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Biophysical report

Fourteen Streams 311

MINING PROPOSAL:

Application for mining right to mine alluvial diamonds.

BASELINE STUDY BIOPHYSICAL REPORT

By

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in association with

DERA ENVIRONMENTAL CONSULTANTS

May 2008

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BIOPHYSICAL REPORT FOR FOURTEEN STREAMS

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1 INTRODUCTION

AC Koekemoer was appointed by the DERA Environmental Consultant to compile a Specialist Report on the Biophysical Environment entailing a description of the Fauna and Flora of the proposed mining site. The aim of this report is to assess, evaluate and give a full description of the current ecology of the proposed site, to give a description of possible species that might occur in the area. The effects and impacts of the proposed activity on the environment with their mitigative measures as well as the potential outcome post mining closure will also be reviewed.

1.1 THE OBJECTIVE OF THE DEVELOPMENT

Coppersun Twelve has applied for the Right to mine the alluvial diamond deposit that is located on the farm Fourteen Streams 311. Prospecting efforts in this area indicated the presence, quantity and grade of diamond deposits to be of such nature that it is a realistic, economic and a profitable venture to mine the diamond deposits. Their objectives are to:

- To excavate the fertile seedbed soil layer, topsoil and/or overburden from the area to be mined where it is still intact. These will be stockpiled separately.
- To excavate the mineral rich deposit.
- The mineral deposit is then transported to the plant where it goes through various stages to extract the mineral concentrate.
- The mineral concentrate goes through the sorting plant where the diamonds are removed.
- The excavated areas are backfilled and or rehabilitated.

This venture will have various probable spin-offs and further long-term objectives were identified:

- To stimulate economic activities thereby creating job opportunities, consequently not only the private sector but also local people employed will benefit from the venture.
- To rehabilitate the area to a functional and sustainable land capability.

2 NAME AND ADDRESSES

2.1 THE APPLICANT

Coppersun Twelve

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3 LOCALITY

The proposed mining site is located in the Kimberley District of the Northern Cape Province near the town of Warrenton. The proposed mining activities will take place on part of the farm:

- Fourteen Streams 311: Various portions

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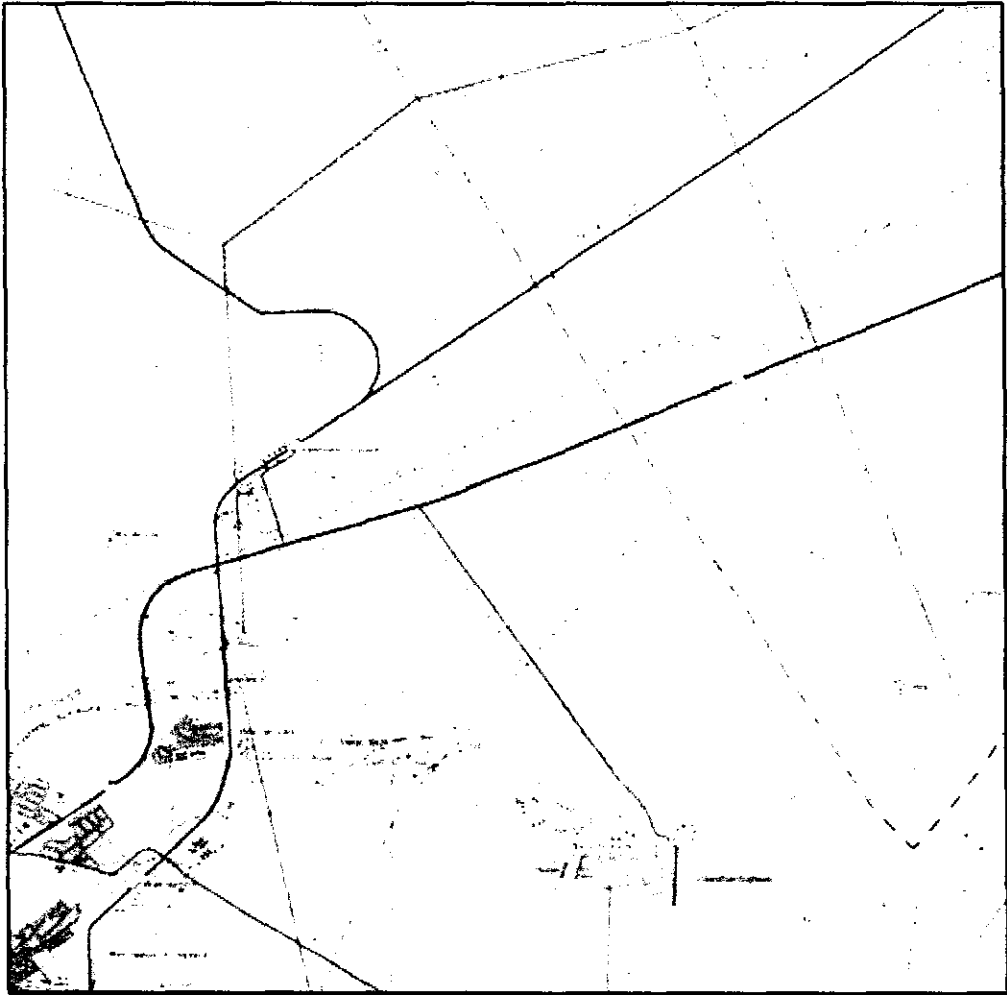


Figure 1: The proposed mining area is on the property Fourteen streams 311.

4 PHYSICAL PROPERTIES OF THE SITE AND SURROUNDING AREA

The physical properties examined and reviewed in this report include the general ecology as well as the animal and plant species present on the proposed mining sites and adjacent area. The site under consideration was investigated by means of a brief site visit and reconnaissance by vehicle and on foot in May of this year. Plant species present were noted as well as animal species present or signs indicating their presence such as faeces, tracks and shelter or nesting structures.

4.1 CURRENT STATE OF THE ENVIRONMENT

Northern Cape State of the Environment Report (SoE) (2004) reports that it is estimated that about 16.5% of South Africa's land cover is transformed, and a further 10% degraded. Sensitive arid habitat such as the Succulent Karoo Biome of the Northern Cape Province is particularly prone to degradation as a result of overgrazing, alien invasive species and mining. In addition, the aridity of the climate precludes rapid recovery of degraded areas. When examining veld degradation in terms of severity and rate of degradation, the Northern Cape emerged as the third most degraded province in South Africa, after the Limpopo Province and KwaZulu-Natal.

South Africa is a country rich in biodiversity. It is characterised by seven biomes, five of which are found in the Northern Cape (Low and Rebelo, 1996). These are the Savanna, Nama Karoo, Succulent Karoo, Grassland and Fynbos Biomes. In addition, there are 18 Centres of Endemism within South Africa, of which 8 are found within the Northern Cape.

This area falls within an open Savanna but not within one of the centres of endemism with the various Acacia species being the most dominant tree species. This biome is confined to sandy plains underlain by calcrete. The extend of this biome in the Northern Cape is 106843 km² or 29.49% of the province. This property is furthermore located within the Kalahari Thornveld or also known as the Kimberley Thorn Bushveld vegetation type as described in VEGMAP (2006). This vegetation type and landscape feature thereof are described as plains that is often slightly irregular with a

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well developed tree layer with *Acacia erioloba*, *A. Tortilis*, *A. Karroo* and *Boscia albitrunca* and a well developed shrub layer with occasional dense stands of *Tarchonanthus camphoratus* and *A. mellifera*. The grass layer is open with much uncovered soil.

A main feature of the property is the Vaalriver that forms a boarder of the property. The tar road, the N12 between Christiana and Warrenton as well as a railway runs through the property. The vegetation adjacent to the river is different to the rest of the property and described as reverine vegetation that was not part of this investigation. The trees present are more densely distributed along the river and this can probably be attributed to the availability of water and fertile soils. It can be said that this area is no longer a pristine wilderness area but there are still numerous species typical to the Kalahari thornveld, inhabiting this property.

The geology of the Kimberley Thornveld can be described as andesitic lavas of the Allanridge Formation in the north and west and fine-grained sediments of the Karoo Supergroup in the south and east. Deep (0.6 – 1.2m) sandy to loamy soils of the Hutton soil forms (Ae and Ah land types) is present on the slightly undulating sandy plains.

The climate can be described as summer and autumn rainfall and very dry winters. MAP is from about 300mm in the southwest to 500mm in the northeast. Frost frequently occurs in winter. The mean monthly maximum and minimum temperatures for Kimberley is 37.5°C and -4.1°C for January and July respectively.

The conservation status of the area is least threatened with the conservation target set at 16%. Only 2% is statutorily conserved. Some 18% of land in this vegetation type was already transformed, mostly by cultivation. Erosion is very low in the area.

This area is furthermore mostly used for cattle farming or game ranching with little croplands. Overgrazing in these areas leads to encroachment of *Acacia mellifera* subsp. *detinens*. Signs of mining (prospecting) efforts are also visible on the property particularly closer to the river. The areas adjacent to the Vaalriver is also more densely populated with numerous human settlements or other infrastructure including ruins and are more disturbed and have more alien vegetation.

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4.2 SPECIES THAT OCCUR ON SITE

Only the terrestrial habitat (Kimberley Thornveld) was considered and the aquatic habitat (the Vaalriver and associated riverine vegetation and associated fauna) was not investigated for the purpose of this report. It is however recognised that these habitats do not function in isolation.

FLORA

The area falls within the Savanna Biome and is classified as Kimberley Thornveld (SVk 4) in VEGMAP (2006). Acocks (1980) classified the vegetation type as the Kalahari Thornveld (16a Kalahari Thornveld Proper – Central Form) invaded by Karoo elements. These Karoo elements include *Pentzia incana* and *Crysocoma ciliate*. The publication of Vegetation of South Africa, Lesotho and Swaziland by Low and Rebelow, classified the area as Kimberley Thornveld (Van Rooyen & Bredenkamp, 1996). They described the area as an open savanna, with Umbrella Thorn *Acacia tortilis* and Camel Thorn *A. erioloba* the dominant tree species, and scattered individuals of Shepherd's Tree *Boscia albitrunca* and Sweet Thorn *Acacia karroo*.

VEGMAP identified the important taxa for this vegetation type. Large and small trees are:

- *Acacia erioloba* (dominant sp)
- *A. karroo* (dominant sp)
- *A. mellifera* subsp. *detinens* (dominant sp)
- *A. tortilis* subsp. *heteracantha* (dominant sp)
- *Rhus lancea*

The tall shrub species include:

- Camphor Tree *Tarchonanthus camphoratus* (dominant sp)
- Wild Raisin *Grewia flava*
- *Diospyros pallens*
- *Eretria rigida* subsp. *rigida*
- *Euclia crispa* subsp. *ovata*
- *Lycium hirsutum*
- *L. Arenicola*
- *Rhus tridactyla*

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Low shrub species include:

- *Acacia hebeclada* subsp. *hebeclada* (dominant sp)
- *Anthospermum rigidum* subsp. *pumilum*
- *Helichrysum zeyheri*
- *Hermannia comosa*
- *Lycium pilifolium*
- *Melolobium microphyllum*
- *Pavonia burchelli*
- *Peliostomum leucorrhizum*
- *Plinthus sericeus*
- *Wahlenbergia nodosa*

Succulent shrubs include:

- *Aloe hereroensis* var. *hereroensis*
- *Lycium cinereum*

Grasses or Graminoids include:

- Lehmann's Lovegrass *Eragrostis lehmanniana* (dominant sp)
- *Aristida canenscens*
- *A. congesta*
- *A. mollissima* subsp. *argentea*
- *Cymbopogon pospischilli*
- *Digitaria argyrograpt*
- *D. eriantha* subsp. *eriantha*
- *Enneapogon cenchroides*
- *E. scoparius*
- *Eragrostis rigidior*
- *Heteropogon contortus*
- *Themeda triandra*

Herb species includes:

- *Barleria macrostegia*
- *Dicoma schinzii*
- *Harpagophytum procumbens* subsp. *procumbens*
- *Helichrysum cerastioides*
- *Hermstaedtia odorata*
- *Hibiscus marlothianus*
- *Jamesbrittenia aurantiaca*
- *Lippia scaberima*
- *Osteospermum muricatum*

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- *Vahlia capensis* subsp. *vulgaris*

Succulent herbs include:

- *Aloe grandidentata*
- *Piarranthus decipiens*

Not all species occurring on this site or all the species listed above were recorded during the initial reconnaissance due to various constraints such as seasonality and time.

The area north of the N12 tar road had more open grassveld with small tree clumps and scattered shrubs while the area south of the tar road had less open grassveld with more trees and shrubs. The most dominant tree species observed in this area were *Acacia karoo*, *A. mellifera* subsp. *detinens* and a little less *A. tortilis* subsp. *heteracantha* and *Rhus lancea* species.



Figure 2 The vegetation on the northern side of the N12 tar road have more open grasveld with tree clusters interdispersed.

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Figure 3 The vegetation south of the N12 tar road is more dense with less grass patches and can be an indication of grazing pressure.

The most dominant shrub species identified for this area include the Camphor Tree *Tarchonanthus camphoratus* also known as the Vaalbos, *Acacia hebeclada* subsp. *hebeclada*, Wild Raisin *Grewia flava*, *Euclia crispa* subsp. *ovata*, *Lycium hirsutum* and *Ziziphus micronata* the Buffelo thorn.

These trees and shrubs provide shade, shelter and food for various birds, mammals and insects. *Acacia erioloba* known as the Camel thorn tree is a protected species that cannot be cut or destroyed without an approved written application. It must therefore be protected and may not be removed or damaged.

Aloe grandidentata was a dominant succulent herb species that were also observed as abundant on previously disturbed prospecting areas. This species grows easily and is widely distributed in the arid interior of South Africa and is common throughout its distribution range and is not a threatened species.

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Figure 4 Aloe grandidentata is a dominant succulent herb species that grows abundant on previously disturbed prospecting areas

Some of the grass species or graminoids that were identified for this area includes Lehmann's Lovegrass *Eragrostis lehmanniana*, *Chloris virgata*, *Aristida canescens*, *Themeda triandra*, *Cynodon dactylon*, *Enneapogon cenchroides*, *Eragrostis rigidior*, *Cymbopogon plurinodis*, and *Melinis repens*.

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Figure 5: The herb species Cadaba aphylla known as the Desert spray were observed on the property (although not a dominant species).

A variety of invader and weedy species were observed in this area. These species include *Melia azedarach* (Syringa), *Alternanthera pungens* (Khaki weed), *Asclepias fruticosa* (Shrubby milkweed), *Salsola kali* (Russian Tumble weed), *Eucalyptus* sp (Gum tree), *Cirsium vulgare* (Spear thistle), *Xanthium strumarium* (large cocklebur), *Datura stramonium* (Common thorn-apple), *Verbena bonariensis* (Purple top), *Protosparigus* sp., *Agave americana* (American agave) and *Opuntia* sp.

The proliferation of "weedy" species and the invasion of ecosystems by alien species, also alter the ecosystem composition. Their encroachment leads to the extinction of indigenous plants and undermine the ecological functioning of natural systems.

FUANA

Various avian species were observed on the site visit. The aquatic habitat provided by the Vaalriver increase the avian species diversity for the area. However, these species are also mostly associated with the aquatic habitat that must not be disturbed by mining activities. Avian species observed included the Southern Masked Weaver (*Ploceus velatus*), Whitebacked Mousebird (*Colius colius*), Laughing Dove (*Streptopelia semitorquata*), Glossy starling (*Lamprotornis nitens*), Cape white-eye

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(*Zosterops pallidus*), Common fiscal shrike (*Lanius collaris*), Marico Flycatcher (*Melaenornis mariquensis*), House sparrow (*Passer domesticus*), Cape Wagtail (*Motacilla capensis*) and various waterfowl and aquatic associated species that were observed close to the river.

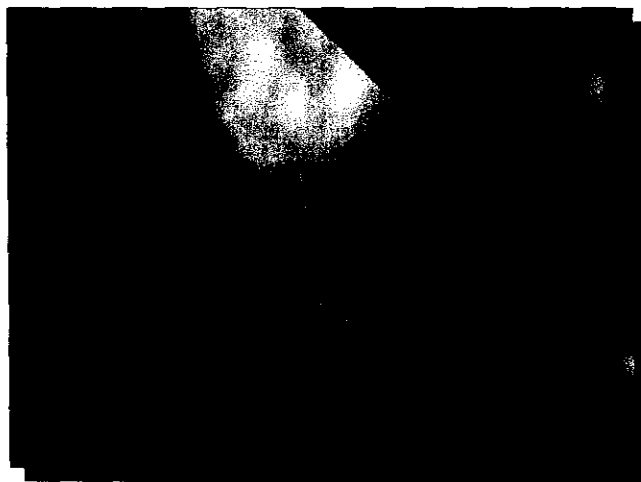
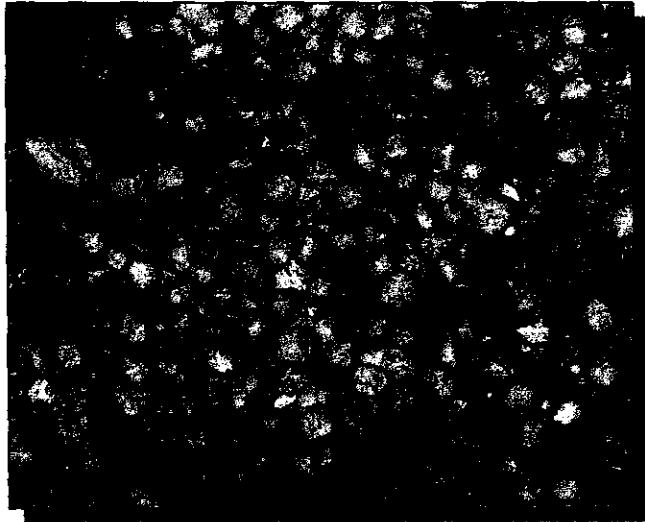
Various insects are known to be present such as ants, grasshoppers, butterflies etc.

No reptile or amphibian species were directly observed but is likely to occur on site considering the availability of various food and prey sources present.

Mammal species that were observed during the site visit include warthogs (*Phacochoerus africanus*), Vervet monkeys (*Cercopithecus aethiops pygerythrus*), Cape ground Squirrel (*Xerus inaurus*) and the cape clawless otter (*Aonyx capensis*) (the latter observed on the banks of the Vaalriver). Other species that are expected to also occur on site includes species such as steenbok, duiker, kudu, bat-eared fox, cape fox and hares.



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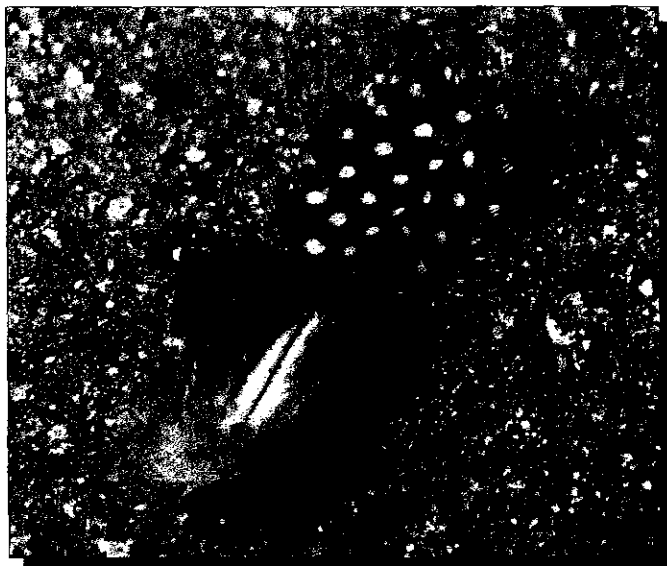


Figure 6 Signs of / and animals inhabiting the area

4.3 SPECIES LIKELY TO OCCUR IN THE SURROUNDING AREA

Information extracted from published accounts and information collected during the site visit was evaluated. The site habitat description with the apparent restrictions imposed by human-settlements and other pressures on the environment such as the bordering tar road were considered to compile a list of species that might occur on the adjacent area.

The species currently present on the adjacent areas is a good indicative measure of species that will be encountered after successful rehabilitation and closure of the mined sites. Species from the adjoining areas will act as source populations. It can therefore be concluded that if the necessary steps is taken and proper rehabilitation methodology employed, that these species will return with succession and remain on the site after mining if no other further significant disturbances occur.

4.3.1 FLORA

South Africa is a country rich in biodiversity. It is characterised by seven biomes, five of which are found in the Northern Cape (Low and Rebelo,

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1996). These are the Savanna, Nama Karoo, Succulent Karoo, Grassland and Fynbos Biomes. Approximately 20 vegetation types are recognised within these biomes (Low and Rebelo, 1996). The Northern Cape therefore has a large number of threatened and endemic species. However, most of these species are part of the Fynbos Biome, Succulent Karoo and other veld types of the Nama Karoo. However, a comprehensive list of threatened plant species for the Northern Cape Province is included in Annexure A.

None of these protected species were encountered during the field investigation. However, in the event of encountering a red data species during the preparation stage with clearing of vegetation prior to mining, the relevant measures must be put in place as to conserve these species.

4.3.2 Fauna

- **Avifauna**

The surrounding area and in particular the riverine vegetation and the Vaalriver itself provides a great habitat for avian species. A list of possible species occurring on site is included in Annexure B. The species included here were selected based on distribution range and the likelihood of occurring in area. The effects of human activities and other disturbances were not taken into consideration because of the complex behavioural responses of birds to the different variables. All of the species had a wide habitat range and was not limited to this specific site.

HERPTOFAUNA

- **Reptiles**

Reptile fauna form a significant component of terrestrial fauna in South Africa and play an important role in maintaining the functioning of ecosystems through nutrient cycling and population control of other terrestrial vertebrate species. Reptiles, in particular snakes, tend to be habitat generalists occurring wherever a suitable prey source can be found. The current site can therefore still support viable snake populations as long as a suitable prey source is present (Annexure C).

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- **Amphibians**

Amphibians are both primary consumers and predators and therefore play an important role in the ecosystem. They consume large numbers of insects and are important in pest control. Tadpoles are natural monitors of water quality. Both adults and tadpoles are important links in the food web, being eaten by snakes, birds, mammals and other frogs. Although no amphibian species were observed during the site visit, certain species are expected to occur on the site in particular associated with the aquatic areas (Annexure C).

ARTHROPODS

Insects are essential in the various roles within ecosystems, e.g. nutrient cycling, plant pollination, maintenance of plant community composition and supporting insectivorous animals. Each insect forms part of a wider ecosystem, and if lost, the complexities and abundance of other life will be affected.

There are only one butterfly species in the Northern Cape Province that are endangered according to the lepidopterists' society of Africa. This species, *Anthene lindae* only occur in the Witsand Nature Reserve and is not known to occur elsewhere in the region.

MAMMALIA

Most of the species occurring in the area during historical times were lost because of hunting and farming practises together with human settlements. Only some species are currently present. The generalist species with a wide habitat range such as the steenbok, duiker, kudu and Bat-eared Foxes can still be found on the property.

A list of possible species occurring on site is included in Annexure D.

RED DATA SPECIES

The Red Data status and CITES or IUCN status of species are indicated within the species lists that forms annexure B, C and D.

5 IMPACT IDENTIFICATION AND ASSESSMENT

5.1 APPROACH FOLLOWED

The nature of impacts can vary widely depending on the type of physical environment, the size of the development and the perceptions and values of each of the affected parties. It must be accepted that any development will have both physical and social impacts. It is the objective of this report to identify both positive and negative impacts of only biophysical impacts.

5.2 METHODS USED TO IDENTIFY IMPACTS

The existing information was reviewed to assess the present status of the environment and the extent to which they have already been modified. The impact identification and mitigation tables will quantify the identified impacts.

5.3 DEFINITIONS USED IN THE ASSESSMENT AND EVALUATION OF IMPACTS

The assessment and evaluation of environmental impacts is often complicated by the subjective nature of these impacts. Ideally, the degree of severity or significance of a particular impact should be expressed in quantitative terms, against a quantitative assessment of the conditions that pertained before a particular activity started. There must also be some expression as to whether a particular impact is desirable or not.

In order to address these issues and to provide a basis for comparison of the different impacts associated with the development, a number of standard definitions and approaches were used. The different terms are described in the following table. The impact prediction step will determine whether the expected impact is beneficial (positive) or

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adverse (negative). While impact evaluation will comprise a rating of the impacts in terms of their magnitude, duration and significance.

Table 1: Definitions used in the assessment and evaluation of impacts

CATEGORY	DESCRIPTION OR DEFINITION
Impact	A brief written statement, stating which environmental aspect is impacted by a particular project activity or sequence of project activities.
Impact prediction	Denotes the perceived effect of the impact on the affected area. ⊕ Positive impact ⊖ No impact ⊗ Negative impact
Duration	Where duration shall indicate whether the lifespan of the impact will be: <u>Temporary</u> : During construction & Operation. <u>Permanent</u> : Where mitigation either by natural process or by human intervention will not occur in such a way or in such a time span that the impact can be considered transient.
Magnitude:	A prediction of the extent of the impact that may result from the development. Magnitude refers to the size, in both spatial and qualitative terms, of an impact. Site: Impact is site specific Local: Impact is applicable to the local area, including neighbouring farms. Regional: Impact is significant for the region, including the rest of the Northern Cape Province National: Impact has national implications.
Impact Rate: Pre-mitigation	This is an integration (i.e. an opinion) of the prediction, duration, and magnitude, of the impact. <u>High</u> : The impact is high with permanent duration and substantial disruption. <u>Moderate</u> : The impact is a real but measurable impact and should have an influence on the decision unless it is mitigated. <u>Low</u> : The impact is low and not significant, minor mitigation needed but should not have an influence on the decision.
Discussion & mitigation	The relevance of the impact will be discussed and the appropriate mitigation measures provided that will either soften or enhance impacts.
Impact Rate: Post mitigation	Based on the same methodology at Pre-mitigation level, but shows the revised rate if mitigatory measures are taken.

5.4 IMPACT AND MITIGATION TABLES

The impacts identified are reflected in Table 2.

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Table 2: Impact Mitigation table

No	Impact Description	Impact Prediction	Duration	Magnitude	Impact Rate: Pre-mitigation	Discussion/ Mitigation	Impact Rate: Post-mitigation
1	OPERATIONAL PHASE						
1	Flora: Dust pollution from earthmoving vehicles driving on dirt roads.	⊗	Temporary	Site	Low	The Mining Right holder or the responsible person shall take all reasonable measures to minimize the generation of dust as a result of operational activities.	Moderate
2	Flora: Disturbance to natural veld will occur if construction vehicles do not follow cleared routes	⊗	Temporary	Site	Moderate	The Mining Right holder or the responsible person shall take all reasonable measures to ensure that construction vehicles keep to the cleared routes.	Low
3	Flora: All vegetation will be lost if the area demarcated for mining is cleared from vegetation in preparation for mining. Protected species might be lost.	⊗	Permanent	Site	High	Mining outside the ecological footprint of the proposed development must be restricted. If rare or endangered species are identified in the way of disturbance, they should be removed for plantation in undisturbed areas.	High
4	Habitat lost: There might be a lost in habitat due to the development	⊗	Permanent	Site	High	Mining outside the ecological footprint of the proposed development must be restricted. Rehabilitation must be done in accordance with an approved EMP for this mining operation.	Moderate

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No	Impact Description	Impact Prediction	Duration	Magnitude	Impact Rate: Pre-mitigation	Discussion/ Mitigation	Impact Rate: Post-mitigation
5	Fauna: Animals can be disturbed by noise generated during mining operations. The increase in activity in and around the development sites can also cause disturbances.	⊗	Temporary	Site	Low	Noise must be limited. Construction personnel should also be restricted to the construction site and access routes with no unauthorised access to the rest of the area.	Low
6	Fauna: The addition of roads in the already disturbed area can impose further stresses on animals present in the area.	⊗	Permanent	Site	Medium	The existing road infrastructure must be used with no unnecessary insertion of roads.	Low
2	CLOSURE PHASE						
7	Flora: Invader species will establish on the newly rehabilitation area. They as successful pioneers and can prolong the time that the natural vegetation take to re-vegetate the area.	⊗	Temporary	Site	Moderate	Re-vegetation of site must be done and all possible measures taken to prevent invasive species to establish and or remove and destroy these species when they do establish themselves on the newly rehabilitated areas in an appropriate manner.	Low
8	Flora: Re-vegetation of the site will take place as a result of rehabilitation.	☺	Permanent	Site	Moderate	Re-vegetation of site, towards grazing potential.	Moderate +
9	Fauna: Animals will re-enter the rehabilitated area as part of an ongoing successional process.	☺	Permanent	Site	Moderate	Re-establishment of habitat for fauna return	Moderate +

6 REHABILITATION RECOMMENDATION

6.1 GENERAL RECOMMENDATIONS

The responsibilities of the mine owner imply that the environment affected by the mining operations must be rehabilitated as far as is practicable, to its natural state or to a predetermined and agreed standard or land use which conforms to the concept of sustainable development. The affected environment must also be maintained in a stable condition that will not be detrimental to the safety and health of humans and animals and that will not pollute the environment or lead to the degradation thereof. A developed use usually implies a financial yield and may require either passive care, such as rangeland, or active care as would apply to any industrial site or urban development.

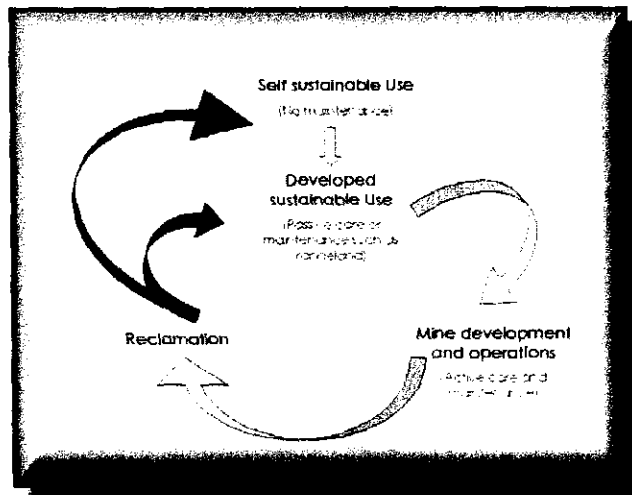


Figure 7: Reclamation to a developed sustainable use. *

Rehabilitation objectives and tasks as well as end status must be clarified for each individual site as it would direct all ameliorative actions. If the end use of an area will be industrial, residential or otherwise developed, the re-vegetation must be functional as to stabilise soils and minimise erosion. The species composition must be of such nature that it is not detrimental to the surrounding area (for example exclusive of alien

* Reclamation diagram as taken from Robertson, Devenny & Shaw.

BIOPHYSICAL REPORT FOR FOURTEEN STREAMS

vegetation). The vegetation must be functional but don't have to aspire to certain ecological characteristics of the area's known biome and veldtype. If the end use is however to re-establish vegetation natural to the surrounding area, different ameliorative actions such as the introduction of pioneer species that could facilitate natural successional processes must be taken.

The objective of a sustainable use for the area with natural successional and ecological processes is a practical aspiration if the proposed progressive rehabilitation actions are taken with the rehabilitation and establishment of vegetation for each area.

6.2 PROGRESSIVE REHABILITATION ACTIONS

Progressive rehabilitation actions and the establishment of vegetation have the following objectives:

- ◆ To establish a sustainable use for the area
- ◆ To facilitate natural successional and ecological processes
- ◆ To minimise negative impacts such as erosion of soils
- ◆ To attain a similar species composition and vegetation cover as is present on undisturbed adjacent areas (the latter acts as source populations in future)

Physical actions to be taken include the following:

- ◆ To remove and manage alien vegetation.
- ◆ To till and loosen soils that has been compacted for increased water infiltration.
- ◆ Cover bare areas with plant material such as branches to create micro environments that will facilitate establishment of pioneer species. Cover will reduce soil temperature and provide physical barriers to slow water movement across soils and catch windblown seeds and organic matter.
- ◆ To reshape slopes to approximate 12° for better species colonization.
- ◆ To introduce species or seeds in the fragmented areas to enhance and accelerate dispersal.
- ◆ To apply fertiliser to enhance and accelerate vegetation establishment.
- ◆ To evaluate and monitor the success or failures of rehabilitation.

- ♦ To apply ameliorative actions if rehabilitations seems to be very slow or a failure.

7 CONCLUSIONS AND RECOMMENDATIONS

The site is currently i) situated within and adjacent to an area that is typical of a number of sites in the surrounding area, ii) forms part of the ~~Kimberley~~ thorn bushveld biotype and iii) the area has been disturbed in the past by pastoral activities.

No species is only limited to this site with most of them being generalist and having a wide distribution range. However, reasonable measure must be put in place to protect endangered and protected species if they are encountered on this site.

Mining must not cause any disturbance outside the ecological footprint of the proposed mining site thus ensuring a healthy ecological community adjacent to the mining site that can serve as source populations to facilitate the ecological successional processes in aid of the rehabilitation of the area.

The developer of mining activities as proposed must be committed to enhancing the positive impacts of the development and to mitigate the negative impacts. It is believed that the biological integrity and functioning of the area will be restored if an appropriate rehabilitation schedule is followed (as stipulated in an approved EMP for this application).

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ANNEXURE A:
ENDANGERED PLANT
SPECIES OF THE
NORTHERN CAPE

Red Data Plant Species of the Northern Cape Province

Red Data List for plant species in the Northern Cape Province

As taken from the Interim red Data list of South African Plant Species of 2004 prepared by the Threatened Species Programme (TSP), National Botanical Institute (NBI), NORAD and the Department of Environment Affairs and Tourism (DEAT) Report.

Taxon	FAMILY	Summary	SA ENDEMIC	Rarity
<i>Acanthosicyos horridus</i> Welw. ex Hook.f.	CUCURBITACEAE	Threatened		
<i>Adenia repanda</i> (Burch.) Engl.	PASSIFLORACEAE	Least Concern		
<i>Adenium oleifolium</i> Stapf	APOCYNACEAE	Least Concern		
<i>Adenoglossa decurrens</i> (Hutch.) B.Nord.	ASTERACEAE	Least Concern	Endemic	Rare
<i>Adromischus diabolicus</i> Toelken	CRASSULACEAE	Data Deficient	Endemic	
<i>Adromischus humilis</i> (Marloth) Poelln.	CRASSULACEAE	Data Deficient	Endemic	Rare
<i>Adromischus marianiae</i> (Marloth) A.Berger var. <i>hallii</i> (Hutchison) Toelken	CRASSULACEAE	Least Concern		
<i>Adromischus nanus</i> (N.E.Br.) Poelln.	CRASSULACEAE	Near Threatened	Endemic	Rare
<i>Adromischus phillipsiae</i> (Marloth) Poelln.	CRASSULACEAE	Data Deficient	Endemic	Rare
<i>Adromischus subviridis</i> Toelken	CRASSULACEAE	Near Threatened	Endemic	Rare
<i>Agathosma namaquensis</i> Pillans	RUTACEAE	Least Concern	Endemic	Rare
<i>Albizia antunesiana</i> Harms	FABACEAE	Least Concern		
<i>Aloe arenicola</i> Reynolds	ASPHODELACEAE	Least Concern	Endemic	
<i>Aloe buhrii</i> Lavranos	ASPHODELACEAE	Threatened	Endemic	Rare
<i>Aloe chlorantha</i> Lavranos	ASPHODELACEAE	Threatened	Endemic	Rare
<i>Aloe comosa</i> Marloth & A.Berger	ASPHODELACEAE	Threatened	Endemic	Rare
<i>Aloe dabenorisana</i> Van Jaarsv.	ASPHODELACEAE	Threatened	Endemic	Rare
<i>Aloe falcata</i> Baker	ASPHODELACEAE	Near Threatened	Endemic	
<i>Aloe khamiesensis</i> Pillans	ASPHODELACEAE	Threatened	Endemic	
<i>Aloe krapohlana</i> Marloth	ASPHODELACEAE	Near Threatened	Endemic	
<i>Aloe meyeri</i> Van Jaarsv.	ASPHODELACEAE	Threatened	Endemic	Rare

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Taxon	FAMILY	Summary	SA ENDEMIC	Rarity
<i>Aloe pearsonii</i> Schönland	ASPHODELACEAE	Threatened	Endemic	
<i>Aloe pillansii</i> L.Guthrie	ASPHODELACEAE	Threatened	Endemic	
<i>Aloe ramosissima</i> Pillans	ASPHODELACEAE	Threatened	Endemic	
<i>Aloe striata</i> Haw. subsp. <i>karasbergensis</i> (Pillans) Glen & D.S.Hardy	ASPHODELACEAE	Least Concern		
<i>Aloe striata</i> Haw. subsp. <i>komaggasensis</i> (Kritzing & Van Jaarsv.) Glen & D.S.Hardy	ASPHODELACEAE	Threatened	Endemic	Rare
<i>Aloinopsis acuta</i> L.Bolus	MESEMBRYANTHEMACEAE	Near Threatened	Endemic	Rare
<i>Alonsoa unilabiata</i> (L.f.) Steud.	SCROPHULARIACEAE	Least Concern	Endemic	
<i>Amaryllis paradisicola</i> Snijman	AMARYLLIDACEAE	Threatened	Endemic	
<i>Amphiglossa corrudifolia</i> DC.	ASTERACEAE	Data Deficient	Endemic	Rare
<i>Anacampseros bayeriana</i> S.A.Hammer	PORTULACACEAE	Near Threatened		Rare
<i>Anacampseros comptonii</i> Pillans	PORTULACACEAE	Near Threatened	Endemic	Rare
<i>Anacampseros filamentosa</i> (Haw.) Sims subsp. <i>tomentosa</i> (A.Berger) Gerbaulet	PORTULACACEAE	Near Threatened		Rare
<i>Anacampseros lanceolata</i> (Haw.) Sweet subsp. <i>lanceolata</i>	PORTULACACEAE	Near Threatened	Endemic	Rare
<i>Anacampseros lanceolata</i> (Haw.) Sweet subsp. <i>nebrownii</i> (Poelln.) Gerbaulet	PORTULACACEAE	Near Threatened	Endemic	Rare
<i>Anacampseros rufescens</i> (Haw.) Sweet	PORTULACACEAE	Data Deficient		Rare
<i>Anacampseros scopata</i> G.Will.	PORTULACACEAE	Near Threatened	Endemic	Rare
<i>Androcymbium ciliosatum</i> Schltr. & K.Krause	COLCHICACEAE	Least Concern	Endemic	
<i>Androcymbium cruciatum</i> U. & D.Müll.-Doblies	COLCHICACEAE	Near Threatened	Endemic	Rare
<i>Androcymbium exiguum</i> Roessler subsp. <i>vogelii</i> (U. & D.Müll.-Doblies) U. & D.Müll.-Doblies	COLCHICACEAE	Data Deficient		Rare
<i>Androcymbium henssenianum</i> U. & D.Müll.-Doblies	COLCHICACEAE	Near Threatened	Endemic	Rare
<i>Androcymbium poeltianum</i> U. & D.Müll.-Doblies	COLCHICACEAE	Near	Endemic	Rare

Red Data Plant Species of the Northern Cape Province

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Taxon	FAMILY	Summary	SA ENDEMIC	Rarity
		Threatened		
<i>Androcymbium scabromarginatum</i> Schltr. & K.Krause	COLCHICACEAE	Data Deficient	Endemic	Rare
<i>Androcymbium villosum</i> U. & D.Müll.-Doblies	COLCHICACEAE	Near Threatened	Endemic	Rare
<i>Anginon fruticosum</i> I.Allison & B.-E.van Wyk	APIACEAE	Least Concern	Endemic	
<i>Anginon jaarsveldii</i> B.L.Burtt	APIACEAE	Near Threatened	Endemic	Rare
<i>Anisodonteia malvastroides</i> (Baker f.) Bates	MALVACEAE	Near Threatened	Endemic	Rare
<i>Anisodonteia racemosa</i> (Harv.) Bates	MALVACEAE	Near Threatened	Endemic	Rare
<i>Antimima lawsonii</i> (L.Bolus) H.E.K.Hartmann	MESEMBRYANTHEMACEAE	Data Deficient	Endemic	Rare
<i>Antithrixia flavicoma</i> DC.	ASTERACEAE	Least Concern	Endemic	Rare
<i>Arctotis bolusii</i> (S.Moore) Lewin	ASTERACEAE	Least Concern	Endemic	
<i>Arctotis crispata</i> Hutch.	ASTERACEAE	Data Deficient	Endemic	Rare
<i>Arctotis diffusa</i> Thunb.	ASTERACEAE	Data Deficient	Endemic	Rare
<i>Arctotis hirsuta</i> (Harv.) Beauverd	ASTERACEAE	Least Concern	Endemic	
<i>Argyrolobium petiolare</i> Walp.	FABACEAE	Data Deficient	Endemic	
<i>Aspalathus oliveri</i> R.Dahlgren	FABACEAE	Near Threatened	Endemic	Rare
<i>Astridia herrei</i> L.Bolus	MESEMBRYANTHEMACEAE	Data Deficient	Endemic	Rare
<i>Astridia speciosa</i> L.Bolus	MESEMBRYANTHEMACEAE	Data Deficient		
<i>Astridia vanheerdei</i> L.Bolus	MESEMBRYANTHEMACEAE	Data Deficient	Endemic	Rare
<i>Athanasia flexuosa</i> Thunb.	ASTERACEAE	Data Deficient	Endemic	Rare
<i>Athanasia spathulata</i> (DC.) D.Dietr.	ASTERACEAE	Threatened	Endemic	Rare
<i>Avonia mallei</i> G.Will.	PORTULACACEAE	Near Threatened	Endemic	Rare
<i>Babiana attenuata</i> G.J.Lewis	IRIDACEAE	Data Deficient	Endemic	Rare
<i>Babiana brachystachys</i> (Baker) G.J.Lewis	IRIDACEAE	Data Deficient	Endemic	Rare
<i>Babiana framesii</i> L.Bolus var. <i>framesii</i>	IRIDACEAE	Least Concern	Endemic	
<i>Babiana framesii</i> L.Bolus var. <i>kamiesbergensis</i> G.J.Lewis	IRIDACEAE	Least Concern	Endemic	
<i>Babiana horizontalis</i> G.J.Lewis	IRIDACEAE	Data Deficient	Endemic	Rare

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Taxon	FAMILY	Summary	SA ENDEMIC	Rarity
<i>Babiana lobata</i> G.J.Lewis	IRIDACEAE	Near Threatened	Endemic	Rare
<i>Babiana namaquensis</i> Baker	IRIDACEAE	Data Deficient		Rare
<i>Babiana pauciflora</i> G.J.Lewis	IRIDACEAE	Data Deficient	Endemic	Rare
<i>Babiana striata</i> (Jacq.) G.J.Lewis var. <i>planifolia</i> G.J.Lewis	IRIDACEAE	Near Threatened	Endemic	Rare
<i>Babiana thunbergii</i> Ker Gawl.	IRIDACEAE	Least Concern	Endemic	
<i>Babiana torta</i> G.J.Lewis	IRIDACEAE	Data Deficient	Endemic	Rare
<i>Babiana tritonioides</i> G.J.Lewis	IRIDACEAE	Data Deficient	Endemic	Rare
<i>Babiana vanzylliae</i> L.Bolus	IRIDACEAE	Least Concern	Endemic	
<i>Babiana virginea</i> Goldblatt	IRIDACEAE	Near Threatened	Endemic	Rare
<i>Barleria papillosa</i> T.Anderson	ACANTHACEAE	Data Deficient		Rare
<i>Brachiaria dura</i> Stapf var. <i>pilosa</i> J.G.Anderson	POACEAE	Near Threatened	Endemic	Rare
<i>Brunsvigia herrei</i> F.M.Leight. ex W.F.Barker	AMARYLLIDACEAE	Threatened		Rare
<i>Brunsvigia namaquana</i> D. & U. Mull.-Doblies	AMARYLLIDACEAE	Least Concern		
<i>Brunsvigia pulchra</i> (W.F. Barker) D. & U. Mull.-Doblies	AMARYLLIDACEAE	Least Concern	Endemic	Rare
<i>Brunsvigia radula</i> Aiton	AMARYLLIDACEAE	Threatened	Endemic	
<i>Brunsvigia striata</i> (Jacq.) Aiton	AMARYLLIDACEAE	Least Concern	Endemic	
<i>Bulbine diphylla</i> Schltr. ex Poelln.	ASPHODELACEAE	Near Threatened	Endemic	Rare
<i>Bulbine pendens</i> G.Will. & Baijnath	ASPHODELACEAE	Near Threatened	Endemic	Rare
<i>Bulbine rhopalophylla</i> Dinter	ASPHODELACEAE	Near Threatened		Rare
<i>Bulbine striata</i> Baijnath & Van Jaarsv.	ASPHODELACEAE	Near Threatened	Endemic	Rare
<i>Bulbinella nana</i> P.L.Perry	ASPHODELACEAE	Near Threatened	Endemic	Rare
<i>Caesalpinia bracteata</i> Germish.	FABACEAE	Near Threatened	Endemic	Rare
<i>Calliandra redacta</i> (J.H.Ross) Thulin & Asfaw	FABACEAE	Near	Endemic	Rare

Red Data Plant Species of the Northern Cape Province

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Taxon	FAMILY	Summary	SA ENDEMIC	Rarity
		Threatened		
Carex acocksii C.Archer	CYPERACEAE	Threatened	Endemic	
Cephalophyllum fullerii L.Bolus	MESEMBRYANTHEMACEAE	Threatened	Endemic	
Cephalophyllum tetrastichum H.E.K.Hartmann	MESEMBRYANTHEMACEAE	Threatened	Endemic	
Ceropegia filiformis (Burch.) Schltr.	APOCYNACEAE	Least Concern		
Ceropegia occidentalis R.A.Dyer	APOCYNACEAE	Threatened	Endemic	
Chaetobromus involucratus (Schrad.) Nees subsp. dregeanus (Nees) Verboom	POACEAE	Least Concern	Endemic	
Chamarea longipedicellata B.L.Burt	APIACEAE	Near Threatened		Rare
Chamarea snijmaniae B.L.Burt	APIACEAE	Near Threatened	Endemic	Rare
Chasmatophyllum braunsii Schwantes	MESEMBRYANTHEMACEAE	Data Deficient	Endemic	Rare
Chasmatophyllum maninum L.Bolus	MESEMBRYANTHEMACEAE	Data Deficient	Endemic	Rare
Cheilanthes depauperata Baker	PTERIDACEAE	Near Threatened	Endemic	Rare
Cheilanthes kunzei Mett.	PTERIDACEAE	Near Threatened		Rare
Cheilanthes namaquensis (Baker) Schelpe & N.C.Anthony	PTERIDACEAE	Least Concern		
Cheilanthes rawsonii (Pappe) Mett. ex Kuhn	PTERIDACEAE	Least Concern		
Cheilanthes robusta (Kunze) R.M.Tryon	PTERIDACEAE	Least Concern		
Cheiridopsis delphinoides S.A.Hammer	MESEMBRYANTHEMACEAE	Near Threatened	Endemic	Rare
Cheiridopsis pearsonii N.E.Br.	MESEMBRYANTHEMACEAE	Threatened	Endemic	
Cheiridopsis peculiaris N.E.Br.	MESEMBRYANTHEMACEAE	Threatened	Endemic	
Cheiridopsis rudis L.Bolus	MESEMBRYANTHEMACEAE	Data Deficient	Endemic	
Cheiridopsis umdausensis L.Bolus	MESEMBRYANTHEMACEAE	Threatened	Endemic	
Cheiridopsis velox S.A.Hammer	MESEMBRYANTHEMACEAE	Data Deficient	Endemic	
Chlorophytum lewisiae Oberm.	ANTHERICACEAE	Near Threatened	Endemic	Rare
Chlorophytum namaquense Poelln.	ANTHERICACEAE	Near Threatened	Endemic	Rare

Red Data Plant Species of the Northern Cape Province

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Taxon	FAMILY	Summary	SA ENDEMIC	Rarity
<i>Cliffortia arborea</i> Marloth	ROSACEAE	Near Threatened	Endemic	Rare
<i>Cliffortia hantamensis</i> Diels	ROSACEAE	Least Concern	Endemic	Rare
<i>Coelidium obtusilobum</i> Granby	FABACEAE	Threatened		
<i>Conophytum achabense</i> S.A.Hammer	MESEMBRYANTHEMACEAE	Threatened	Endemic	Rare
<i>Conophytum armianum</i> S.A.Hammer	MESEMBRYANTHEMACEAE	Near Threatened	Endemic	Rare
<i>Conophytum auriflorum</i> Tischer subsp. <i>auriflorum</i>	MESEMBRYANTHEMACEAE	Near Threatened	Endemic	Rare
<i>Conophytum auriflorum</i> Tischer subsp. <i>turbiniforme</i> (Rawé) S.A.Hammer	MESEMBRYANTHEMACEAE	Threatened	Endemic	
<i>Conophytum blandum</i> L.Bolus	MESEMBRYANTHEMACEAE	Near Threatened	Endemic	Rare
<i>Conophytum burgeri</i> L.Bolus	MESEMBRYANTHEMACEAE	Threatened	Endemic	
<i>Conophytum caroli</i> Lavis	MESEMBRYANTHEMACEAE	Least Concern	Endemic	
<i>Conophytum carpianum</i> L.Bolus	MESEMBRYANTHEMACEAE	Near Threatened	Endemic	Rare
<i>Conophytum concavum</i> L.Bolus	MESEMBRYANTHEMACEAE	Least Concern	Endemic	Rare
<i>Conophytum devium</i> G.D.Rowley subsp. <i>devium</i>	MESEMBRYANTHEMACEAE	Least Concern	Endemic	
<i>Conophytum ernstii</i> S.A.Hammer subsp. <i>ernstii</i>	MESEMBRYANTHEMACEAE	Near Threatened	Endemic	Rare
<i>Conophytum friedrichiae</i> (Dinter) Schwantes	MESEMBRYANTHEMACEAE	Least Concern		
<i>Conophytum frutescens</i> Schwantes	MESEMBRYANTHEMACEAE	Least Concern	Endemic	Rare
<i>Conophytum herreanthus</i> S.A.Hammer subsp. <i>herreanthus</i>	MESEMBRYANTHEMACEAE	Threatened	Endemic	
<i>Conophytum khamiesbergense</i> (L.Bolus) Schwantes	MESEMBRYANTHEMACEAE	Least Concern	Endemic	
<i>Conophytum lithopsoides</i> L.Bolus subsp. <i>boreale</i> (L.Bolus) S.A.Hammer	MESEMBRYANTHEMACEAE	Data Deficient	Endemic	
<i>Conophytum lithopsoides</i> L.Bolus subsp. <i>lithopsoides</i>	MESEMBRYANTHEMACEAE	Least Concern	Endemic	Rare
<i>Conophytum loeschianum</i> Tischer	MESEMBRYANTHEMACEAE	Least Concern		Rare
<i>Conophytum lydiae</i> (Jacobsen) G.D.Rowley	MESEMBRYANTHEMACEAE	Least Concern	Endemic	
<i>Conophytum maughanii</i> N.E.Br. subsp. <i>latum</i> (Tischer) S.A.Hammer	MESEMBRYANTHEMACEAE	Least Concern	Endemic	
<i>Conophytum phoeniceum</i> S.A.Hammer	MESEMBRYANTHEMACEAE	Threatened	Endemic	
<i>Conophytum phoenicium</i> S.A.Hammer	MESEMBRYANTHEMACEAE	Near Threatened	Endemic	Rare

Red Data Plant Species of the Northern Cape Province

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Taxon	FAMILY	Summary	SA ENDEMIC	Rarity
<i>Conophytum praeseckum</i> N.E.Br.	MESEMBRYANTHEACEAE	Least Concern	Endemic	Rare
<i>Conophytum regale</i> Lavis	MESEMBRYANTHEACEAE	Near Threatened	Endemic	Rare
<i>Conophytum roodiae</i> N.E.Br. subsp. <i>sanguineum</i> (S.A.Hammer) T.C.Smale	MESEMBRYANTHEACEAE	Threatened	Endemic	
<i>Conophytum rugosum</i> S.A.Hammer	MESEMBRYANTHEACEAE	Near Threatened	Endemic	Rare
<i>Conophytum rugosum</i> S.A.Hammer subsp. <i>rugosum</i>	MESEMBRYANTHEACEAE	Least Concern	Endemic	
<i>Conophytum schlechteri</i> Schwantes	MESEMBRYANTHEACEAE	Threatened	Endemic	Rare
<i>Conophytum semivestitum</i> L.Bolus	MESEMBRYANTHEACEAE	Extinct	Endemic	
<i>Conophytum smorenskaduense</i> de Boer subsp. <i>hermarium</i> S.A.Hammer	MESEMBRYANTHEACEAE	Threatened	Endemic	
<i>Conophytum smorenskaduense</i> de Boer subsp. <i>smorenskaduense</i>	MESEMBRYANTHEACEAE	Threatened	Endemic	Rare
<i>Conophytum swanepoelianum</i> Rawé subsp. <i>swanepoelianum</i>	MESEMBRYANTHEACEAE	Least Concern	Endemic	Rare
<i>Conophytum vanheerdei</i> Tischer	MESEMBRYANTHEACEAE	Threatened	Endemic	Rare
<i>Conophytum velutinum</i> Schwantes subsp. <i>velutinum</i>	MESEMBRYANTHEACEAE	Near Threatened	Endemic	Rare
<i>Conophytum verrucosum</i> (Lavis) G.D.Rowley	MESEMBRYANTHEACEAE	Least Concern	Endemic	
<i>Corycium deflexum</i> (Bolus) Rolfe	ORCHIDACEAE	Least Concern	Endemic	
<i>Corycium ingeanum</i> E.G.H.Oliv.	ORCHIDACEAE	Least Concern	Endemic	
<i>Corymbium glabrum</i> L. var. <i>glabrum</i>	ASTERACEAE	Least Concern	Endemic	
<i>Cotula loganii</i> Hutch.	ASTERACEAE	Threatened	Endemic	Rare
<i>Crassula barbata</i> Thunb. subsp. <i>broomii</i> (Schönland) Toelken	CRASSULACEAE	Near Threatened	Endemic	Rare
<i>Crassula brevifolia</i> Harv. subsp. <i>psammophila</i> Toelken	CRASSULACEAE	Threatened	Endemic	
<i>Crassula decumbens</i> Thunb. var. <i>brachyphylla</i> (Adamson) Toelken	CRASSULACEAE	Least Concern	Endemic	
<i>Crassula exilis</i> Harv. subsp. <i>exilis</i>	CRASSULACEAE	Near Threatened	Endemic	Rare
<i>Crassula fusca</i> Herre	CRASSULACEAE	Least Concern		
<i>Crassula garibina</i> Marloth & Schönland subsp. <i>glabra</i> Toelken	CRASSULACEAE	Near Threatened	Endemic	Rare
<i>Crassula multiceps</i> Harv.	CRASSULACEAE	Near Threatened	Endemic	Rare

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Taxon	FAMILY	Summary	SA ENDEMIC	Rarity
<i>Crassula namaquensis</i> Schönland & Baker f. subsp. <i>comptonii</i> (Hutchison & Pillans) Toelken	CRASSULACEAE	Near Threatened	Endemic	Rare
<i>Crassula pellucida</i> L. subsp. <i>spongiosa</i> Toelken	CRASSULACEAE	Near Threatened	Endemic	Rare
<i>Crassula plegmatoides</i> Friedrich	CRASSULACEAE	Threatened		
<i>Crassula roggeveldii</i> Schönland	CRASSULACEAE	Near Threatened	Endemic	Rare
<i>Crassula rupestris</i> Thunb. subsp. <i>commutata</i> (Friedrich) Toelken	CRASSULACEAE	Data Deficient		Rare
<i>Crassula sericea</i> Schönland var. <i>velutina</i> (Friedrich) Toelken	CRASSULACEAE	Near Threatened		Rare
<i>Crassula sladenii</i> Schönland	CRASSULACEAE	Near Threatened		Rare
<i>Crassula subacaulis</i> Schönland & Baker f. subsp. <i>subacaulis</i>	CRASSULACEAE	Near Threatened	Endemic	Rare
<i>Crassula susannae</i> Rauh & Friedrich	CRASSULACEAE	Data Deficient	Endemic	
<i>Crassula thunbergiana</i> Schult. subsp. <i>minutiflora</i> (Schönland & Baker f.) Toelken	CRASSULACEAE	Near Threatened		Rare
<i>Crassula vestita</i> Thunb.	CRASSULACEAE	Near Threatened	Endemic	Rare
<i>Crinum variable</i> (Jacq.) Herb.	AMARYLLIDACEAE	Least Concern	Endemic	
<i>Crocasmia fucata</i> (Herb.) M.P.de Vos	IRIDACEAE	Near Threatened	Endemic	Rare
<i>Crotalaria meyeriana</i> Steud.	FABACEAE	Near Threatened		Rare
<i>Crotalaria pearsonii</i> Baker f.	FABACEAE	Data Deficient	Endemic	
<i>Cullen biflora</i> (Harv.) C.H.Stirt.	FABACEAE	Data Deficient		Rare
<i>Cullumia pectinata</i> (Thunb.) Less.	ASTERACEAE	Near Threatened	Endemic	Rare
<i>Cullumia rigida</i> DC.	ASTERACEAE	Data Deficient	Endemic	Rare
<i>Cyanella aquatica</i> Oberm. ex G.Scott	TECOPHILAEACEAE	Near Threatened	Endemic	Rare
<i>Cyanella cygnea</i> G.Scott	TECOPHILAEACEAE	Near Threatened	Endemic	Rare

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Taxon	FAMILY	Summary	SA ENDEMIC	Rarity
<i>Cyristetes longifolia</i> (L.) Milne-Redh. & Schweick.	AMARYLLIDACEAE	Least Concern		
<i>Cynanchum meyeri</i> (Decne.) Schltr.	APOCYNACEAE	Near Threatened		Rare
<i>Cyphia longiflora</i> Schltr.	LOBELIACEAE	Data Deficient	Endemic	Rare
<i>Cyrtanthus herrei</i> (F.M.Leight.) R.A.Dyer	AMARYLLIDACEAE	Near Threatened		Rare
<i>Daubenya aurea</i> Lindl.	HYACINTHACEAE	Threatened	Endemic	
<i>Dianthus kamisbergensis</i> Sond.	CARYOPHYLLACEAE	Near Threatened	Endemic	Rare
<i>Diascia alonsooides</i> Benth.	SCROPHULARIACEAE	Least Concern	Endemic	
<i>Diascia insignis</i> K.E.Steiner	SCROPHULARIACEAE	Near Threatened	Endemic	Rare
<i>Diascia integerrima</i> Benth.	SCROPHULARIACEAE	Least Concern		
<i>Diascia lewisiae</i> K.E.Steiner	SCROPHULARIACEAE	Threatened	Endemic	
<i>Diascia nana</i> Diels	SCROPHULARIACEAE	Least Concern	Endemic	
<i>Diascia rudolphii</i> Hiern	SCROPHULARIACEAE	Least Concern	Endemic	
<i>Dinteranthus pole-evansii</i> (N.E.Br.) Schwantes	MESEMBRYANTHEMACEAE	Data Deficient	Endemic	
<i>Dinteranthus vanzylii</i> (L.Bolus) Schwantes	MESEMBRYANTHEMACEAE	Threatened	Endemic	
<i>Diosma ramosissima</i> Bartl. & H.L.Wendl.	RUTACEAE	Least Concern	Endemic	
<i>Disa macrostachya</i> (Lindl.) Bolus	ORCHIDACEAE	Threatened	Endemic	
<i>Disa spathulata</i> (L.f.) Sw. subsp. <i>spathulata</i>	ORCHIDACEAE	Least Concern	Endemic	
<i>Disperis purpurata</i> Rchb.f. subsp. <i>pallens</i> Bruyns	ORCHIDACEAE	Threatened	Endemic	Rare
<i>Dorotheanthus bellidiformis</i> (Burm.f.) N.E.Br. subsp. <i>bellidiformis</i>	MESEMBRYANTHEMACEAE	Least Concern	Endemic	
<i>Dorotheanthus booyensii</i> L.Bolus	MESEMBRYANTHEMACEAE	Least Concern	Endemic	
<i>Dorotheanthus maughanii</i> (N.E.Br.) Ihlenf. & Struck	MESEMBRYANTHEMACEAE	Least Concern	Endemic	
<i>Dorotheanthus rourkei</i> L.Bolus	MESEMBRYANTHEMACEAE	Least Concern	Endemic	
<i>Dregeochloa calviniensis</i> Conert	POACEAE	Near Threatened	Endemic	Rare
<i>Dregeochloa pumila</i> (Nees) Conert	POACEAE	Threatened		
<i>Drimia capensis</i> (Burm.f.) Wijnands	HYACINTHACEAE	Least Concern	Endemic	
<i>Duvalia maculata</i> N.E.Br.	APOCYNACEAE	Least Concern		

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Taxon	FAMILY	Summary	SA ENDEMIC	Rarity
<i>Ectadium virgatum</i> E.Mey.	APOCYNACEAE	Threatened		
<i>Ehrharta eburnea</i> Gibbs Russ.	POACEAE	Near Threatened	Endemic	Rare
<i>Empodium namaquensis</i> (Baker) M.F.Thomps.	HYPOXIDACEAE	Least Concern	Endemic	Rare
<i>Eriospermum arenosum</i> P.L.Perry	ERIOSPERMACEAE	Near Threatened	Endemic	Rare
<i>Eriospermum aribesense</i> P.L.Perry	ERIOSPERMACEAE	Near Threatened	Endemic	Rare
<i>Eriospermum armianum</i> P.L.Perry	ERIOSPERMACEAE	Near Threatened	Endemic	Rare
<i>Eriospermum attenuatum</i> P.L.Perry	ERIOSPERMACEAE	Near Threatened	Endemic	Rare
<i>Eriospermum cervicorne</i> Marloth	ERIOSPERMACEAE	Least Concern	Endemic	
<i>Eriospermum coactum</i> P.L.Perry	ERIOSPERMACEAE	Near Threatened	Endemic	Rare
<i>Eriospermum erinum</i> P.L.Perry	ERIOSPERMACEAE	Near Threatened	Endemic	Rare
<i>Eriospermum ernstii</i> P.L.Perry	ERIOSPERMACEAE	Near Threatened	Endemic	Rare
<i>Eriospermum filicaule</i> P.L.Perry	ERIOSPERMACEAE	Near Threatened	Endemic	Rare
<i>Eriospermum glaciale</i> P.L.Perry	ERIOSPERMACEAE	Near Threatened	Endemic	Rare
<i>Eriospermum minutiflorum</i> P.L.Perry	ERIOSPERMACEAE	Least Concern	Endemic	
<i>Eriospermum papilliferum</i> A.V.Duthie	ERIOSPERMACEAE	Near Threatened	Endemic	Rare
<i>Eriospermum parvulum</i> P.L.Perry	ERIOSPERMACEAE	Near Threatened	Endemic	Rare
<i>Eriospermum proliferum</i> Baker	ERIOSPERMACEAE	Least Concern	Endemic	
<i>Eriospermum pusillum</i> P.L.Perry	ERIOSPERMACEAE	Near Threatened	Endemic	Rare
<i>Eriospermum ramosum</i> P.L.Perry	ERIOSPERMACEAE	Near Threatened	Endemic	Rare

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Taxon	FAMILY	Summary	SA ENDEMIC	Rarity
<i>Eriospermum ratelpoortianum</i> P.L.Perry	ERIOSPERMACEAE	Near Threatened	Endemic	Rare
<i>Eriospermum sabulosum</i> P.L.Perry	ERIOSPERMACEAE	Near Threatened	Endemic	Rare
<i>Eriospermum tuberculatum</i> P.L.Perry	ERIOSPERMACEAE	Near Threatened	Endemic	Rare
<i>Eriospermum undulatum</i> P.L.Perry	ERIOSPERMACEAE	Data Deficient	Endemic	Rare
<i>Eriospermum villosum</i> Baker	ERIOSPERMACEAE	Least Concern	Endemic	
<i>Eriospermum viscosum</i> P.L.Perry	ERIOSPERMACEAE	Near Threatened	Endemic	Rare
<i>Euclea linearis</i> Zeyh. ex Hiern	EBENACEAE	Least Concern	Endemic	
<i>Eulophia tabularis</i> (L.f.) Bolus	ORCHIDACEAE	Least Concern	Endemic	
<i>Euphorbia albertensis</i> N.E.Br.	EUPHORBIACEAE	Threatened	Endemic	
<i>Euphorbia brakdamensis</i> N.E.Br.	EUPHORBIACEAE	Near Threatened	Endemic	Rare
<i>Euphorbia cibdela</i> N.E.Br.	EUPHORBIACEAE	Near Threatened		Rare
<i>Euphorbia cylindrica</i> A.C.White, R.A.Dyer & B.Sloane	EUPHORBIACEAE	Threatened	Endemic	
<i>Euphorbia friedrichiae</i> Dinter	EUPHORBIACEAE	Data Deficient		
<i>Euphorbia hallii</i> R.A.Dyer	EUPHORBIACEAE	Near Threatened	Endemic	Rare
<i>Euphorbia hottentota</i> Marloth	EUPHORBIACEAE	Near Threatened		Rare
<i>Euphorbia inornata</i> N.E.Br.	EUPHORBIACEAE	Data Deficient	Endemic	Rare
<i>Euphorbia oxystegia</i> Boiss.	EUPHORBIACEAE	Threatened	Endemic	
<i>Euphorbia pentops</i> A.C.White, R.A.Dyer & B.Sloane	EUPHORBIACEAE	Data Deficient	Endemic	Rare
<i>Euphorbia planiceps</i> A.C.White, R.A.Dyer & B.Sloane	EUPHORBIACEAE	Data Deficient	Endemic	Rare
<i>Euphorbia quadrata</i> Nel	EUPHORBIACEAE	Near Threatened	Endemic	Rare
<i>Euphorbia restituta</i> N.E.Br.	EUPHORBIACEAE	Near Threatened	Endemic	Rare
<i>Euphorbia rudolfii</i> N.E.Br.	EUPHORBIACEAE	Data Deficient	Endemic	Rare
<i>Euphorbia vaalputsiana</i> L.C.Leach	EUPHORBIACEAE	Near	Endemic	Rare