (see Plate 00).

2. Vanrhynsdorp Gannabosveld: This vegetation type is under threat due to cultivation and open-cast gypsum mining. Drill site 1 at Stinkfontein lies in this vegetation type and negative impact during the prospecting drilling may be difficult to avoid.

However, if access to the drill site is sensitively planned, and the disturbance of the surrounding area (outside of the drill site) is carefully kept to a necessary minimum, then prospecting drilling can be achieved with the minimum disturbance to the surrounding Vanrhynsdorp Gannabosveld as well as the CBA 2 designated sites. The physical marking of approved access and drilling activity area is recommended as well as inspection during the drilling by the Ecological Control Officer appointed for the entire drilling operation.

3. Ecological Control Officer (ECO): It is recommended that a suitably qualified ECO be appointed to assist with the access and control at the various drilling sites to guide the drilling operation and to ensure that the least possible disturbance to the site occurs. This is particularly relevant to the Kopjeskraal and Stinkfontein drilling sites which fall within CBA 2 designated areas.

4. Access and site rehabilitation: It is recommended that, after completion of the prospecting activities, each drill site be provided with suitable physical barriers for the calming of any soil erosion that may be caused by the prospecting activities.

Simple drainage gutters and earth berms are all that is needed to slow down the energy of runoff water and these can be made by hand with a spade. Where necessary, drainage humps along the access roads and effective water channelling and calming is all that is required. These details can be contained in the relevant project management plan.

5. Fauna and prospecting drilling: The relevant mitigations are as follows:

- Most vertebrate fauna can move off the proposed drilling site into identical habitat outside of the affected area, thus escaping direct impact.
- No Red Listed fauna are likely to occur at the specific drill sites.
- After the drilling is concluded, vertebrate animals (and invertebrates) can again colonise the drill sites from the surrounding unaffected areas if need be. The disturbance will thus not be permanent nor will the surrounding natural habitat be permanently transformed in any way.

6. Extent and impact of the proposed prospecting drilling:

The restricted size of each proposed drill sites serves to reduce biodiversity and other potential impacts. The temporary presence of the drilling activity will not result in any permanent fragmentation of habitat or long-term disruption of any important landscape corridors.

4. CONCLUSION

It can be concluded that the proposed prospecting drilling operation, and its associated access infrastructure, will have a localized and temporary impact on the natural biodiversity of the site.

There is very little risk in terms of biodiversity impact. If the recommended mitigatory measures are effectively implemented, all of the issues relating to plants and animal sensitivity will be adequately mitigated. The greatest risk relating to the drilling operation will largely be restricted to the Kopjeskraal and Stinkfontein drill sites which are within CBA 2 designated areas. At both sites the actual prospecting disturbance will be localized with no impact on the surrounding CBA 2 designated area. The proposed prospecting operation will have no impact on landscape connectivity nor will it contribute to the fragmentation of vegetation types or animal habitats.

The spectacular dwarf succulent endemism that is generally associated with the Knersvlakte part of Namaqualand is generally associated with quartz pebble fields and other rocky areas (Van Wyk & Smith, 2001).. The more-sandy areas (such as those of the Loeriesfontein study sites) have a less specialized flora and consist of the more widespread plant species. This was found to be the case during this survey as no pebble or rocky areas occurred at the proposed drill sites resulting in lower risk in terms of narrowly endemic plant species.

5. REFERENCES

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Appendix 6:

CLOSURE PLAN

mineral resources

Department:
Mineral Resources
REPUBLIC OF SOUTH AFRICA

CLOSURE PLAN

STINKFONTEIN PROSPECT

SUBMITTED IN TERMS OF APPENDIX 5 of the NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 1998 (AS AMENDED).

NAME OF APPLICANT:	**Rooiberg Mining (Pty) Ltd**
TEL NO:	**082 300 4184**
FAX NO:	**None**
POSTAL ADDRESS:	**PO Box 84 Napier 7270**
PHYSICAL ADDRESS:	**94 Gentoo Street, Cape Agulhas, 7287**
FILE REFERENCE NUMBER SAMRAD:	**NC 30/5/1/1/2/13093 PR**

Report #:2595/C
July 2022

Table of Contents

1 Details of -

1.1 The EAP who prepared the closure plan.

Name of the Practitioner: Craig Donald – Site Plan Consulting
Tel No: 021 854 4260
Fax No: 021 854 4321
E-mail address: craig@siteplan.co.za

1.2 The expertise of the EAP.

Name:	**CRAIG DONALD**
Date of Birth:	26 February 1967
Parent Firm:	Site Plan Consulting
Position in Firm:	Member (50%)
Years with the Firm:	Since 2004 as member
Nationality:	South African
Professional Registration:	EAPASA (Reg #: 2020/2124)

Qualifications:

Year	Qualification	• Institution
1984	Senior Certificate Matriculation	Plumstead High School
1992	National Higher Diploma: Town & Regional Planning (*cum Laude*)	Cape Technikon
1995	Minerals and Metals Extraction short course	Continuing Engineering Education, University of Witwatersrand
1997	National Diploma: Surface Mine Management	Technikon SA
1999	Principles for Environmental Management short course	Environmental Evaluation Unit of University of Cape Town
2003	Masters of Business Administration	University of Cape Town

Languages : English (first language)
Afrikaans (second language)

Employment History & Key Qualifications:
1989 -2004: Settlement Planning Services
2004 till present: Site Plan Consulting CC (as 50% member)

I was initially employed by Settlement Planning Services (a Town Planning Consultancy) as a technician during my Higher Diploma in Town and Regional Planning as part of my experiential training. Under the mentorship of Stephen van der Westhuizen my main involvement was the compilation of Environmental Management Programmes (mainly in surface mining related field) and geographic information systems. There was little guidance and no templates for the compilation of the EMPs and between Mr van der Westhuizen and myself, we developed a document structure acceptable to the then Department of Minerals.

In order to obtain a deeper understanding of the relevant issues, I completed a Surface Mine Management course as well as short courses such as Mineral and Metal Extraction and the immersive Environmental Evaluation course run by the EEU of UCT. I completed a part-time MBA at UCT in 2003.

In 2004 I joined Mr van der Westhuizen's Site Plan Consulting CC as a 50% member and since then have been serving mostly the Surface Mining industry in all environmental related matters as well

other aspects in their licencing and legislated environmental requirements in maintaining said approvals (if granted).

Main tasks:
I have many years practical experience in diverse environmental, spatial and mine planning projects. In that time I have developed experience in use of Word, Excel, CorelDraw and ArcView GIS.

The main focus of work experience has been in the licencing, physical and environmental planning, monitoring and closure of surface mining operations. The mines have varied in:

- Size from small sand mines to the largest aggregate or diamond producers,
- Products from clay to diamonds,
- Location from the Alexander Bay to East London/KZN coastal areas as well as inland in Free State and Limpopo
- Scale and type of environmental impact.

In respect of the licencing and physical planning of surface mines, the work entails *inter alia* the compilation of:

- Mining and Prospecting Work Programmes: a detailed mine / prospect plan and project description including cash flow forecast / budget to determine mine's economic viability and cost of prospecting
- Social and Labour Plan: Legislated document required to describe how the mine will maximise its socio-economic impact through enforced education, training and corporate social responsibility programmes for the staff and surrounding community.

In respect of the environmental planning, the work has entailed the completion of Environmental Authorisation Application forms and the compilation of Basic Assessments, Scoping Reports, Environmental Impact Assessments, Environmental Management Plans and Programmes dependent on application requirements in accordance with either or both the Mineral and Petroleum Resources Development Act and the National Environmental Management Act (with the amalgamation of these 2 pieces of legislation in December 2014). These have all entailed full public participation and liaison with and full input from specialists as required.

In respect of monitoring the work involves conducting of environmental audits to measure the level of compliance of actual site conditions against the prescriptions of the EMP. The auditing task also serves to highlight any shortcomings in the EMP.

Closure of surface mining operations has entailed the conducting of all public participation and the lodging of all documentation required.

In addition, the work also entails annual updates of Rehabilitation Quantum calculations for almost all of the approved Mining Rights in the list below. These calculations are conducted using both the Guideline of the DMR and as Itemised costs in certain relevant operations. In addition to the list below, we have been calculated the rehabilitation quantum for Alexkor and De Beers (now Transhex) operations on the West Coast as well as Lower Orange River operations of Transhex (now LOR-D/Plateaux Diamonds).

The following lists represent the projects wherein I have been the lead EAP. I have been involved in other projects as an assistant to the lead EAP. Note that although I (and Site Plan Consulting) have always adhered to the principles of NEMA in the EIA process, the amalgamation of the Minerals and Petroleum Resources Development Act and National Environmental Management Act as the "One Environmental System" only came into effect in December 2014. The projects I have conducted under that system have been listed separately under the relevant project experience which follows.

Relevant Project Experience:

Prospecting Rights (including public participation and compilation of EMPlans (inclusive of EIAs)):

- For Salt on Papendorp Pan as community initiative supported by Cawood Salt (Pty) Ltd
- EMPs only for 7 Heavy Mineral Prospects of the West Coast (Basileus Group)
- Firlands (Gordons Bay) for aggregate - Afrimat
- Zoet and Zuur Diamond pipe (Boshof, Free State)
- Several Alluvial Diamond prospects on West Coast and inland West Coast (Western and Northern Cape) – Surfzone (Pty) Ltd, et al.
- Phosphate prospect (Saldanha) –Gecko Fert (Pty) Ltd
- Aggregate prospect near Oyster Bay in Eastern Cape – Denron Group
- Cobalt, Copper, Molybdenum, Nickel, Lead, Zinc, Silver, Gold & Platinum Group Minerals on 13 farms in the Kenhardt Magisterial District – Lehumo Resources (Pty) Ltd
- Nickel and related minerals on 8 farms near Kliprand – Hondekloof Nickel (Pty) Ltd
- Kaolin at Langklip (near Saldanha) – Seeland Development Trust on behalf of local community.
- Base minerals around Oena Mine in Northern Cape – African Star Resources (Pty) Ltd
- 6 sites for Uranium in the Karoo (Tasmin Pacific Minerals Ltd)
- Nickel prospect at Oup near Pofadder – Lehumo Resources (Pty) Ltd
- Commissioners Pan Salt Prospect – Dwaggas Soutwerke (Pty) Ltd
- Gypsum prospects near Kimberley, Vanrhysdorp and in the Bushmanland (St Gobain Group)
- Sand sources for Atlantis Foundries (Western Cape) – ZLLD Sand Mining (Pty) Ltd
- Salt at Gemsbok Horn (North of Upington) – Transalt (Pty) Ltd

Mining Permits and Rights (including full Public Participation and compilation of EMPs inclusive of EIAs)

- Caledon Manganese Mining Permit – Rand Gold Reclamation (Pty) Ltd
- Pentlands Granite Quarry Mining Right near Empangeni (KZN) – Masa Mzantsi Cement (Pty) Ltd
- Gamohaan Aggregate Quarry near Kuruman (Permit) – Afrimat Group
- Cawood Salt Mine at Sout River mouth (Amendment of existing Right) – Cawood Salt (Pty) Ltd
- Kuipersbult Aggregate Mining Right near Lephalale (Limpopo) as source for Medupi Power station construction – Afrimat Group
- Dikpens Gypsum Mine Extension (Bushmanland) – St Gobain Group
- Yserfontein Pan Gypsum - Amendment of Mining Right including update of EMP – St Gobain Group
- Gypsum Mine near Vanrhynsdorp - Mining Right – PPC (Right now owned by St Gobain Group)
- Transand Aggregate mine near Hartenbos - Mining Right – Transand (Pty) ltd
- Aggregate and sand mine on municipal owned land in Gansbaai (Permit and Right)- Sisiza Ukhanyo Trading 410 (Pty) Ltd
- Sand mining permit near Salmonsdam Nature Reserve, Stanford – DJ Transport (Pty) Ltd
- Limestone Mining Right north of Klawer – Now held by Afrimat (previously Cape Lime (Pty) Ltd
- Sand Mining permits near Gouritz River / Vlees Bay – Transand Group
- Phospate Mining Right near Langebaanweg - Gecko Fert (Pty) Ltd
- Oyster Bay Mining Right application for Aggregate – Denron Group
- Moddergat Sand Mining Right (between Worcester and Villiersdorp) – Afrimat Group
- Mining Right for Manganese near Swellendam – Aquarella (Pty) Ltd
- Involvement to a greater or lesser degree in at least 50 other Mining Permit and Mining Right applications
- EMP updates / amendments (some of which did not require public participation) for several operations (at least 20).

Environmental Performance /Audit Assessments (monitoring) of the following sites on once-off or regular basis. First compiled in terms of Reg 55 of MPRDA prescriptions and since December 2014 guided by NEMA requirements (Appendix 5 and Regulation 34 of NEMA):

- Crammix Clay Mine (Brakenfel)
- Botriver Sand mine (Steyns)

- Cawood Salt Mine (Sout River)
- Swellendam Manganese Mine
- Buffelsbank Diamond Mine
- Gecko Fert Phosphate Prospects
- Cape Lime Limestone Mine near Vredendal
- Denron operations (Sand and Aggregate) Knysna / Plettenberg Bay area
- Dimension Stone Mines of Verde Bitterfontein (Namaqualand)
- Limestone quarries in Bredasdorp and Vredendal
- Lime Sand near Saldanha – Marine Lime
- Cawood Salt Mine on West Coast
- 3 x Salt Mines north of Upington
- PPC Gypsum Mine near Vanrhynsdorp
- Lafarge Western Cape operations including Tygerberg, Dorstberg, Peak and Saldanha Quarries
- Maskam Gypsum Mine near Vanrhynsdorp
- Nama Copper: Retreatment of existing dumps at Nababeep
- Various Afrimat aggregate operations throughout the country
- Setting up of Environmental Monitoring Committee at Yzerfontein Gypsum Mine
- Setting up of Environmental Monitoring Committee at George K1 Quarry
- Johnsons Brick Clay Mine (Oudtshoorn)

Closure Applications (for mining and prospecting operations):

- Gecko Fert Phosphate Prospecting Rights and Mining Permit
- Knysna Whitebridge Quarry
- Denron Funda and Helderwater Quarry – Plettenberg Bay
- Crammix Clay Mine (Brackenfel)
- Vaale Valley Sand Mine (Mossel Bay)
- Various Dimension Stone bulk samples for Verde Bitterfontein (Namaqualand)
- Bergsig / Farm 292 Closure (Hartenbos)
- Klipfontein Sand Mine (Vlees Bay)
- Welbedagt Gravel Permit (Herbertsdale / Mossel Bay)

"One Environmental System" applications (Post 8 December 2014) all conducted in terms of NEMA EIA process:

- Cape Lime Sand Mine (Schaap Kraal operation) – Afrimat
- Atlantis Foundries Sand Mine Ptn 8 – ZLLD Sand Mining (Pty) Ltd
- Atlantis Foundries Sand Mine Prospect (Ptn 4 & 5) – ZLLD Sand Mining (Pty) Ltd
- De Hoek Sand Mining Right – Buy-Line Trading (Pty) Ltd
- Denver Quarry Section 102 (MPRDA)– Afrimat
- Desert Rose Dimension Stone Mine – Application only
- Naroogna Pan Salt Mine – United Salt (Pty) Ltd
- Stanford Quarry Extension – Afrimat
- Bester Calcrete Mining Permit – West Coast Calcrete
- Commissioner Pan Salt Mine – Dwaggas Salt Works (Pty) Ltd
- Lezmin Sand Mine (Gouritz Area) – Lezmin 2021 CC
- Yzerfontein Gypsum Mine (Section 102) – St Gobain Construction Materials (SA)
- Skietkuil Quarry Mining Permit – Skietkuil Quarries CC
- Honingklip Gravel Mining Permit – Western Cape Construction Materials (Pty) Ltd
- Johnsons Clay Brick Oudtshoorn (Mining Right Amendment)
- Okiep Dumps Reprocessing Application – O'okiep Copper Company Ltd
- Karoo One / Bo Plaas Sand and Gravel Mining Permit
- Salt Prospect – Gemsbok Horn (N Cape) – Transalt (Pty) Ltd
- Bosluispan Diamond Mine (Section 102 Application) – Kori Diamonds (Pty) Ltd

- Oena Diamond Mine (Section 102 Application) – African Star Minerals
- Welbedagt East Gravel – Mossel Bay - Buyline Trading
- Gemsbok Horn Salt Prospect – Upington – Industrial Salt
- Okiep Tailings Investigation – OCC – Okiep and Carolusberg
- Regulation 31 Application: Kliprug Quarry for Batch Plant - Afrimat
- Kolkies River Gypsum Mine – Ceres- Space Minerals – not yet lodged
- Grootwitpan Salt Mine - North of Upington- United Salt

Section 24G Applications:

- Makulu Quarry – Denron
- Swellendam Manganese Mine – Sikhova Environmentally Friendly Building Solutions
- Illegal Waste Disposal Site – Die Kop – Plettenberg Bay
- Smalblaar Quarry – Stockpiling area - Afrimat

2 Introduction

This Closure Plan has been compiled using the stipulated content as per Appendix 5 of NEMA. It has been compiled in terms of the requirements for the Prospecting Right application on 5 non-contiguous portions of land on land parcels as follows:

Section 1: Kopjeskraal Section
Portion of Portion 1 of Kopjeskraal 273
Section 2: Eyer Gat Section
Portion of Remainder of Eyer Gat 327
Section 3: Wolve Grav Section
Portion of Portion 2 of Wolve Grav Water 330
Section 4: Stinkfontein East Section
Portion 6 of Stinkfontein 461
Portion of Portion 7 of Stinkfontein 461
Portion of Portion 9 of Stinkfontein 461
Portion 12 of Stinkfontein 461
Portion 14 of Stinkfontein 461
Portion 16 of Stinkfontein 461
Portion 18 of Stinkfontein 461
Portion of Portion 21 of Stinkfontein 461
Section 5: Stinkfontein West Section
Portion of Portion 7 of Stinkfontein 461
Portion of Portion 8 of Stinkfontein 461
Portion of Portion 10 of Stinkfontein 461
Portion of Portion 21 of Stinkfontein 461

All farms in Calvinia Administrative District.

3 Closure objectives.

The overall objective is to limit the impact of activities by implementing all the prescribed rehabilitation methods as prescribed in the EMP.

The objective is to return the site so that it is indistinguishable from the rest of the surrounding environment to allow current uses. In addition, it is an objective that the disturbance area is kept to an absolute minimum.

The *impact management outcomes* to be included in the EMP, therefore:

i. Immediate rehabilitation of disturbed area of each drill site as well as the drill traverse when finalised to limit impact on land capability.

ii. Access to no go areas (everything outside of drill sites, drill traverses and outside of the Prospecting Right area, and the appropriate vegetation or heritage no go areas) must be prevented through environmental education of all staff members.

iii. Limiting of dust and noise impact on surrounding users.

iv. Avoidance of any impact in respect of hydrocarbon pollution.

4 Proposed mechanisms for monitoring compliance with & performance assessment against the closure plan and reporting thereon.

Decommissioning rehabilitation will take place at each site as soon as drilling has been completed. The following is required in terms of monitoring, actions taken and reporting of the decommissioning rehabilitation toward closure:

1) Decommissioning rehabilitation is conducted at each of the sites post drilling
2) Post decommissioning *Draft* Environmental Audit is then undertaken. Any shortcomings must be rectified, and the *Final* Environmental Audit is then compiled.
3) Such Final document is included as part of the Closure Application as lodged.

Monitoring of the site must also include the landowner and any party the landowner deems necessary to be in attandance (especially as part of the final Environmental Audit). They can be invited to attend the monitoring visits by the independent environmental assessor after drilling to determine the success of rehabilitation and recommend additional mitigation measures if required.

5 Measures to rehabilitate the environment affected by activities and associated closure to its natural or predetermined state or to a land use which conforms to the generally accepted principle of sustainable development (including a handover report).

The closure objective is to return the drill site/s so that they function as part of the grazing/ wilderness and to not be discernible from the surrounds. In order to achieve this, the following actions are required and these start at the initiation of drilling:

5.1 Site Selection and access to the drilling site

The proposed location of the drill traverses are as indicated in figures 8-11. These have been selected prior to full and detailed site investigation with the main aim being to avoid any CBA 1 and, as far as possible, any water resource.

Existing roads and tracks will be used as indicated in that Figure 8-11 of the BAR.

No topsoil will be removed as experience has shown that the impact in this area is prolonged if all topsoil and vegetation is removed.

No sled mounted drill rig is permissible for use. Reference is made to the significant disturbance which was realised because of the use of a sled in the previous prospecting conducted elsewhere.

5.2 Description of drilling on site

The drill rig will either be truck mounted or delivered to each site by a light truck equipped with a hi-up (brick pallet type lift) to be placed on the drill site. NO sled mounted drill is permitted under any circumstances.

Some of the other operational considerations being:

1) No water is required for this shallow air reverse circulation drilling.
2) The 120m² therefore has the following equipment located upon it:
    a. The drill rig and drill rods
    b. Chemical toilet

5.3 Decommissioning rehabilitation to be applied at the drill site

After drilling has been completed the following activities must take place:

1. Removal of all equipment from the site
2. If there is any evidence of Hydrocarbon pollution, then such pollution and contaminated soil must be placed in black bags and removed from site and disposed of as per Hydrocarbon Management protocol in para 7.1
3. Backfilling of any residual drilling residue into the drill hole
4. The site will be rehabilitated by light raking to reinstate disturbed micro-topography and aerate upper soil horizon.
5. These same rehabilitation measures apply to the traverse which would have also been subject to access and disturbance.

Photographic (geotagged, date-stamped) records of each site pre- and post- drilling must be kept as proof of adequate rehabilitation and sent to the competent authority (as part of an Environmental Audit) for their records and review.

In addition, it is critical that contractor staff are educated / trained in environmental issues (the details of the environmental induction are as per Appendix 4 of the BAR).

6 Information on any proposed avoidance, management and mitigation measures that will be taken to address the environmental impacts resulting from the undertaking of the closure activity.

The impacts (and proposed mitigation measures required) that will arise out the undertaking of the closure activities are as follows:

Activity	Impact	Scale of impact	Avoidance, Management or Mitigation	Proposed Management / Mitigation Measures	Significance with mitigation, Probability & Duration of Impact
Removal of all equipment from site	Possible minor dust impact	Insignificant	None required	None required	Occurrence based
If there is any evidence of Hydrocarbon pollution, then such pollution and contaminated soil must be placed in black bags and removed from site and disposed of as per Hydrocarbon Management protocol	Hydrocarbon	Moderate / Insignificant dependent on scale	Avoidance. If not avoided then mitigations	Removal to proper disposal facility with contaminated soil (in black bags or drums)	None
Backfilling of any residual drilling material into the drill hole using spade	None negative				
The site will be rehabilitated by light raking to reinstate disturbed micro-topography and aerate upper soil horizon.	None negative except access for personnel				
These same rehabilitation measures apply to any access route which may have resulted in disturbance.	None negative except access for personnel				
If the landowner requires it, then the rehabilitated site and access disturbances can be fenced to ensure no grazing of the rehabilitating areas	Land not available for grazing	Drill sites plus any access disturbance	Management	Remove when revegetation satisfactory	None

7 Description of the manner in which it intends to-

7.1 Modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation during closure;

The proposed rehabilitation measures as prescribed in para 5 above are aimed at returning the site to pre-prospecting condition. The only potential aspect which could lead to pollution or environmental degradation during closure will be the mistreatment of hydrocarbons through leakage of oils and fuels by vehicles which may be required to transport personnel and equipment required to rehabilitate the site.

Hydrocarbon management during closure must include the following aspects:

Note that there will be minimal volumes of domestic and industrial waste emanating from this rehabilitation operation; however the following must to be implemented.

The waste streams that could potentially emanate during this time:

Domestic Waste: Only small quantities of domestic waste will emanate from this site and this will typically be in the form of lunch wrapper, cool-drink bottles, etc. The waste will be retained in the cab of the vehicle and disposed of at the Loeriesfontein at the end of the working day.

Industrial Waste: Although no servicing of any vehicles is permitted in the proposed permit area, it is possible that emergency repairs may be required. If so, then adequate drip trays and funnels must be utilised to catch dirty oils from draining or from leaks – see para entitled Emergency Repairs on site below.

So, the Hydrocarbon Management protocol for the site:

Fuel receipt, storage and dispensing:

There will be no fuel storage facility on this site (for diesel). Diesel (**Unlikely but if required, then it**) will be brought in using small towed bowser and refuelling will take place in field. It is required that suitable funnels connections and drip trays are in place to limit the potential for leaks during such refuelling. The fuel delivery bowser driver must be cautioned to adhere to safe driving speeds and drive cautiously along the access roads.

Emergency repairs on site:

In the event of a breakdown with repair being required in the field, the staff should be trained in use of drip trays and suitable funnels (not to drain oil into the sand) for filling and draining of lubricants and the staff shall be provided with such equipment to prevent oil contamination. In addition:

- Used/replaced filters, hoses, belts, cloths, etc. are to be placed in a black bag or plastic drum for return to the contractor's facility for disposal in terms of their

company regional industrial waste handling methodology. Used filters are not to be buried at the site of repair (nor discarded in the drill hole to be backfilled).

- In the event of soil contamination, the oil and contaminated soils are to be placed in black disposal bags and transported to suitable facility.

Staff Training and Awareness

All staff involved in mobile plant operation and maintenance must be made aware of these oil and lubricant procedures. Staff will require instruction in the:

- Deleterious effects of oil / fuel on the environment
- Handling method and reporting procedure (also in terms of emergency plan readiness in case of large oil spill

General Provisions

- All operators are to check their equipment for leaks and report such leaks on a daily basis. All equipment and vehicles will be maintained in good working order.
- If spills do occur, then the spill to full depth in sand must be removed to waste drums (or in black bags) and then to a suitable hazardous waste facility.
- All contaminated soil/material must also be removed and disposed of or treated with a suitable treatment process.
- Protective gear must be used during clean-up of spills.
- There will be an incident management system, including procedures and training, for dealing with incidents.

7.2 Remedy the cause of pollution or degradation and migration of pollutants during [after] closure;

There will be none at this site provided all measures as proposed in this closure plan and EMP are implemented.

7.3 Comply with any prescribed environmental management standards or practices; and

As described in part 4, the holder is bound by a sequence of environmental; audits during and after closure which will ensure compliance with this closure plan and BAR (EMP).

7.4 Comply with any applicable provisions of the Act regarding closure;

The holder will comply with all aspects of the legislation in respect of closure.

8 Time periods within which the measures contemplated in the closure plan must be implemented;

The closure plan will be implemented in a period of 3-6months from the date upon which decommissioning is proposed to be initiated. Remember that the activities required in closure should be absolutely minimal.

9 The process for managing any environmental damage, pollution, pumping and treatment of extraneous water or ecological degradation as a result of closure

Not applicable.

10 Details of all public participation processes conducted in terms of regulation 41 of the Regulations:

Refer Part 8.2 and 8.3 of the BAR for details of Public Participation

10.1 Copies of any representations and comments received from registered interested and affected parties;

Refer Appendix 3 of BAR

10.2 A summary of comments received from, and a summary of issues raised by registered interested and affected parties, the date of receipt of these comments and the response of the EAP to those comments;

Refer Appendix 3 of BAR

10.3 The minutes of any meetings held by the EAP with interested and affected parties and other role players which record the views of the participants;

Refer Appendix 2 of BAR

10.4 Where applicable, an indication of the amendments made to the plan as a result of public participation processes conducted in terms of regulation 41 of these Regulations

Not applicable

10.5 Where applicable, details of any financial provisions for the rehabilitation, closure and on-going post decommissioning management of negative environmental impacts

Refer Part 32 of BAR

Appendix 7: _

Heritage Matters
(To be finalised in consultation with Heritage Authority Northern Cape and SAHRA)