



mineral resources

Department:
Mineral Resources
REPUBLIC OF SOUTH AFRICA

NAME OF APPLICANT: CAREL DANIEL DIPPENAAR

REFERENCE NUMBER: NC 30/5/1/2/2/11460 PR

ENVIRONMENTAL MANAGEMENT PLAN

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

STANDARD DIRECTIVE

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

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

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

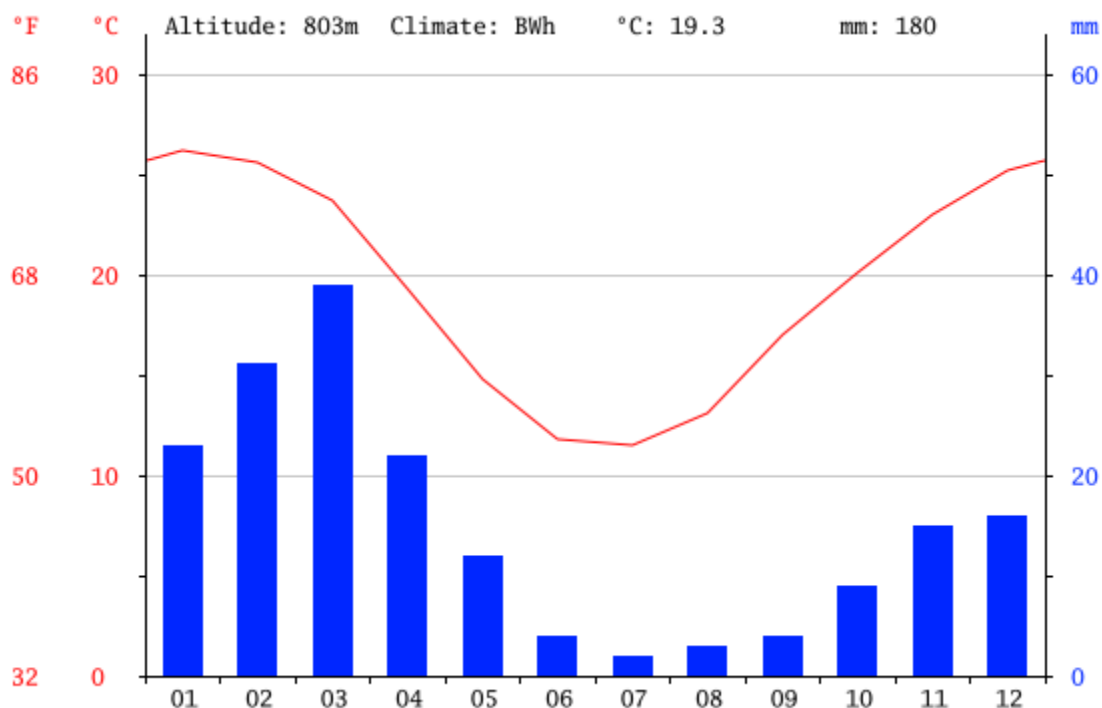
1.1 The environment on site relative to the environment in the surrounding area.

The area under the prospecting right application is on the Remainder of portion 5 – a portion of portion 3 of uitkomst 420, situated in the Magisterial District of Gordonia: Northern Cape Region, under the jurisdiction of Khara Hais Local Municipality. Farm Uitkomst 420 is situated in the Magisterial District of Gordonia with Centre of co-ordinates approximately Lat: -28.355047, Long: 21.356089, or 28.2118 S, 21.2121 E, approximately 6km north east of Upington town at the northern bank of the Orange River. The proposed prospecting area is positioned in an area which is mostly flat terrain with low plains of the Ghaap escarpment. The area applied for covers an area of 595.5833 ha, and is situated approximately 51Km North East of Keimoes and approximately 86km NW of Groblershoop.

Climate

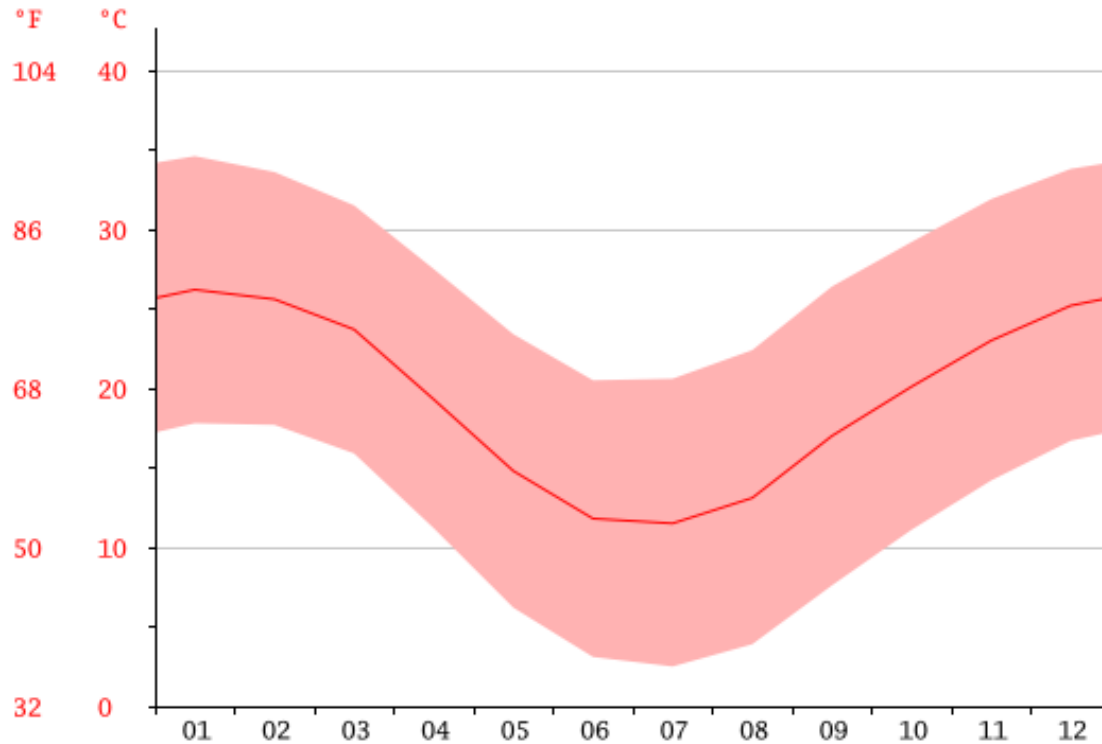
The climate in Upington is called a desert climate. During the year, there is virtually no rainfall in Upington. The climate here is classified as BWh by the Köppen-Geiger system. The average annual temperature in Upington is 19.3 °C. In a year, the average rainfall is 180 mm.

Climate Graph:



Graph 1: Data sourced from Climate-Model by Climate-Data.org

The driest month is July. There is 2 mm of precipitation in July. Most of the precipitation here falls in March, averaging 39 mm.

Temperature Graph:

Graph 2: Data sourced from Climate-Model by Climate-Data.org

With an average of 26.2 °C, January is the warmest month. July is the coldest month, with temperatures averaging 11.5 °C.

Climate Table:

Table 1: Data sourced from Climate-Model by Climate-Data.org

month	1	2	3	4	5	6	7	8	9	10	11	12
mm	23	31	39	22	12	4	2	3	4	9	15	16
°C	26.2	25.6	23.7	19.3	14.8	11.8	11.5	13.1	17.0	20.1	23.0	25.2
°C (min)	17.8	17.7	15.9	11.2	6.2	3.1	2.5	3.9	7.6	11.1	14.2	16.7
°C (max)	34.6	33.6	31.5	27.5	23.4	20.5	20.6	22.4	26.4	29.2	31.9	33.8
°F	79.2	78.1	74.7	66.7	58.6	53.2	52.7	55.6	62.6	68.2	73.4	77.4
°F (min)	64.0	63.9	60.6	52.2	43.2	37.6	36.5	39.0	45.7	52.0	57.6	62.1
°F (max)	94.3	92.5	88.7	81.5	74.1	68.9	69.1	72.3	79.5	84.6	89.4	92.8

The precipitation varies 37 mm between the driest month and the wettest month. Throughout the year, temperatures vary by 14.7 °C.

Biodiversity:

The municipality covers 344434ha- 96.1% of the area remains natural, with the remainder being without natural habitat. There are no protected areas, Ramsar sites or critically endangered species in area. One endangered ecosystem, the Lower Gariep Alluvial Vegetation, covers 4653.5ha (1.35% of municipality).

The Municipality falls within two distinct biomes, namely the Nama-Karoo Biome (71.65%), and the Savanna Biome (28.35%). Six vegetation types covering the area includes: Bushmanland Arid Grassland (25.98%); Gordonia Duneveld (27.96%); Kalahari Karroid Shrubland (40.7%); Lower Gariep Alluvial Vegetation (3.55%); Lower Gariep Broken Veld (1.68%); and Southern Kalahari Salt Pans (0.13%). There are no vulnerable ecosystems in this municipality.

The classification of the vegetation type is Shrub land. The area between Alheit and Blouputs are characterised by Thicket and Busland, while grassland are to be found in the far northern section of the municipal area. As can be expected, the commercial cultivated lands are to be found all alongside the Orange River and a small section of Woodland in the area between Kakamas and Keimoes. A few *Acacia erioloba* trees and *Prosopis* bushes grow here and there.

The two species typically found in the Northern Cape especially also in Gordonia are the Karoo thorn, *Acacia karroo*, and the camel thorn, *A erioloba*, both of which can reach a considerable height. The coronet is made up of a bead heading and an embellishment that includes further beadwork motifs. The heading is a characteristic ornament of the hunter-gatherer Bushman people, the aboriginal inhabitants of the Northern Cape, who were closely related to the cattle-keeping.

Protected species which occur in this habitat type include *Boscia foetida*, *Boscia albitrunca* and *Acacia erioloba*. *Boscia albitrunca* and *Acacia erioloba* are generally restricted to drainage lines and would not be little impacted by the development, while *Boscia foetida* is more widespread and larger but not highly significant numbers of this species are likely to be affected by the development but probably less than 100 plants, which would not be considered highly significant given their abundance in the local area.

Fauna:

On the species checklists of the region are 49 mammal species, 186 bird species, 41 reptile species, six amphibian species and 12 fresh-water fish species. The fauna is adapted to arid conditions, conspicuous species including Hartmann's mountain zebra *quus zebra hartmannae* and black rhino *Diceros bicornis* (to be reintroduced).

The Marbled rubber frog, *Phrynomantis annectens* is endemic to the park. The lower Orange River also has threatened ichthyofauna, including the Red-listed Namaqua barb *Barbus hospes* (Skelton and Cambray 1981). Other fauna includes dassie *Procavia capensis*, giraffe *Giraffa camelopardalis*, klipspringer *Oreotragus oreotragus*, honey badger *Mellivora capensis*, springbok *Antidorcas marsupialis*, red hartebeest *Alcelaphus buselaphus*, kudu *Tragelaphus strepsiceros*, gemsbok *Oryx gazella*, eland *Tragelaphus oryx*, caracal *Caracal caracal*, leopard *Panthera pardus*, African wildcat *Felis silvestris cafra*, brown hyena *Proteles cristatus*, aardvark *Orycteropus afer* and bat-eared fox *Otocyon megalotis*. Bird species include Verreaux's *Aquila verreauxii* and African fish eagles *Haliaeetus vocifer*, as well as eight species of swallows and swifts.



Photo 1: typical natural Vegetation cover of the proposed area.

Geology:

Medium grained biotitic gneiss; lenses of fine grained psammitic gneiss and calc silicate rocks cover almost the whole surface area except for the middle part and area in between covered by Red brown, wind-blown sand and dunes, with the north east to south west portion intersected by the R27 road.

To the east, the Gordonia Subprovince comprises a central domain of volcano-sedimentary amphibolite grade rocks of an arc-like affinity (the Areachap Group of ~1.29 Ga age, Cornell et al., 1990), separating the western, granitoid-dominated, high-grade Kakamas Terrane from the eastern Upington Terrane. Voluminous syn- to post-tectonic plutons of the Keimoes Suite intrude the Areachap Group and gneisses of the Kakamas Terrane to the west, and have been dated at ~1.15 to ~1.10 Ga by conventional bulk zircon analysis (Geringer et al., 1988). The southwestern boundary of the Gordonia Subprovince with the Bushmanland Subprovince is a southwest-verging structure named the Waterval Thrust.

Exposures of the Areachap Group extend as a 30–50 km wide belt striking in a southeasterly direction from north of Upington for ~280 km to Prieska in the south (Geringer et al., 1986, 1994). Younger rocks cover the succession both to the north and south (Theart, 1985; Geringer

et al., 1986). The succession is divided into a northern and southern domain, separated by the Boven Rugzeer Shear Zone (Stowe, 1983).

Regional Geological Map

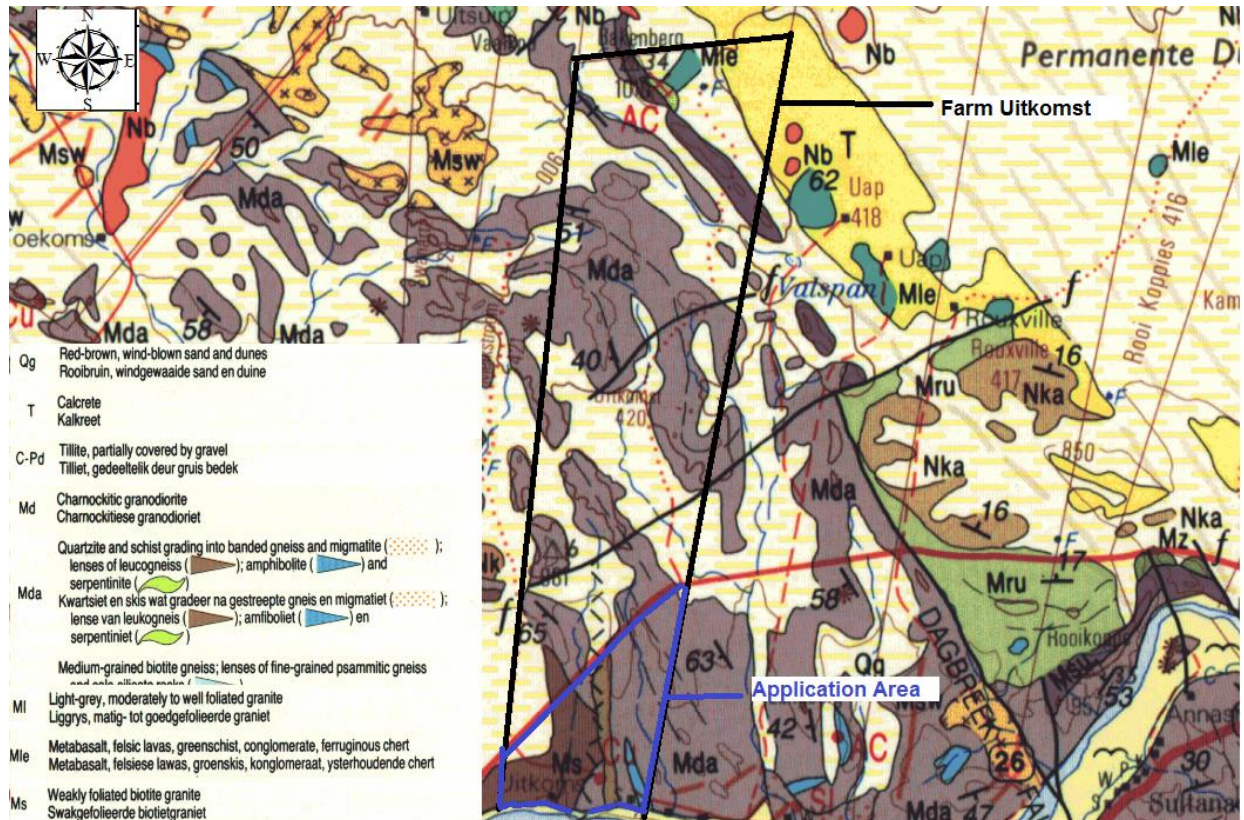


Figure 1: Extract from 1:250 000 geological map 2820 Upington (Council for Geoscience, Pretoria) showing project areas in Black.

Topography:

The topography of the site is determined by the geology and is dominated by the Orange River delta forming many streams and islands. In the north along the N14 main road, the soil surface consists of bare rocky outcrops with red sandy soil and calcrete and quartz scatters, which changes to alluvial sand near the river. The area contains a short grass cover with scatters of aloes and shrubs and bushes on the surface.



Photo 2: photo showing the dominantly flat topography in the area.

Soil:

The soil surface consists of bare rocky outcrops with red sandy soil and calcrete and quartz scatters, which changes to alluvial sand near the river. The area contains a short grass cover with scatters of aloes and shrubs and bushes on the surface.

The soils in the area are generally not suitable for dry land crop production and the only area where intensive crop cultivation is feasible is along the Gariep River where irrigation is possible. Soil salination may be a problem in certain irrigated areas.

Soil conservation is generally not of the required standard. Inadequate control over urban and rural development, indiscriminate agricultural practices and mining together with the predominantly arid character of the area result in substantial losses of topsoil and land degradation in general. Desertification as a result of localized overgrazing leads to vegetation loss and is also strongly linked to poverty and food security as a result of the social and economic importance of natural resources and its agricultural significance for especially the rural communities.

Water Resources:

The proposed prospecting area falls within the *Lower Orange Water Management Area* (LOWMA). The lower Orange River runs through the Khara Hais Municipality. A fresh water ecosystem are managed, with wetlands covering covering 3604.9ha (1%) of the area. Its natural environment is generally characterized by an arid climate with minimal rainfall and drought conditions, with occasional severe flooding. Little usable surface runoff is generated over most of the area as a result of the extremely low and infrequent rainfall.

With the exception of the Orange River, all the rivers in the area are non-perennial rivers (Siyanda EMF, 2007). The River is the main drainage channel in the area Due to the perennial Gariiep River very little use is made of ground water and only a few boreholes occur within the municipal boundaries. The availability of water also holds the key to the settlement of emergent or small farmers.

Socio-Economic Environment:

The implementation of the sand sampling project will generate both direct and indirect employment. The proposed project will bring in job opportunities during operational phase. The man power requirement is based on quantity of production and transportation technology. The indirect employment opportunity in the form of hiring trucks and Tractors skilled and unskilled labour will also be engaged in the proposed prospecting activities. Small shops and other business avenues will also be emerged. The project will also provide impetus to industrialization of the area. The prospecting activities will be carried out in consultation with the local people during this operation.

Cultural and Heritage Resources:

It is identified that there are no grave sites within the area. However, should any cultural or heritage materials be identified, these areas will be demarcated and treated as no-go areas during the prospecting activities. Detailed heritage studies would then be undertaken if it is deemed that these sites would be affected by the prospecting activities.

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

Soil: topsoil will be stripped and stored separately from the overburden on the high ground side of the mining area away from flood plain. The topsoil stockpile will be less than 1.5m in height to avoid erosion. Any contaminated soil will be treated by use of bio-sorb or oil cap and returned to its original area after being treated and tested to be oil free. Stored topsoil will be spread on top of rehabilitated area in order to promote vegetation growth.

Vegetation: the applicant **Carel Daniel Dippenaar** will avoid unnecessary clearance of vegetation within the prospecting areas. Existing roads will be utilised to access the prospecting area in order to avoid/minimise vegetation and surface disturbances.

Geology: the area will not be rehabilitated to its original state; however the trenches will be sloped down following their sequence.

River or water resource:

No trenches will be done within 100m from the Orange River or any water resources without authorisation from Department of Water and Sanitation. Carel Daniel Dippenaar is not planning to dig trenches next to any water resource or wetland.

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

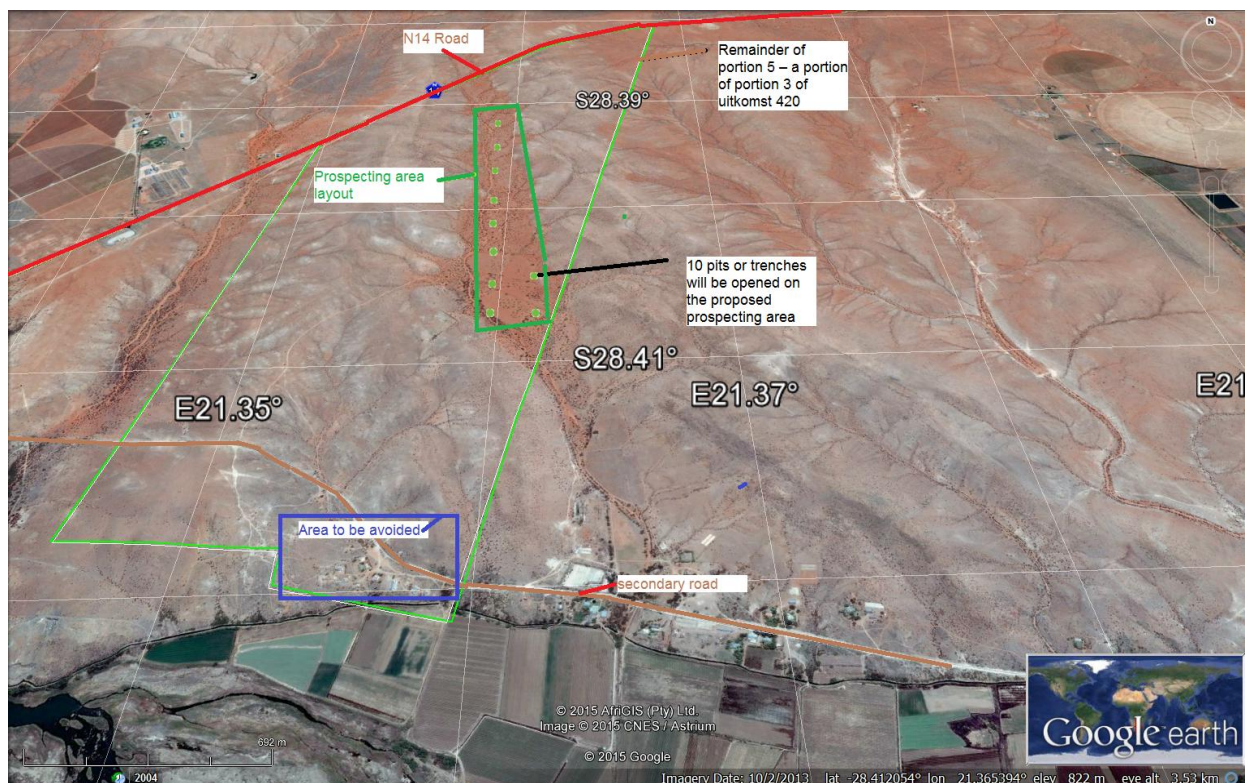


Image: Spatial locality maps of the prop

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Photo 3: typical homestead in the area

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

Landowners and affected parties have been consulted in relation to the proposed prospecting activity and engagement is ongoing (refer to the proof of consultation attached). The EMP, PWP and background information have been provide to the land owners and affected parties. Participants were also given an opportunity to provide and share their knowledge on the general environmental information of the proposed area.

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

2.1 Description of the proposed prospecting or mining operation.

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

Prospecting will only consist of loading and hauling of sand. No processing will take place on site. No infrastructure including roads will be constructed so there will be no work done during the construction phase except for domestic and limited industrial waste management facilities.

Access Roads

Note that only existing access roads would be used during the sand sampling. Existing access roads will be utilised, therefore no new haul roads will be constructed in order to access the prospecting area.



Photo 4: showing access roads on site

Topsoil storage

In all areas where physical disturbances will occur, topsoil will be stripped and stored separately from the sand to be sampled on the high ground side of the trenches away from flood plain. The topsoil stockpile will be less than 1.5m in height to avoid erosion. The stockpiles storage will cover the area of 20mx10mx1.5m.

Mobile Chemical toilets

There will be one mobile chemical toilet measuring 2mx2m to the height of 3m provided on sites. The toilets will be serviced and emptied by qualified contractor on regular basis. They will also be monitored at all times for hygiene purposes.

Storage Site

Hydrocarbon such as diesel or oil will be stored in the mobile tanks which will be brought to the site on a daily basis. Drip trays will be placed under mobile tank in order to avoid accidental spillages and precautions will be taken on the refuelling point. Lockable storage containers (10mx5m) will be used to store any chemicals that will be utilized during the prospecting period.

Fence

Fence will only be erected around the foot print of the proposed prospecting areas and around the processing area.

Equipment to be used during the prospecting activities includes:

- 1 X Front-End-Loaders
- 1 X Dump Truck
- 1X TLB
- Vehicle and diesel trailers

2.1.2 Plan of the main prospecting activities with dimensions

Main prospecting activities will be conducted in such a way that minimal environmental damage is ensured. This will be achieved by practising concurrent rehabilitation throughout the prospecting activities and also by managing the environmental impacts.

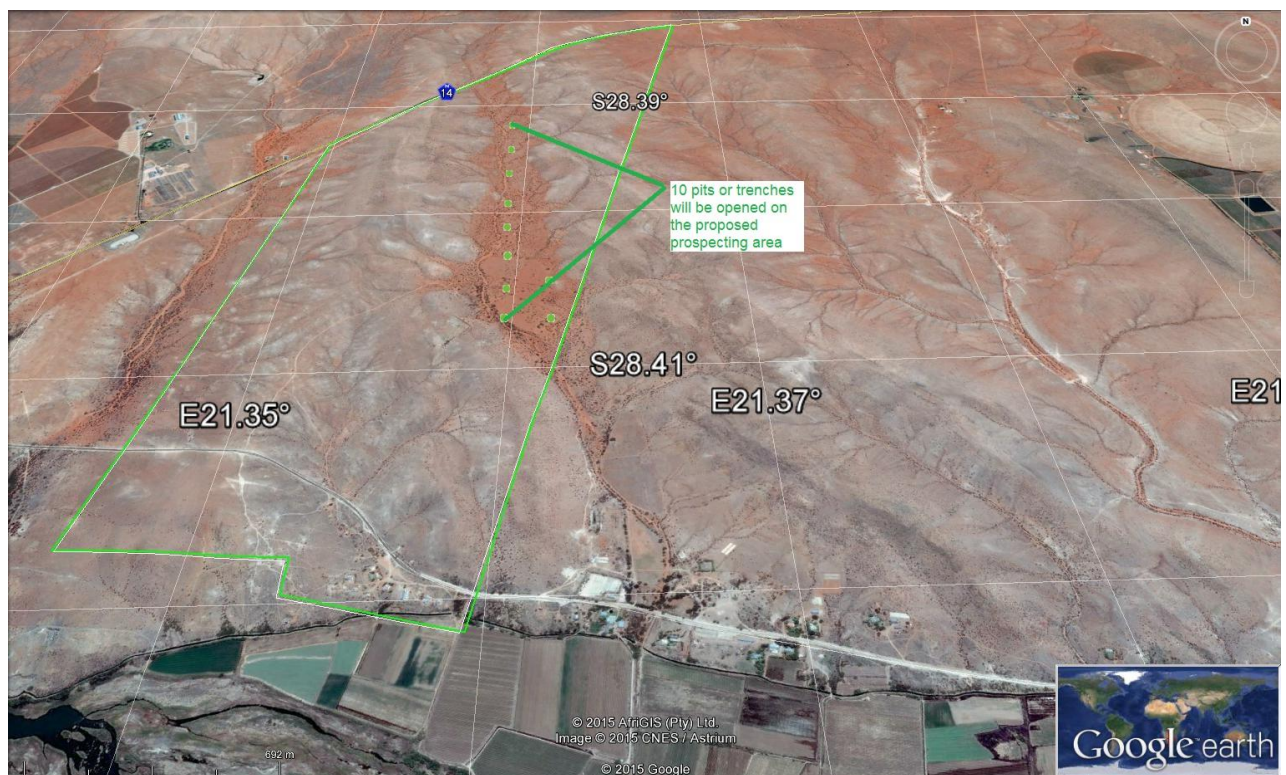


Image 2: Plan of the main prospecting activities

The planned prospecting operation will create the following:

Pitting /trenching method

Trenches: The prospecting pitting programme will consist of approximately 10 pits/trenches to the area marked green (image 2). The pits will be developed in an area of very shallow overburden (approximately 0 -0.2m deep) above the 0.3m-1.5m thick of sands. The pits will be developed to 10-15m long x 10-15m wide. Assuming an average overburden depth of 0.2m, then each pit will require the handling of some 200 m³ overburden and topsoil.

2.1.3 Description of construction, operational, and decommissioning phases.

Construction phase:

The prospecting site will be established during this phase whereby the dedicated areas will be demarcated. Equipment and mobile structures will be transported to the site. This phase will take a period of one month. It is during this period where topsoil will be stripped from all areas that are going to be disturbed. The area to be first prospected will be fenced off. During this phase consultation is required with the surface owners on the routes to be used by prospecting vehicles and machinery.

Operational phase:

The operational phase will consist of non-invasive and invasive prospection. The below table shows the activities to be conducted and their time frame:

Phase	Activity (what are the activities that are planned to achieve optimal prospecting)	Skill(s) required (refers to the competent personnel that will be employed to achieve the required results)	Timeframe (in months) for the activity)	Outcome (What is the expected deliverable, e.g. Geological report, analytical results, feasibility study, etc.)	Timeframe for outcome (deadline for the expected outcome to be delivered)	What technical expert will sign off on the outcome? (e.g. geologist, mining engineer, surveyor, economist, etc)
1	Non-invasive Prospecting Review of surroundings past exploration results. Imagery Analysis and geological mapping	Geologist Geologist	Month 1-2 Month 3-7	Maps, plan & report on previous work Plan & Report	Month 2 Month 7	Geologist Geologist
2	Invasive Prospecting pitting/trenches	Geologist , Operations Manager and Labor	Month 8- 19	Trench logs, Map & Report	Month 19	Geologist
3	Invasive Prospecting Bulk Sampling (Sand)	Operations Manager	Month 19- 33	Plan and reports	Month 33	Geologist
4	Non-invasive Prospecting Analytical Desktop Study	Geologist	Month 34- 36	Maps, Resource statement and final report Feasibility study and decision making if results	Month 36	Manager/Geologist

				prove negative then decommissioning and closure if results prove positive then continue with bulk sampling		
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Non-Invasive Prospecting

PHASE 1

Literature Review

The non-invasive prospecting work will take approximately seven months and will compile the relevant data and observations from the recent and historical survey work. The deliverables will be a detailed report and maps highlighting areas with the best potential to contain the Sands prospecting.

Imagery Analysis & Geological Mapping

High-resolution satellite images will be studied and used to geologically map the application area. Contacts between various lithologies' will be mapped and specific attention will be given to delineate and define areas underlain by sand.

PHASE 2

Invasive Prospecting Trenches

The prospecting pitting programme will consist of approximately 10 pits/trenches to the area marked blue (Refer image 2). The pits will be developed in an area of very shallow overburden (approximately 0 -0.2m deep) above the 0.3m-1.5m thick of sands. The pits will be developed to 10-15m long x 10-15m wide. Assuming an average overburden depth of 0.2m, then each pit will require the handling of some 200 m³ overburden and topsoil.

PHASE 3

Bulk Sampling

A bulk sample will consist of a box cut excavated perpendicularly to the paleo channel. The footprint of the proposed trenches will be 10 X 10 meters (0.01Ha). There will only ever be 10trenches open at any given time and it is anticipated that no more than 2 such trenches will be developed at the same time without proper rehabilitation.

Bulk sampling will consist of the following procedures:

- Remove topsoil to either side of the eventual box cut lateral extension. Note that the upper 0.2m will be treated as topsoil as it contains a seed bank. Say $10\text{m}^2 \times 0.2\text{m} = 20\text{m}^3 \times 10 \text{ trenches} = 200 \text{ m}^3$.
- Extract Sand material to a depth of 1.5m. Say $10 \times 10 \times 1.3 = 130 \text{ m}^3 \times 10 \text{ trenches} = 1300\text{m}^3$ of Sand.
- From 10 pits 1300m^3 of Sand will be extracted.

Non-invasive prospecting: (Analytical Desktop Study)

The project geologist monitors the programme, consolidates and processes the data and amends the programme depending on the results. This is a continuous process throughout the programme and continues even when no prospecting is done on the ground.

Each physical phase of prospecting is followed by desktop studies involving interpretation and modelling of all data gathered. These studies will determine the manner in which the work programme is to proceed in terms of activity, quantity, resources, expenditure and duration.

Decommissioning phase:

The decommissioning phase will only commence once all prospected areas are rehabilitated. Industrial and domestic waste will be removed from the site to the registered licenced facility. During this phase all prospecting related infrastructure and equipment will be removed from the site and final rehabilitation of the disturbed areas will take place. All compacted area will be ripped to a depth of 300mm in order to allow vegetation to grow. Monitoring will take place to see if re-growth is taking place naturally. If re-vegetation does not take place naturally therefore seeding of the prospecting area with surrounding indigenous species will be considered. No excavation or waste deposits will be left un-rehabilitated. The land has very low land capability and is unsuitable for agricultural use.

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

According to Listing Notice 1: List of activities and competent authorities identified in terms of Sections 24(2) and 24D of the National Environmental Management Act, 1998 (Act no. 107 of 1998) of Government Gazette no 33306, No. R. 544 the following activity is applicable according to NEMA EIA regulations: The proposed prospecting activities triggers (Activity 19- Any activity requiring a prospecting right or renewal thereof in terms of Section 16 and 18 respectively of the Mineral and Petroleum Resources Development Act, 2002 (Act no 28 of 2002).

2.2 Identification of potential impacts (Refer to the guideline)

2.2.1. Potential impacts per activity and listed activities.

<u>Phases</u>	<u>Prospecting Activity</u>	<u>Potential impact</u>	<u>Description of the impact before mitigation.</u>
Construction phase	Site establishment	Surface disturbances	Surface will be disturbed as a result of topsoil that will be stripped during this phase. Ground will also be compacted by the movement of vehicles within the prospecting area.
		Air pollution	Movement of trackless mobile machinery e.g. front-end loader and a truck to the site. Dust will be generated during the stripping of soil.
		Noise pollution	Noise will be generated from the prospecting equipment.
		Soil pollution	Contamination of soil may occur from accidental spillages from the machineries brought to the site.
		Vegetation loss	Some of the vegetation will be disturbed on areas that topsoil will be removed. In all areas where site is going to be established vegetation will be disturbed.
		Fauna disturbances	Animals within the prospecting area will move to other location because of the disturbances if precaution is not followed.
		Loss of authentic value	The natural environment of the area will be disturbed.
		Topography	The natural slope of the area will be disturbed.
Operational phase	Trenching/pitting	Surface disturbance	The ground will be compacted and will also be excavated.
		Air pollution	Dust will be generated from movement of the prospecting equipment when the sand is being extracted
		Noise pollution	Noise impact will be created during the prospecting period
		Soil pollution	Contamination of soil may occur from accidental spillages from the machineries.
		Water pollution	If accidental hydrocarbons spills are not removed with immediate effect after they spill, this may lead to surface and ground water contamination.
		Vegetation loss	Some of the vegetation will be disturbed on these

			areas
		Waste generation	Littering of domestic and industrial waste during exploration.
		Fauna disturbances	Animals within the prospecting area will move to other location.
		Loss of authentic value	The machinery will be visible to the surrounding community.
		Topography	The natural slope of the area will be disturbed as a result of trenches, stock piles and overburden during the prospecting period.
		Health risk to workers or general public	This can happen if worker or general public inhale excessive dust or drink contaminated water as a result of the prospecting activities. This can also occur if the Mine Health and Safety Act is not implemented
		Socio-economic (positive impact)	These can be seen directly through increased employment, training, salaries and wages and government revenues (royalties and taxes). It can also provide economic stimulus to the local and broader economy through secondary industries such as retail and service sectors that supply the mine and the mine's employees.
		Conflict of land use	Prospecting activities will have conflict with the current land-use which is farming/ grazing.
		Heritage sites	Heritage feature may be disturbed during the trenching of the area.
Decommissioning Phase	Positive impacts	Surface disturbance	All surface disturbed will be rehabilitated to its original state. All compacted ground will be ripped to a depth of 300mm.
		Soil pollution	Contamination of soil from accidental seepage will be cleaned from the site.
		Vegetation loss	The area will be ripped to allow vegetation growth.
		Fauna disturbances	If re-vegetation occur the area will attract animals
		Topography	The pit and sand extraction operations will be in-evident from vantage points. Gradual changes over time, but these changes will be gradual over years and should also be in evident.

2.2.2. Potential cumulative impacts.

Cumulative impacts	Description
Air pollution	Dust will be generated from movement of the prospecting equipment and when the sand is being extracted will be cumulative since Carel Daniel Dippenaar will be using existing access roads to access the proposed prospecting sites.
Noise pollution	Noise created by adjacent activities and the proposed prospecting activities. This impact will be cumulative.
Water pollution	If accidental hydrocarbons spills are not removed with immediate effect after they spill, this may lead to surface and ground water contamination.

2.2.3. Potential impact on heritage resources

There are no known areas with a heritage resource on the proposed area under application. South African Heritage Resource Agency (SAHRA) will be consulted in order to find out if it is necessary to conduct Phase 1 of Heritage Impact assessment. If there is a need to conduct the above mentioned study, Phase 1 of Heritage Impact Assessment will be conducted before prospecting activities take place to determine if there are historical site within the prospecting area that need protection. Therefore, there won't be any impact on the heritage sites since the location of the heritage site will be avoided and no prospecting will be done 100m from any heritage resources. If any heritage resource is identified, that area will be fenced-off.

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

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

Conflict of land use:

The current land use is livestock farming/grazing land and after rehabilitation of all disturbed area as a result of prospecting activities, the area will be returned to its original state and can again be used as a grazing land. During the prospecting period the area which is going to be prospected will be fenced off in order to avoid any access of game animals into the excavations to be prospected. No poaching of game animals will be allowed.

The farm owners and the adjacent farm owner may be impacted on by the visual, noise and dust generated from the proposed prospecting of sand. Therefore, looking at the extent of the proposed prospecting activities to be conducted and the proposed mitigations for managing the negative environmental impacts, most of the impact will be rated as low.

Noise generation is likely to be one of the biggest impacts at the site during the prospecting operation. All efforts will be made to reduce noise levels via the use of efficient, well maintained equipment and the location of any noise generating equipment in noise checked areas or at distant locations from sensitive receptors.

Socio-economic (Positive impact)

Some of the workers will be employed from the community and the community will be given first preference with regard to employment criteria. Training will be given to the workers meaning that some of the community members will gain skills from the proposed prospecting activities.

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

The list of the potential impacts has been compiled with the participation of the landowner and interested and affected parties (refer to the attached proof of public participation). However consultation will be an on-going process throughout the prospecting period.

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

Due to the limited scope and scale of the proposed prospecting operation no specialist studies were deemed necessary or undertaken. Therefore no specialist report was appended. South African Heritage Resource Agency (SAHRA) will be consulted in order to find out if it is necessary to conduct Phase 1 of Heritage Impact assessment. If there is a need to conduct the above mentioned study, Phase 1 of Heritage Impact Assessment will be conducted before prospecting activities take place to determine if there are historical site within the prospecting area that need protection. The reports of the above mentioned studies will be submitted to DMR and SAHRA. If there is any specialist studies recommended by any of the consulted Departments, such special study will be conducted and the report will be provided.

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

3.1.1 Criteria of assigning significance to potential impacts

The assessment of the impacts has been conducted according to a synthesis of criteria required by the integrated environmental management procedure.

Nature of impact

This is an appraisal of the type of effect the activity would have on the affected environmental component. Its description should include what is being affected, and how.

Extent

The physical and spatial size of the impact. This is classified as follows:

Local

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

Site

The impact could affect the whole, or a measurable portion of the property.

Regional

The impact could affect the area including the neighbouring farms, transport routes and the adjoining towns.

Cumulative

The impact could have a cumulative effect with the surrounding land uses.

Duration

The lifetime of the impact which is measured in the context of the lifetime of the proposed phase (i.e. construction or operation)?

Short term

The impact will either disappear with mitigation or will be mitigated through natural process in a short time period.

Medium term

The impact will last up to the end of the prospecting period, where after it will be entirely negated.

Long term

The impact will continue or last for the entire operational life of the mine, but will be mitigated by direct human action or by natural processes thereafter.

Permanent

The only class of impact, which will be non-transitory. Mitigation either by man or natural process will not occur in such a way or in such a time span that the impact can be considered transient.

Intensity

This describes how destructive, or benign, the impact is. Does it destroy the impacted environment, alter its functioning, or slightly alter it. These are rated as:

Low

This alters the affected environment in such a way that the natural processes or functions are not affected.

Medium

The affected environment is altered, but function and process continue, although in a modified way.

High

Function or process of the affected environment is disturbed to the extent where it temporarily or permanently ceases. This will be a relative evaluation within the context of all the activities and the other impacts within the framework of the project.

Probability

This describes the likelihood of the impacts actually occurring. The impact may occur for any length of time during the life cycle of the activity, and not at any given time. The classes are rated as follows:

Improbable

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

Probable

There is a possibility that the impact will occur to the extent that provisions must be made therefore.

Highly probable

It is most likely that the impacts will occur at some or other stage of the development.

Definite

The impact will take place regardless of any preventative plans, and mitigation measures or contingency plans will have to be implemented to contain the impact.

Determination of significance

Significance is determined through a synthesis of impact characteristics. Significance is an indication of the importance of the impact in terms of both physical extent and time scale, and therefore indicates the level of mitigation required. The classes are rated as follows:

No significance

The impact is not likely to be substantial and does not require any mitigatory action.

Low

The impact is of little importance, but may require limited mitigation.

Medium

The impact is of importance and therefore considered to have a negative impact. Mitigation is required to reduce the negative impacts to acceptable levels.

High

The impact is of great importance. Failure to mitigate, with the objective to reduce the impact to acceptable levels, could render the entire development option or entire project proposal unacceptable. Mitigation is therefore essential.

3.1.2. Potential impact of each main activity in each phase, and corresponding significance assessment without mitigation:

PHASES	PROSPECTING ACTIVITY	POTENTIAL IMPACT	EXTENT	DURATION	INTENSITY	PROBABILITY	SIGNIFICANCE
Construction phase	Site establishment Activities	Surface disturbance	Site	Medium	Medium	Definite	Medium
		Air pollution	Cumulative	Short term	Medium	Definite	Medium
		Noise pollution	Cumulative	Short term	Medium	Definite	Medium
		Soil pollution	Local	Medium	Medium	Definite	Medium
		Surface and Ground Water Pollution	Local	Medium	Medium	Probable	Medium
		Vegetation loss	Site	Long-term	Medium	Definite	Medium
		Fauna disturbances	Site	Long-term	Medium	Definite	Medium

		Loss of authentic value	Site	Long-term	Medium	Definite	Medium	
		Waste generation	Local	Short-term	Medium	Probable	Medium	
		Topography	Regional	Medium	Medium	Definite	Medium	
	Trenching Activities		Surface disturbance	Site	Medium	Medium	Definite	High
			Air pollution	Cumulative	Long-term	Medium	Definite	Medium
			Noise pollution	cumulative	Medium	Medium	Definite	Medium
			Soil pollution	Local	Medium	Medium	Definite	Medium
			Surface and Ground Water Pollution	Site	Medium	Medium	Probable	Medium
			Vegetation loss	Site	Long-term	Medium	Definite	Medium
			Fauna disturbances	Site	Long-term	Medium	Definite	High
			Loss of authentic value	Regional	Long-term	Medium	Definite	Medium
			Waste generation	Local	Short-term	Medium	Probable	Medium
			Topography	Regional	Medium	Medium	Definite	Medium
			Health risk to workers or general public	Regional	Long-term	Medium	Probable	Medium
			Heritage sites	Local	Short-term	Medium	Probable	Medium
Land use conflict	Regional	Long-term	Medium	Definite	High			
Decommissioning phase	Final rehabilitation (removal of equipment and ripping the roads)	Noise pollution	local	Short term	Low	Probable	low	
		Air pollution	local	Short term	Low	probable	Low	
		Soil pollution	Site	Medium	Low	probable	Medium	

3.1.3. Assessment of potential cumulative impacts.

IMPACT	EXTENT	DURATION	INTENSITY	PROBABILITY	SIGNIFICANCE
Air pollution	cumulative	Long-term	Medium	Definite	Medium
Water pollution	Regional	Medium	Medium	Probable	Medium
Noise pollution	Regional	Medium	Medium	Definite	Medium

3.2. Proposed mitigation measures to minimise adverse impacts.

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

Although there are significant activities that pose a greater risk to the significance of impacts on the environment the entire invasive operation will be monitored and mitigation measures implemented to prevent any environmental degradation.

The above mentioned significant activities include:

- Trenching/Pitting Process
- Hauling Process

3.2.2. Concomitant list of appropriate technical or management options

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

Air quality:

Air quality will be minimised by means of the following:

- Dust suppressions by means of water spraying will be implemented on haul roads and unpaved areas when there is a need.
- Avoidance of unnecessary removal of vegetation
- Vehicles will be properly serviced in order for them to minimise emission of CO²
- Re-vegetation of rehabilitated areas not occupied by plant infrastructure to take place as soon as possible.
- Keeping material in the aqueous phase
- All workers will have access to respiratory protection equipment
- Stock piles will always damped
- Speed limit of 40km/hour will be maintained at all times during the lifespan of the prospecting activities.
- Any complain with regards to the emission of dust from the proposed prospecting activities from interested and affected parties will be considered at all times and correct mitigation measures will be implemented.

Flora:

Vegetation will be protected by avoiding unnecessary clearance and by using existing roads at all times. All vehicles will be monitored so that they move on the existing tracks at all times. All prospected areas will be rehabilitated and re-vegetation will take place naturally. If re-vegetation do not take place naturally therefore seeding of the prospected area with surrounding indigenous species will be considered. Rehabilitated area will be monitored to avoid other disturbances on rehabilitated area until vegetation is fully grown. Open fire that will end up destroying the vegetation will be avoided at all times. If invader species are encountered they will be uprooted, felled or cut off and can be destroyed completely. The plants will be treated with an herbicide that is registered for use in connection therewith and in accordance with the directions for the use of such an herbicide." Valid permits from Northern Cape Nature Conservation will be obtained before any protected plant species are removed.

Fauna:

- Prospecting areas will be fenced off in order to restrict access of any animal or human.
- Speed limits of vehicles inside the application area will be strictly controlled to avoid road kills.
- No poaching will be allowed on site and the Department of Nature Conservation will be contacted if any endangered species are encountered.
- Any form of snares or traps on the site will be removed and farm and game animals will be relocated if necessary.
- Fire will not be allowed on site and workers will bring their own cooked food.
- Any area that is rehabilitated or decommissioned will be seeded with a seed mixture reflecting the natural vegetation as is currently found and which may attract back animal species.

Noise:

The proposed sand prospecting project consists of three major activities, namely, Sand Excavation, Sand Loading and Sand Transportation. Noise will be generated by movement of vehicles used for transportation and machines used for excavation. Noise environment in this project will be affected only by the equipment at the site and vehicular transportation. Since operation is done semi-mechanically, slight increase in noise levels can be expected. Noise pollution can cause significant impact on the environment and subsequently on the humans. Baseline Noise levels are observed to be well within the limits in the monitored villages.

However, after applying the mitigation measures noise pollution will be reduced further. Since the noise generating is only through mechanical equipment and movement of vehicles, strict compliance to periodical maintenance the vehicle conditions will be insisted. No working will be carried out in the night hours.

Soil pollution and surface & ground water contamination:

Topsoil will be stripped and stored separate from sand and will not be used for building or maintenance of access roads. The stored topsoil will be adequately protected from being blown away or being eroded. The topsoil will be used during the rehabilitation of any impacted areas, after sloping in order to re-establish the same land capability. If any soil is contaminated during the life of the prospecting activities, it will be immediately scooped and stored in the enclosed containers or plastic to be removed with the industrial waste to a recognized facility or company for further treatment. Small spills will be treated on site using bio-sorb or oil cap.

Mechanical equipment:

All mechanical equipment will be in good working order/condition and vehicles will adhere to the relevant noise requirements of the Road Traffic Act. All vehicles in operation will be equipped with a silencer on their exhaust system. Safety measures, which generate noise such as reverse gear alarms on large vehicles, will be appropriately calibrated/adjusted. Hydrocarbon such as diesel or oil will be stored in the mobile tank which will be brought on site on a daily basis. Drip trays will be placed under the mobile tanker and vehicles/equipment in order to avoid accidental spills.

Ground water mitigation:

During rehabilitation, one of the primary considerations is the isolation of material from the environment. This includes measures to reduce the potential long-term impact on groundwater, erosion controls to prevent surface water impacts and cover sequences to prevent biological penetration of tailings structures. Monitoring for this pathway will generally involve environmental sampling determination. However, care is required because of natural variability. In a number of cases the operational component may be far smaller than the natural background levels, the operational component will be determined and taken into account.

Visual impact:

Concurrent rehabilitation will be implemented throughout the prospecting operation, meaning that each pit will be rehabilitated before moving to the next area to be excavated. One trench will be opened and rehabilitated at a time before moving to the other side. The area will be rehabilitated to its original state meaning that no visual impact will be left on site. All equipment will be removed from site during the decommissioning phase of the prospecting operation.

Conflict of land use

The current land use is livestock farming/grazing land and after rehabilitation of all disturbed area as a result of prospecting activities, the area will be returned to its original state and can again be used as a grazing land. During the prospecting period all live stock or any game animal will be relocated if it is necessary and the prospecting areas will be fenced-off.

Surface disturbance and topography:

Concurrent rehabilitation will be implemented throughout the prospecting operation, meaning that each borehole and a trench will be rehabilitated before moving to the next area to be prospected. All surface disturbed will be rehabilitated at this stage. All compacted ground will be ripped to a depth of 300mm. All rehabilitated areas will be monitored and if vegetation is not growing naturally seeding of the areas will be considered.

Waste generation:

Wastes will be stored temporally within marked containers where they will be collected every week and deposited to a licenced facility. Industrial waste will be collected by contractors to the registered facility when there is a need. Employees must be instructed on how to tell the difference between hazardous waste and general waste. Littering will not be allowed within or outside the prospecting boundaries.

Impacts on the heritage sites:

There won't be any impact on the heritage sites since the location of the heritage site will be avoided and no prospecting will be done 100m from any heritage resources. If any heritage resource is identified, that area will be fenced-off. South African Heritage Resource Agency (SAHRA) will be consulted in order to find out if it is necessary to conduct the above mention study. Full Heritage Impact Assessment, inclusive of an Archaeological and Paleontological Impact Assessment, will be conducted prior to any bulk sampling related activities occurring within the proposed application area.

3.2.3. Review the significance of the identified impacts

(After bringing the proposed mitigation measures into consideration).

After bringing the proposed mitigation measures into consideration all the impact resulting from the prospecting operation will be medium to low significance. The company will always avoid the impacts to occur within the prospecting areas as a result of their prospecting activities and in areas where they cannot be avoided they will be minimised. Monitoring will be conducted in a daily basis in all areas where possible impacts may occur.

Below is the table of overall significant impacts assessment after mitigation measures being implemented successfully:

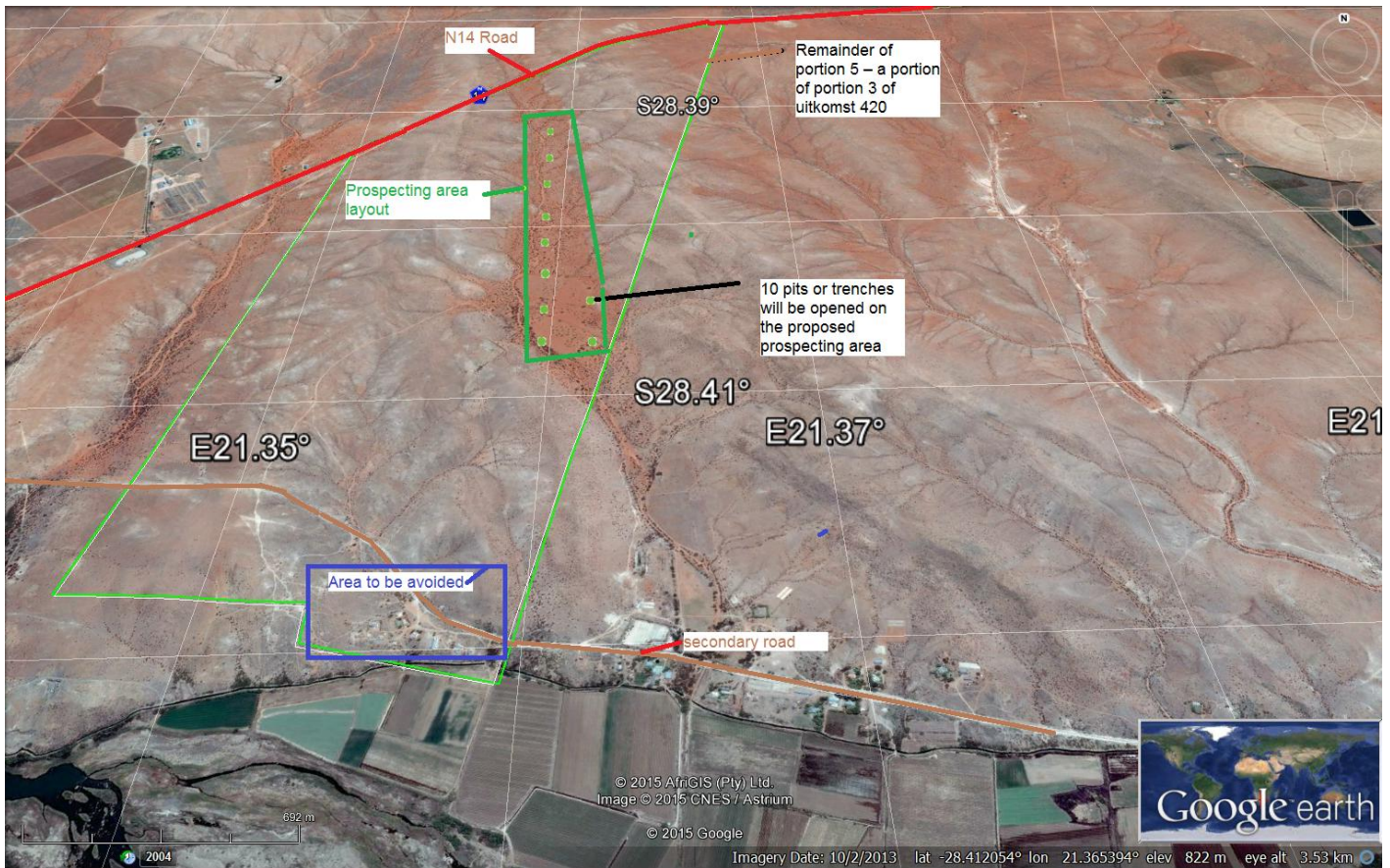
IMPACT	EXTENT	DURATION	INTENSITY	PROBABILITY	SIGNIFICANCE
Surface disturbance	Local	Short term	Low	Highly probable	Medium
Air pollution	Regional	Medium	Low	Highly probable	Low
Noise pollution	Regional	Medium	Low	Probable	Low

Soil pollution	Local	Medium	Low	Probable	Low
Surface and Ground Water Pollution	Regional	Short term	Low	Improbable	Low
Vegetation loss	Site	Medium	Low	Improbable	Medium
Fauna disturbances	Local	Medium	Low	Probable	Low
Loss of authentic Value	Site	Medium	Low	Probable	Low
Waste generation	Local	Short-term	Low	Probable	Low
Topography	Site	Short term	Low	Probable	Low
Health risk to workers or general public	Site	Medium	Low	Probable	Low
Heritage sites	Local	Short-term	Low	Improbable	Low
Land use conflict	Site	medium	Low	Probable	Medium
Socio-economic (positive impact)	Cumulative	Long-term	Low	Definite	Low

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

- 4.1. Plans for quantum calculation purposes.** (Show the location and aerial extent of the aforesaid main mining actions, activities, or processes, for each of the construction operational and closure phases of the operation).

Main prospecting areas



Pitting /trenching method Trenches: The footprint of the proposed trenches will be 10 X 10 meters (0.015Ha). The total footprint of all trenches to be excavated will be 1500m³, or 0.18 ha. Note that the upper 0.2m will be treated as topsoil as it contains a seed bank. Say 10m² X 0.2m = 20m³ x 10 trenches = 200 m³.

Extract Sand material to a depth of 1.5m. Say 10x10x1.3= 130 m³ x 10 trenches= 1300m³ of Sand.

From 10 pits 1300m³ of Sand will be extracted= 0.015ha

1. **Trenches**= 0.015Ha = 10m x 15m = 150m²x1.5=225 m³
2. **Topsoil storage** = 0.01 ha= 10mx10m=100m² x1.5m= 150m³
3. **Fence**=300m
4. **Mobile Chemical toilets:** There will be one mobile chemical toilet measuring 2mx2m to the height of 3m =0.0004ha.
5. **Storage Site**-A lockable storage container= 10mx5mx=50m²

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

- The closure objectives are to create a post-mining state as close as possible to the pre-prospecting state of the environment. This can be accomplished by the correctness of rehabilitation and proper after-care activities.

- Unnecessary roads will be cleared or foreign materials and ripped to loosen the ground for vegetation re-growth. After final rehabilitation is completed a 1 to 2 year after-care plan is initiated to ensure a satisfying vegetation re-growth rate and the successful establishment of indigenous vegetation.
- **Free draining landform:** The backfilling of the site is important for both safety reasons and also to allow vegetation to re-establish itself in the area. The aim must be to create a free draining landform that is not susceptible to erosion.
- **Self-sustaining ecosystem:** The main goal and objective of rehabilitation is to rehabilitate the area disturbed to the degree that it no longer requires much management intervention. It is important to prevent residual impacts such erosion by water and wind. This is best achieved by re-establishing vegetation communities. Re-vegetation will occur naturally overtime as the area has a small area of disturbance and will be colonised by surrounding vegetation. However, monitoring the area to ensure weed species do not establish recolonize is important. Due to prevailing climate it is not expect that weeds will colonise quickly and should therefore only require limited monitoring intervals. Every four (4) months for two years should be sufficient to adequately monitor the rehabilitation of the area.

The closure objectives are also include the following:

- To prevent the sterilization of any ore reserves.
- To prevent the establishment of any permanent structures or features.
- To manage and limit any impact to the surface and groundwater aquifers in such a way that an acceptable water quality and yield can still be obtained, when a closure certificate is issued.
- The mine also has the objective to establish a stable and self-sustainable vegetation cover.
- To limit and rehabilitate any erosion features and prevent any permanent impact to the soil capability of the mine.
- To limit and manage the visual impact of the mine.
- To safeguard the safety and health of humans and animals on the mine.
- The last closure objective is that the mine is closed efficiently, cost effectively and in accordance with government policy.

4.3. Quantum calculations. (Provide a calculation of the quantum of the financial provision required to manage and rehabilitate the environment, in accordance with the guideline prescribed in terms of regulation 54 (1) in respect of each of the phases referred to).

CALCULATION OF THE QUANTUM							
Applicant:		CAREL DANIEL DIPPENAAR			Ref No.:		NC 30/5/1/2/2/11460 PR
Evaluators:		Ndi Geological Consulting Service			Date:		Jan-15
No.	Description	Unit	A Quantity	B Master Rate	C Multiplication factor	D Weighting factor 1	E=A*B*C*D Amount (Rands)
1	Dismantling of processing plant and related structures (including overland conveyors and powerlines)	m3	0	12.21	1	1	0
2 (A)	Demolition of steel buildings and structures	m2	0	170.13	1	1	0
2(B)	Demolition of reinforced concrete buildings and structures	m2	0	250.72	1	1	0
3	Rehabilitation of access roads	m2	0	30.44	1	1	0
4 (A)	Demolition and rehabilitation of electrified railway lines	m	0	295.49	1	1	0
4 (A)	Demolition and rehabilitation of non-electrified railway lines	m	0	161.18	1	1	0
5	Demolition of housing and/or administration facilities	m2	0	340.26	1	1	0
6	Opencast rehabilitation including final voids and ramps	ha	0.015	173174.97	1	1	2597.6246
7	Sealing of shafts adits and inclines	m3	0	91.33	1	1	0
8 (A)	Rehabilitation of overburden and spoils	ha	0	118912.29	1	1	0
8 (B)	Rehabilitation of processing waste deposits and evaporation ponds (non-polluting potential)	ha	0	148103.1	1	1	0
8 (C)	Rehabilitation of processing waste deposits and evaporation ponds (polluting potential)	ha	0	430161.62	1	1	0
9	Rehabilitation of subsided areas	ha	0.1	99571.13	1	1	9957.113
10	General surface rehabilitation	ha	0	94198.59	1	1	0
11	River diversions	ha	0	94198.59	1	1	0
12	Fencing	m	300	107.45	1	1	32235
13	Water management	ha	0	35816.95	1	1	0
14	2 to 3 years of maintenance and aftercare	ha	0.1	12535.93	1	1	1253.593
15 (A)	Specialist study	Sum	0			1	0
15 (B)	Specialist study	Sum				1	0
Sub Total 1							46043.331
1	Preliminary and General		5525.199666		weighting factor 2 1		5525.1997
2	Contingencies		4604.333055				4604.3331
Subtotal 2							56172.86
VAT (14%)							7864.20
Grand Total							64037

4.4. Undertaking to provide financial provision

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

The financial provision to the amount of R64, 037.00 will be provided to the Department by means of bank guarantee or cash deposit or any approved method.

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

5.1. List of identified impacts requiring monitoring programmes.

All prospecting actions, activities and processes should be monitored against the mitigation measures as stipulated above in Section 3.2.2 of this document on a regular basis.

- Dust
- Water

- Noise
- Interference with existing land uses;
- vegetation
- Displacement, injury and death of local fauna;
- Soil erosion;
- Soil contamination and pollution;
- Waste generation and disposal.

5.2. Functional requirements for monitoring programmes.

1. Air quality (Dust) the site environmental personnel will be responsible for managing all environmental impact as results of the prospecting activities. he/she will make sure that the following measures are implemented:
 - a) Roads are sprayed by water when there is a need.
 - b) This impact will be monitored throughout the day and where it is encountered it will be suppressed by means of spraying water.
 - c) Atmospheric pollution prevention Act will be followed at all times.
 - d) Dust fall-out buckets are properly located and this must also be monitored throughout the day.
 - e) Monitoring of dust exposure will includes use of active air sampling, passive dust collectors.
 - f) The National Environment Management: Air Quality Act, 2004 (Act No.39 of 2004) (All Sections of this Act, except Section 21,22,36 to 49, 51 (1)(e), 51(1)(f), 51(3), 60 and 61 have taken effect on 11 September 2005); will be adhered to at all times.
 - g) The Prospecting Health and Safety Act, 1996 (Act No. 29 of 1996) as amended and other legislation or regulations will also be adhered to at all times to avoid air pollution.

2. Soil and Water Pollution- the vehicles and equipment will be monitored before the commencement of any daily prospecting activity to avoid any soil contamination which may lead to ground water contamination. Surface water will be protected by adhering to The National Water Act, 1998 (Act No. 36 of 1998).

3. Noise- Bureau of Standards Code of Practice for the Measurement and Assessment of Occupational Noise for Hearing Conservation Purposes, SABS 083 as amended, in any place at or in any mine or works where persons may travel or work, exceeds 82 dB (A), the site manager will take the necessary steps to reduce the noise below this level. noise monitor machine will be used to find out if the noise generated from the prospecting activities is exceeding the standard. The following will be adhered to:
 - a) The Occupational Health and Safety Act, 1993 (Act No. 85 of 1993) – Section 7.

- b) The Mine Health and Safety Act, 1996 (Act No. 39 of 1996) as amended.
 - c) The Road Traffic Act, 1997 (Act No. 93 of 1997);
4. Interference with existing land uses:
 - Inform landowners in writing of intent and comply with reasonable request to reduce the impact.
 - Negotiate compensation for interference with landowner/lawful occupier
 - Visual confirmation of rehabilitation
 - Approval of rehabilitation by landowner/lawful occupier
 5. Vegetation:
 - Site clearance to be kept to a minimum and avoid unnecessary removal of vegetation.
 - Visual inspection to make sure that vehicle utilise the existing tracks as possible.
 - No removal, disturbance or pruning of large to medium shrubs or tress
 - Visual marking of sensitive species
 6. Displacement, injury and death of local fauna:
 - Site clearance to be kept to a minimum
 - Visual marking of sensitive species and areas
 - Visual inspection of fencing and/or other safety measures
 - On site log to be kept
 7. Soil erosion:
 - Visual confirmation of soil erosion controls, soil profile disturbance and topsoil management where required.
 8. Waste generation and disposal:
 - All waste such as oil spills must be stored separately and disposed of at a registered facility
 - Proof of disposal must be kept on site.
 - EMP checklist will be compiled and utilised during the prospecting period

5.3 Roles and responsibilities for the execution of monitoring programmes.

The environmental officer, geologist will be responsible for all monitoring programmes. The site manager will be responsible overall monitoring programs.

5.4 Committed time frames for monitoring and reporting.

All the impacts will be monitored through-out the prospecting period on the daily basis and the Monitoring report will be submitted to the Department of Mineral Resources on the annual basis.

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

6.1. Rehabilitation plan

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

The goal of rehabilitation with respect to the area where trenching took place is to leave the area to similar to its previous state prior prospecting activity. All other equipment's and material used during operation will be removed from the area, including other waste. Removal of these materials shall be done on a continuous basis and not only at the final stage of rehabilitation and closure.

- Overburden will be stored adjacent to the trenches in order to avoid any delay during rehabilitation period.
- All trenches will be rehabilitated using overburden material following their sequence and topsoil be spread over.
- The compacted ground will be ripped to a depth of 300mm.
- Mobile equipment will be removed from the site

The slope of the rehabilitated area will be flat after rehabilitation. Since the area will be seeded with surrounding plant species, this will attract back the animal life into the area. The final land use of the prospecting area will be returned back to livestock farming/ grazing land. The area can be used as an agricultural land after prospecting activities cease.

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

Closure objectives:

The closure objectives are to create a post-prospecting state as close as possible to the pre-prospecting state of the environment. This can be accomplished by the correctness of rehabilitation and proper after-care activities.

- To prevent the sterilization of any ore reserves.
- To prevent the establishment of any permanent structures or features.
- To manage and limit any impact to the surface and groundwater aquifers in such a way that an acceptable water quality and yield can still be obtained, when a closure certificate is issued.
- To safeguard the safety and health of humans and animals on the mine.
- The last closure objective is that the mine is closed efficiently, cost effectively and in accordance with government policy.

6.3. Confirmation of consultation

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

The environmental objectives in relation to closure have been consulted with landowners, interested and affected parties. A copy of the EMP has been provided to the interested and affected parties for comment.

7. REGULATION 52 (2) (g): Record of the public participation and the results thereof.**7.1. Identification of interested and affected parties.**

(Provide the information referred to in the guideline)

The following interested and affected parties were identified and public participation was undertaken by a one on one consultation. The prospecting background information Document & the Prospecting Work Programme were also attached in order to give them a summary of the prospecting activities to be conducted. Advertisement was also placed on the local newspaper **(the proof has been attached as an appendix).**

Table of the surface owners**CONSULTED PARTIES:**

- Mnr Vd Walt - Portion 4 of farm 408
- Mnr B D vd Walt- Farm Uap 418
- Eerw F.J.Jansen- Portion 3 of farm no. 420
- Municipality

Other interested and affected parties identified:

- Siyanda District Municipality
- Khara Hais Municipality.
- Northern Cape -Department of Water Affairs
- Northern Cape - Department of Environment and Nature Conservation
- Northern Cape - Department of environmental affairs
- Northern Cape - Department of Labour
- Northern Cape - Department of Rural Development and Land Reform

- Northern Cape - South African Heritage Resources Agency
- Northern Cape – Department of Mineral Resources

7.2. The details of the engagement process.

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

The prospecting background information Document & Prospecting Work Programme was also attached in order to give them a summary of the prospecting activities to be conducted. Advertisement was also placed on the local newspaper. Letters of response to their concerns were forwarded to the interested and affected parties in order to clarify they were not understanding. (Refer to the attached background information appended).

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

The below mentioned parties were consulted:

- Mnr Vd Walt - Portion 4 of farm 408
- Mnr B D vd Walt- Farm Uap 418
- Eerw F.J.Jansen- Portion 3 of farm no. 420
- Municipality

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

No views were raised with regard to the cultural environment

No objections by any I&APs was received or attended to by identified interest and affected parties. See relevant evidential supporting that one on one public participation process was done. The company is waiting for the feedback from the identified interest and affected parties.

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

No views were raised with regard to the cultural environment

No objections by any I&APs was received or attended to by identified interest and affected parties. See relevant evidential supporting that public participation process was done. The company is waiting for the feedback from the identified interest and affected parties.

7.2.5. Other concerns raised by the aforesaid parties.

No views were raised with regard to the cultural environment

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

Carel Depeenaar hereby confirms that all records of the consultations are appended.

7.2.7. Information regarding objections received.

None

7.2.8. The manner in which the issues raised were addressed.

The revised acceptance letter was sent to the surface owner who requested that the description on the acceptance letter must match with the description of the farm on the PWP. The revised letter has been handed over to the attorney's in their office.

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

8.1. Employee communication process

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

Training will be provided to all employees. Initial environmental induction and or awareness will be conducted before commencement of any daily activity to all employees.

8.2. Description of solutions to risks

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

Everyday Awareness

Littering – All workers will be educated on how important is the wild animals that can be harmed or die if they litter any garbage such as plastics for example. Littering of non-degradable wastes such as plastics, glass, rubber and tyres can also pollute our environment since they will not be decomposed. Workers will also be educated to separate their waste so that they can be recycled and reused. No glass, paper, plastics and cigarette duds are to be littered during the duration of the prospecting operations. Marked garbage containers will be installed and maintained to prevent littering by workers. Penalties will be communicated to the worker if they do not follow the protocol with regard to littering.

Open fires – Upington is an arid district with less than moderate rainfall per annum. It is however by law prohibited to start open fires. Due to the hot and dry conditions of the district is it very susceptible for runaway fires. No open fires will be tolerated during the prospecting period and as this is regarded by law as a criminal offence related penalties can be issued. The littering of self-ignitable substances or objects (e.g. matches) are also not allowed as it will always pose a danger regarding field fires, and if such happen the person responsible to the littering will be charged with arson and related penalties can be issued.

Sanitation and Personal Hygiene

Sanitation and personal hygiene is a very important subject for environmental and social health. Improper sanitation habits can lead to intestinal parasite infestations within humans and animals, endangering the overall health of the recipients. Unfortunately these infestations do not stay only within the host and will spread rapidly throughout a community or herd. Human viruses like Tubercle bacillus (TB) and Herpes simplex, both are very contagious, spread vigorously throughout a community not handling good hygiene habits/practices. Strict use and cleanliness of the toilette facilities will be enforced during the entire life of mine. Employees will further be advised and educated on the importance of consuming clean and fresh water. Several sites will be identified and water tanks will be erected for safe human water consumption.

Fauna –the three employees will be advised to stay clear from any wild animal or reptile and not to try and provoke them in any manner. They will further be educated on dangerous and poisonous reptiles and the actions to be taken when such reptiles are encountered.

Flora- No indigenous shrubs of trees will be unnecessarily uprooted and utilized for firewood, the employees will rather be advised to utilize pioneer species and be educated on which plant species are indigenous, endangered or pioneer. If any pioneer species are observed the reporting thereof to the rehabilitation site manager will be highly recommended. Penalties will be given to individuals that damage any endangered species e.g. cutting branches/bark from a Camel/Grey Camel tree.

Work Related Awareness

- When handling chemicals make sure of non-spillage procedures are followed
- Scrap must be dispose of in the most appropriate manner
- Plastics and domestic wastes removed from the vehicles need to be discarded in the appropriate manner.
- Daily checking or oil/diesel before vehicle is operated.

- Drip pans must be installed under all stationary vehicles and equipment.
- Strict adherence to the prospecting roads and no off-road driving to prevent trampling to the vegetation.
- Driving speed must be complied with. Beware of animals, workers and other vehicles.
- During fencing/rehabilitation common fence wires may not be left scattered as these rust over time – any cuts to animals and humans (sepsis and tetanus risk) can lead to suffering or great discomfort.
- No metals may be left scattered as it pose the same thread as described directly above.
- All personnel handling work related chemicals must follow handling procedures – any spillage contaminating the ground will pose risk to environmental degradation.
- All workers must always wear protective clothing at all time to reduce health and safety risk.

8.3. Environmental awareness training.

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

ENVIRONMENTAL AWARENES TRAINING PROGRAMME PROCEDURE

Natural resources are limited and not always renewable and it is the responsibility of management to ensure that all employees are trained to understand the impacts of their tasks on the environment and to reduce them wherever possible. Environmental awareness training will be given to new employees on site and any contractors who may come onto site for a short period of time. Refresher training must be given to permanent employees on an annual basis. The objective of this procedure is to ensure that all employees on the, including contractors, are competent to perform their duties, thereby eliminating negative impacts on their safety, health and the environment.

The Environmental topics to be covered in awareness training should include the following:

Resource Management

a. The importance of saving water

- i. South Africa is a water scarce country and rivers are polluted
- ii. Do not throw litter into river or water drains
- iii. Do not dispose of oils in sewers

b. Air pollution - Climate change

- i. The use of fossil fuels is increasing the amount of greenhouse gases that are discharged to the atmosphere. Share transport or use public transport
- ii. Don't burn any rubbish, the smoke pollutes the air
- iii. Plant trees, they clean the air, provide us with oxygen and remove the greenhouse gas carbon dioxide from the air.

c. Soil conservation

- i. Prevent overgrazing of farmlands, keep vegetation on the surface of the land to prevent soil erosion
- ii. Plant trees

HAZARDOUS SUBSTANCE USE AND STORAGE

- a. Solvents, petrol, diesel, insecticides, chlorine, detergents, and chemical fertilisers are harmful to the environment and to your health. Use them sparingly and do not let them get into the water systems. Containers must be disposed of to a licensed hazardous waste disposal facility
- b. Hazardous substances must be stored and used correctly
- c. Ensure that 16 point Material Substances Safety Data Sheets (MSDS) are available at point of store
- d. Compressed gas storage requirements
- e. Flammable substances store requirements

INCIDENT & EMERGENCY REPORTING

The company must have an emergency / incident reporting system whereby environmental incidents can be reported and actioned to mitigate and follow up on.

OIL / DIESEL/ PETROL SPILL CLEAN UP

All employees who work with machines and vehicles must be instructed how to prevent and clean up an oil or diesel spill appropriately. Spill kits must be available on site, drip trays must be used when servicing vehicles or machines.

CONSERVATION OF WATER

- Campaign to save water on site
- Clean water is expensive and potable water must be used carefully
- Prevent pollution of water by preventing spills and dispose of wastes properly

CONSERVATION OF VEGETATION

Plants, grasses and trees are very important to our existence on the earth, they provide food, fuel, shelter, raw materials and they clean the air. Indigenous plants are important for medicinal purpose and the whole ecology of life. Human activities are destroying the natural forests of the earth.

- a. Vegetation cover reduces water and topsoil loss from the ground, do not clear vegetation unnecessarily
- b. Indigenous trees provide shade, attract wild birds
- c. Do not chop down indigenous trees without good reason
- d. Implement a tree planting programme
- e. Remove alien invasive trees in the area such as Prosopis, Syringa and Pepper trees, cactus plants.

WASTE MANAGEMENT

- a. Employees must be instructed on how to tell the difference between hazardous waste and general waste
- b. They must know how to separate hazardous and general waste and where to dispose of these wastes in the correct way
- c. Examples of hazardous waste which must be recycled or sent to Waste Tech for disposal:
 - i. Oil, diesel, batteries, acids, paint, thinners, electronic waste
 - ii. Pesticides, jik, handy Andy
 - iii. Old oil, old oil filters, old paint is hazardous and must not be disposed of to a general land fill. Oilkol of the Rose Foundation will collect old oil.
 - iv. Mercury in fluorescent light bulbs is hazardous, fluorescent lights must be handled with great care so as not to break the glass and release the mercury vapour into the air which you breathe.
- d. Examples of general wastes which can go to the municipal landfill: Wood, paper, plastic, glass, old PPE
- e. Recycle, Reuse, Reduce, and Recover where ever possible

EMERGENCY PREPAREDNESS

Emergency response programmes will include procedures for:

- assigning responsibilities and accountabilities;
- assessing and classifying emergencies;
- assessing source terms and consequences;
- activating and implementing emergency responses;
- notifying and alerting site personnel and other stakeholders, including the public (on-site and off-site communications);
- protecting on-site and off-site emergency response personnel;
- assembling, protecting and evacuating personnel;
- responding to over-exposures, contamination incidents, injuries or fatalities;
- Post-accident monitoring and assessments of systems, effluents and conditions (e.g. observations, tests, measurements, collection of samples, sample preparation and analysis, reporting results of sampling, measurements and tests);
- documenting and controlling the exchange of information;
- effecting scheduled shift changes and workplace turnovers;
- controlling vehicular and human traffic;
- directing, controlling and supporting emergency responses;
- develop a plan of activities to protect personnel and the public in the case of an emergency situation and its consequences;
- develop an accident response plan and implement emergency preparedness measures and emergency response activities

Readiness for accident elimination

One of the main issues for readiness in limiting and eliminating emergency consequences is adequate training of the workforce and rescue service personnel.

Training for emergency situations includes the development and co-ordination of instructions and other guidance, distribution of this material to all potentially impacted organisations as well as providing the proper equipment and training for rescue services personnel. Training at the mine facilities is conducted according to a plan that is approved by the territorial division of the authorised body. It is conducted under the supervision of the territorial division of the authorised body and results of the training exercise are

documented in a report. Control over the implementation of proposals contained in the report is charged to the head of the organisation.

CONCLUSION

The company will utilize the Environmental Awareness Plan (EAP) to assure that all employees and contractors are aware of the environment and know how to manage it correctly. The company will also utilize EAP to ensure that their health and safety is protected throughout the prospecting operation.

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

9.1. The annual amount required to manage and rehabilitate the environment. (Provide a detailed explanation as to how the amount was derived)

The annual amount required to manage and rehabilitate the environment is R64,037.00 as calculated in Section 4.3 of this document.

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

The amount required to cover the prospecting operation was calculated to an amount of R64,037.00 as reflecting on the Prospecting Work Programme.

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

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

Full Names and Surname	Carel Daniel Dippenaar
Identity Number	7001245058087

-END-
Appendix 1

Public participation

Response letter from interested and affected parties

Newspaper advert

Background information

Consultation Report