# Goegap Nature Reserve

Northern Cape Province,
South Africa

## Integrated Management Plan

Planned Cycle: 2020 to 2024

# AUTHORIZATION

This Integrated Management Plan (IMP) for the Goegap Nature Reserve (GGNR) was drafted by the Reserve Planning Team (RPT), a multi-disciplinary team in consultation with all stakeholders, for approval in terms of sections 39 and 41 of the National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003).

| NAME AND TITLE | SIGNATURE AND DATE |
|---|---|
| **Mr. L.M.M. Wa Modise**<br>**Acting Head of Department** | |

**Approved by:**

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|---|---|
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# FOREWORD

The Northern Cape Provincial Nature reserves have numerous benefits to both humans and natural ecosystems. They contribute directly to local, regional and national economies through tourism, employment and expenditure on reserve management. Nature reserves also facilitate complementary private sector investments, such as infrastructure and commercial services, which includes enabled industries such as the hospitality industry. Important social benefits to the public include the provision of an educational resource; indigenous and heritage values; and in increased quality of life, health and wellbeing.

Nature reserves are established in Northern Cape Province as a strategy to conserve and protect the natural environment for the benefit, enjoyment and welfare of present and future generations from a healthy environment.

In 2004, the 7th Conference of Parties decided that all member states of the Convention on Biological Diversity should develop and apply methodologies and criteria that would enable them to measure the effectiveness of nature reserve (protected area) management in the conservation and protection of biodiversity. South Africa has endorsed the World-Wide Fund for Nature (WWF) Management Effectiveness Tracking Tool (METT-SA) in this regard, which is being used in Northern Cape Province to measure management effectiveness in nature reserves.

Management effectiveness evaluations of nature reserves are vital for the measurement and improvement of the performance of each provincial nature reserve against set management objectives.

The management plans that have been developed for Northern Cape Province include:

- Conservation and tourism objectives for the effective management of the nature reserves that fall under the jurisdiction of Northern Cape Province;
- Visitor marketing and the facilitation of investment opportunities;
- Capacity building and tourism transformation;
- METT indicators to ensure the continuous improvement of the management of these nature reserves; and
- Provision of mechanisms for collaboration with communities and neighbours for harmonious co-existence and beneficiation to the province and the country.

By developing these management plans, the Department has ensured:

- That Northern Cape Province meets its obligatory implementation of international agreements; the Convention on Biological Biodiversity; the provisions of the Constitution of the Republic of South Africa, 1998 (Act No. 108 of 1998) and the National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003) through which natural resources are managed.
- The provision of ecosystem services for everyone in order to facilitate employment, exports, economic growth and a good quality of life.
- That the sourcing of funds for the management of nature reserves beyond the scope of formal Treasury allocations is enhanced.

HONOURABLE GALEREKWE MASE MANOPOLE
MEMBER OF EXECUTIVE COUNCIL: DAERDLR

# ABBREVIATIONS AND PLANNING TERMS

**ABBREVIATIONS:**

| | |
|---|---|
| APO | Annual Plan of Operations |
| BCEA | Basic Conditions of Employment Act, 1997 (Act No. 75 of 1997) |
| CAPEX | Capital Expenditures |
| CARA | Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983) |
| DEA | Department of Environmental Affairs |
| DAERL | Department Agriculture, Environmental Affairs Rural Development & Land Reform |
| DFFE | Department of Forestry, Fisheries and the Environment |
| DENC | Department Environment and Nature Conservation |
| DMRE | Department Mineral Resources and Energy |
| DRPW | Department of Roads and Public Works |
| DWAS | Department of Water and Sanitation |
| EEA | Employment Equity Act, 1998 (Act No. 55 of 1998) |
| EMF | Environmental Management Framework (Local Authority CBA's)) |
| EPWP | Extended Public Works Program |
| EWT | Endangered Wildlife Trust |
| FEPA | Freshwater Ecosystem Priority Area |
| FPA | Fire Protection Association [in terms of the National Veld and Forest Fire Act, 1998 (Act No. 101 of 1998)] |
| GGNR | Goegap Nature Reserve |
| HDI | Historically Disadvantaged Individual |
| HO | Head Office |
| HOD | Head of Department |
| HR | Human Resources |
| HRD | Human Resources Development |
| IBA | Important Bird Area |
| IDP | (municipal) Integrated Development Plan |
| IT | Information Technology |
| IUCN | International Union for the Conservation of Nature |
| KPA | Key Performance Area |
| LRA | Labour Relations Act, 1995 (Act No. 66 of 1995) |
| MEC | Member of the Executive Council |
| METT | Management Effectiveness Tracking Tool |
| METT-SA | Management Effectiveness Tracking Tool for South Africa |
| NBRBSA | National Building Regulations and Building Standards Act, 1977 (Act No. 103 of 1977) |
| NEMBA | National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004) |
| NEMPAA | National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003) |
| NEMWA | National Environmental Management: Waste Act, 2008 (Act No. 58 of 2008) |
| NHRA | National Heritage Resources Act, 1999 (Act No. 25 of 1999) |
| NPAES | National Protected Area Expansion Strategy |
| NSBA | National Spatial Biodiversity Assessment |
| NVFFA | National Veld and Forest Fire Act, 1998 (Act No. 101 of 1998) |
| NWA | National Water Act |
| OHSA | Occupational Health and Safety Act, 1993 (Act No. 85 of 1993) |
| OPEX | Operating Expenditures |
| PAAC | Protected Area Advisory Committee |
| PAM | Protected Area Management |
| PFMA | Public Finance Management Act, 1999 (Act No. 1 of 1999) |

| | |
|---|---|
| PPP | Public Private Partnership |
| PSA | Public Service Act, 1994 (Act No. 103 of 1994) |
| RMP | Reserve Management Plan |
| RPT | Reserve Planning Team |
| SANParks | South African National Parks |
| SAQA | South African Qualifications Authority |
| SANS | South African National Standard |
| SDA | Skills Development Act, 1998 (Act No. 97 of 1998) |
| SEMP | Strategic Environmental Management Plan (Local Authority) |
| SIS | Security and Investigation Services |
| SKDR | State of Knowledge Data Repository |
| SONR | State-owned Nature Reserves |
| SP | Strategic Plan |
| TOR | Terms of Reference |
| TFCA | Trans Frontier Conservation Area |
| TFP | Trans Frontier Park |
| THETA | Tourism and Hospitality Education and Training Authority |
| UNESCO | United Nations Educational, Scientific and Cultural Organization |
| UZM | Use Zone Map |
| VCA | Veld Condition Assessment |
| WfW | Working for Water |
| WHS | World Heritage Site |
| WOF | Working on Fire |
| WSA | Water Services Act, 1997 (Act No. 108 of 1997) |

**DEFINITION OF KEY PLANNING TERMS:**

| | |
|---|---|
| Activities | Activities are management tasks required to collectively realize the objectives. |
| Domain (Planning domain) | Planning domain include areas not declared in terms of NEMPAA where DAERL is appointed as management authority as a result of ownership or co-management agreements with planned protected area expansion for next 5-year planning period. |
| Estate | Estate is the area declared in terms of NEMPAA and where DAERL is appointed as management authority as a result of ownership or co-management agreements. |
| Guiding principles | Guiding principles provide overall direction to the implementation of activities |
| Monitoring | Monitoring is the collection of data and information in a consistent manner over time for the purpose of evaluation. |
| Objectives | Objectives are derived from the vision. They represent key areas in which achievements must be obtained in total, or in some combination, to give direction to the management aspiration (the vision). |
| Outcomes | Ideally outcomes are benefits produced from objectives and activities. |
| Outputs | Outputs are tangible results produced by activities. |
| Performance | Performance assessment is a measurement of accomplishment assessment against a set of pre-determined criteria (e.g., efficiency or effectiveness). |
| Performance indicator | A performance indicator is a measurement used to evaluate the success in achieving targets and realizing objectives. |
| Resources | Resources include the people, materials, technologies, money, etc. required to implement the activities. |
| Target | Targets are set for particular aspects of performance – financial returns, efficiency, and quality of services, etc. – against which performance is monitored and measured. |
| Conservation Development Framework (CDF) | A CDF is a spatial framework that includes a use zone map (zoning) that guides and co- ordinates conservation and development activities in a protected area. |
| Value | A value is a specific attribute or feature (cultural, ecological or recreational) within a reserve that may require additional/special consideration during the planning process and subsequent management. |
| Vision | Vision indicates the direction of management aspiration. |
| Zone of Influence | Shows the areas within which surrounding land-use changes could affect the reserve. Reserve boundaries are not static and there are factors beyond the current or future boundaries that can influence the Reserve. |

# EXECUTIVE SUMMARY

The following Executive Summary provides an overview of the 5-Year Integrated Management Plan (IMP) of the Goegap Nature Reserve.

## i. Purpose of the plan

The IMP sets out the ambitions for the Goegap Nature Reserve (GGNR), as articulated through the vision and objectives for the nature reserve for the next 5-year period 2019 to 2023. The plan sets out how these ambitions will be achieved and delivered through a range of management guidelines and actions. The Integrated Plan strives to:

- Identify the defining qualities and characteristics of the GGNR (i.e. what makes it special and unique) and why it was declared;
- Describe the reserve's management issues and challenges;
- Set out medium- and long-term ambitions for the desired state of the GGNR;
- Provide a five-year implementation framework for delivering this desired state;
- Describe the specific activities to be implemented on an annual basis;
- Identify the measures required to evaluate if the management actions are collectively contributing to achieve the desired state; and
- Describe the institutional, human resource and budget requirements for implementing the management plan

## ii. Reserve context

The GGNR covers an area of 33 412.7995 ha and declaration of the various portions and properties commenced in 1990, with new portions still in progress. These declarations were concluded in terms of Section 6(1) of the Nature and Environmental Conservation Ordinance (Ordinance 19 of 1974) and NEM:PAA (National Environmental Management Act: Protected Areas Act 2003, ((Act No. 57 of 2003)), and is therefore legally defined as a provincial nature reserve in terms of Section 12 of the National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003) (NEMPAA). The various portions of the GGNR were declared as a Nature Reserve in terms of Section 6(1) of the Nature and Environmental Conservation Ordinance (Ordinance 19 of 1974) proclamation number 50/1990 on 17 August 1990 and proclamation number 36/1994 on 12 April 1994 respectively.

In addition, 13 505.8369 ha were added to the PA through the Leslie Hill Succulent Karoo Trust and the WWF. These properties, Ratelkraal Remainder, Ratelkraal 131/5 Portion 1 (Declared on 22 February 2021 (Gov Gazette No 2394, Notice no 10 of 22 February 2021), Karehoutekloof 221, Portion 1 and Kaip Remainder 130, are contractually managed by the DAERL as Management Authority and the areas are to be declared as Protected Areas under Section 12 of the National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003) (NEMPAA) and incorporated with the GGNR.

During 2019 an additional 4 945.3288 ha was added through a Tripartite Offset Agreement with Koeris Wind Proprierty Limited, South Africa Mainstream Renewable Power Kangnas Proprierty and the Northern Cape Department of Environment and Nature Conservation signed on 16 October 2014. The property, Oranjefontein Remainder 129, was transferred to the Provincial Government of the Northern Cape in April 2019 and officially transferred to the Department of Environment and Nature Conservation in February 2020. This area was declared under Section 12 of the National Environmental Management Protected Areas Act (Act No.57 of 2003) (NEMPAA) (Gov Gazette No 2407, Notice no 34 of 29 March 2021) and will be managed as part of GGNR.
The reserve is located 15km south east from the town Springbok, Namaqualand, in the Northern Cape Province. It falls within the Succulent-Karoo Biome which consists mainly of a coastal belt of

approximately 100 km to 150 km wide. The landscape of the Succulent-Karoo Biome, as characterized by the coastal platform, the Knersvlakte north of Van Rhynsdorp and the Tankwa Karoo that is drained from the Tankwa River and its tributaries, is generally flat or evenly raised. In harsh contrast with this there are the jagged mountains of the Richtersveld and northern Namaqualand, where the biome is split by the Orange River.

The temperature for the area ranges from between -2,8°C in July to 39,3°C in January/February. According to the historical weather data from the O'Kiep weather station the average maximum temperature is 24,3°C and the minimum temperature, 10,3°C. The rainfall varies, as the reserve is situated partially in the summer rainfall area and partially in the winter rainfall area. Within the reserve the rainfall varies between 50 and 300mm per year. According to Schulze (1965) the rainfall in this area has an unpredictability of 40%, which is also found in Israel, for instance.

Ecologically GGNR is quite important as it is an example of the three components of the Succulent-Karoo biome (Namaqua Klipkoppe Shrubland, Namaqualand Blomveld & Bushmanland Arid Grassland), each geographically and floristically different. An example of the Bushmanland Arid Grassland vegetation type, for which there were no formally protected areas, was included through the Leslie Hill Succulent Karoo Trust and the WWF (Kaip sections), as well as the addition of the Oranjefontein property.
The area known as the Namaqualand Rocky Hills is also a recognized important center of endemism. Approximately 40% of the worlds' 10 000 succulent species are found in this region. Succulent plants are predominant within the biome, with a large number of endemic species occurring within the area. Through the expansion important geographical links with the Bushmanland Inselberg Shrubland vegetation type is created. Important terrestrial migration corridors are also being created, assisting with the mimicking of natural grazing patterns.

One of the goals of the NPAES&AP is to create a network of areas to conserve a representative sample of biodiversity and to maintain key ecological processes across the land- and seascapes. With this in mind the possibility of expanding the GGNR to the southwest, to incorporate and link a watershed-to-coast protected environment in conjunction with the LHSKT and SANParks will be given due consideration.

Socio-economically the Reserve plays an important role during the tourist season, providing activities and accommodation to visitors to the region. Approximately 8 000 people visit GGNR annually, with the bulk of the visitors arriving in time for the flower season, ranging from 3 weeks to 3 months.

Originally one of the goals of the reserve was to establish a wild flower garden. This was actualized in the establishment of the Hester Malan Wild Flower garden, named after the wife of Dr Nico Malan, Administrator of the Cape of Good Hope at the time. When the reserve expanded, it was then renamed to "Goegap", the Nama word for "reed water", indicating the presence of water. The reserve was then proclaimed as Goegap Provincial Nature Reserve.
The current staff complement of the reserve comprises 13 staff members, which is 11 staff members short of the full staff complement required to manage the reserve effectively

The area has a very long archaeological record stretching all the way back to the Early Stone Age (ESA) at least 50 000 years ago, to a period before modern humans inhabited the globe. The ESA artifacts are not common, but a small assemblage has been found, but as yet undocumented, at a rock overhang close to the entrance gate of the reserve. Artifacts from the succeeding Middle Stone Age (MSA) (250 000 to 30 000 years ago) are more abundant to the east of the area and are characterized by distinctive flakes, blades and specialized formal tools.

The arrival of European colonists signified the end of the Stone Age. GGNR does however contain a few colonial sites which include building remains (dwellings and kraals) with ceramics, glass and porcelain, graves in the Christian burial tradition with crude headstones, mining and agricultural remnants. There are also very well-preserved examples of spectacular stone kraals constructed at the turn of the century on the Oranjefontein section of the reserve.

The reserve can be described as mountainous, with a large part being at a much higher elevation than the surrounding terrain. This consists of rocky hills with exposed rock from a granite origin approximately 1 100 million years ago. The high-lying areas of the GGNR are mainly dominated by the following igneous/intrusive geological/rock formations: Kweekfontein Granite of the Corridor Suite, (lithology - fine to coarse grained equi-granular leucogranite), Concordia Granite of the Spektakel Suite (equi-granular, medium-grained leucogranite) and Nababeep Gneiss of the Little Namaqualand Suite (coarse-grained, mesocratic biotite augen gneiss). Isolated areas of Modderfontein Gneiss of the Little Namaqualand Suite (leucocratic augen gneiss, minor fine-grained gneiss), Brandewynsbank Gneiss of the Gladkop Metamorphic Suite (fine grained grey biotite gneiss, in places megacrystic) and Koperberg Suite (Norite, diorite and anorthosite) are also found. The western section of the Oranjefontein property contain mainly Mokolian granites and gneisses which form even 'rocky sheets' ('klipplate') to moderate rocky slopes with boulders. The granite & gneiss dominated western section is varied with calcrete substrate and alluvium deposits to the eastern section of the property.

Witsandberg consists of the Noenoemaasberg Gneiss of the Gladkop Metamorphic Suite (pink weathering, fine-grained, equi-granular gneiss) and Steinkopf Gneiss of the Gladkop Metamorphic Suite (fine grained, grey, banded to massive biotite-hornblende gneiss). The low-lying areas of GGNR are covered with red Aeolian sand and pediment deposits (sand, scree, rubble and sandy soil). The low hills that rise above the surrounding plains often consist of a capping quartzite, with the slopes consisting of schists and amphibolites, while the base of the slope is granitic gneiss. The slopes are often steep and covered with a coarse mantle of cobbles and boulders. Where they are shallow, lithosols are developed on these pedologically young features and the change in lithologies with topography results in a variation of soil fertility. The highly siliceous quartzites are infertile, whereas the schists and

amphibolite contain major elements such as potassium, calcium and magnesium with variable amounts of copper and zinc.

Dassiepiss or “Klipsweet” also known as Hyraceum or Africa Stone is also found in GGNR and surrounding properties. It is actually a fossilized mixture of rock hyrax dung and urine that forms into a solidified resin. It is estimated that some of the middens date back 40 000 years. This resin is either pulverized into a powder or soaked in alcohol for a few weeks to make a tincture (Dassiepiss tea) that was traditionally used to brew a detoxifying tea. Dassiepiss tea features extensively in many traditional remedies for various disorders including skin and stomach upsets, but it is probably best known for its treatment of convulsions and epilepsy. It seems that it shares properties similar to a group of chemicals called benzodiazepines (valium and xanax are two examples) which are used extensively for conditions including anxiety and convulsive disorders (Payne, A. 2013). As if its medicinal properties weren’t amazing enough, South African Rock Hyrax dung is becoming increasingly sought after by manufacturers of perfumes because of its unique smell.

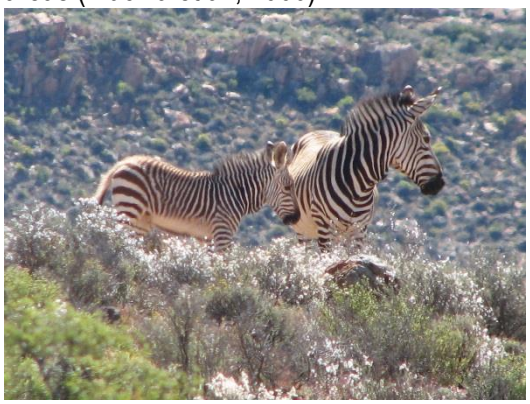
The largest part of the reserve is drained via the seasonal Buffels River system, disemboguing at Kleinzee. The Droëdap River originates in the GGNR and joins with the Buffels River system. The smaller northern portion of the reserve drains via the Orange River system. A spring or seep is water that reaches the surface from some underground supply, appearing as small water holes or wet spots on hillsides or along river banks. There are 7 fresh water springs on the reserve, where sub-terrainean water is discharged through cracks and joints in the rocks. These springs are monitored on a quarterly basis for permanence. Seeps are found in the river beds and along the foot of rock faces where water collects as well as through cracks in rock faces. Drainage lines are dependent on the seasonal rainfall of the area. There are no permanent river systems within the reserve.

According to Mucina et al. (2006) three vegetation types that resort under the Succulent Karoo Biome and one vegetation type resorting under the Nama Karoo Biome, occur on GGNR.

The Namaqualand Klipkoppe Shrubland consists of a landscape dominated by granite and gneiss domes and disintegrated boulder koppies. The area supports open shrub land which is dominated by shrubs of dwarf to medium size and with ericoid or succulent leaves. Kokerboom trees (*Aloidendron dichotoma*) are found mostly on north-facing slopes. Shrubs of the Vygie/Ice plant family (Mesembryanthemaceae) and Daisy plant family (Asteraceae) are common in the Klipkoppe.

The Namaqualand Blomveld consists of level to slightly undulating plains and valleys situated between rocky granite hills and mountains and interspersed with ephemeral water channels. Sparse dwarf shrubs with succulent or ericoid leaves dominate the area. Plants in the Daisy (Asteraceae) and Vygie/Ice plant (Mesembryanthemaceae) families are especially abundant. Geophytes and ephemeral herbs are responsible for spectacular flower displays in spring. Historically these plains and valleys were exposed to disturbance due to ploughing and overgrazing. Recovery is often prevented by sustained heavy grazing on palatable perennial plants (Mucina et al., 2006)

The Bushmanland Arid Grassland area consists of extensive to irregular plains which is sparsely covered by grasses, especially of the *Stipagrostis* species. In places *Salsola* shrubs change the vegetation structure and in years with abundant rainfall, rich displays of annuals occur. The Oranjefontein section also incorporates sections of Transition Veld which contains characteristics of both summer and winter rainfall vegetation, therefore an ecotone between the winter (western) and summer (east) rainfall areas (Mucina et al., 2006).



GGNR is characterized by a variety of fauna. Forty-nine mammal species from 23 families have been recorded on the reserve. Small mammal species are well represented and include species such as Smith's Red Rock Rabbit, Cape Hare, Brant's Whistling Rat, Bush Karoo Rat, Four-striped Grass Mouse, Namaqua Rock Mouse, Dassie Rat, Reddish-grey Rock Shrew and Round-eared Elephant-shrew.

Predators include Black-backed Jackal, Cape Fox, Bat-eared Fox, Caracal and African Wild Cat. Several nocturnal species are found such as Porcupine, Aardwolf, Aardvark and Egyptian free-tailed bat. Large herbivores include Hartmann's Mountain Zebra, Gemsbok, Springbok, Klipspringer, Duiker and Steenbok.

Eighty-eight bird species have been sighted in the reserve, including Verreaux's Eagle, Martial Eagle, Jackal Buzzard, Black Harrier, Secretary Bird, Ludwig's Bustard, Cape Eagle-owl, Ground Woodpecker, Cinnamon-breasted Warbler and Black-headed Canary. Namaqua Sandgrouse, Namaqua Dove, Bokmakierie, Fiscal Shrike, Cape Robin, Pririt Batis, White-backed Mousebird, Cape Bulbul and Malachite Sunbird are frequently seen.

Reptiles include three tortoise species, nineteen lizard, agama and gecko species, fifteen snake species and three frog/toad species. The Angulate Tortoise is the most common tortoise species on the reserve, while the Speckled Padloper and Tent Tortoise are not frequently encountered. Lizard species that are encountered frequently include the Western Three-striped Skink, Variegated Skink, Striped Sandveld Lizard, Karoo Girdled Lizard, Southern Rock Agama and Bibron's Thick-toed Gecko. The most common snake species are the Black Spitting Cobra, Cape Cobra,

Puff Adder, Karoo Whip Snake and Coral Shield Cobra. The Cape River Frog and Namaqua Caco are found near natural springs and the Karoo Toad is found widely across the reserve. These species' records will be amended as new information becomes available.

With regard to socio-economic context the Nama Khoi Local Municipality is considered the hub of the Namakwa District Municipality has the largest population of the Namakwa District, with around 54 644 people. It includes the larger towns of Springbok, Concordia and O'Kiep, with Springbok the commercial, administrative, farming and industrial center. The area covers approximately 15 025 square kilometers. The population density is approximately 3.6 persons per square kilometer. According to the Namakwa District Strategic Environmental Management Plan (SEMP, 2011), the Nama Khoi Local Municipality has the highest number of income earners, but has the highest percentage low-income earners within the district. Hence poverty alleviation projects and programs to improve the economy of the area will yield the highest poverty alleviation benefits.

The Namakwa District Strategic Environmental Management Plan (SEMP, 2011) acknowledge that biodiversity underpins sustainable development as it provides many important ecosystem services such as forage production for livestock and water production that form the cornerstone of local economies and livelihoods.

EPIP programs within the reserve to develop tourism infrastructure will also make a huge contribution to job creation.
The SEMP (2011) also acknowledge that the area is characterized by a unique environment and contains numerous areas of high conservation importance and high tourism potential. Tourism is a growing and developing sector within the area and its potential is yet to be fulfilled and the GGNR can assist in this regard in terms of eco-tourism.

The administrative management section of the GGNR lies at the administrative office 5 km from the main gate. This section consists of an office block, storerooms, laboratory, garages, workshop area, succulent display garden, lapa, and ablution facilities. Directly opposite the administration office is the Conference facility, capable of hosting 150 people.

The road network within the reserve ranges in condition. The management roads (approximately 370 km) are less maintained than the official tourism roads (approximately 73km). The tourism roads include the 4x4 and general tourism routes. Tourism access to the reserve is through the main entrance gate. Management access to the reserve is achieved through 16 management gates. Signage within the reserve is reasonably extensive as directional signage within the reserve has to cover the main tourism use area. Signage from the N14 and N7, as well as the R355 to the entrance of the reserve can be improved. Tourism facilities are limited to 15 picnic sites for day visitors, a basic campsite, group camp, bush huts, chalets and 4x4 trails camp for overnight visitors. In addition, it also offers a conference facility and related boardroom to the public. The reserve provides for two hiking trails, divided into seven circular day hikes, ranging from two to eight kilometers in length. Driving routes include 60km of 4x4/ mountain bike/ horse trails, as well as a 13km general access driving route.

Limited Staff accommodation (8 houses) is provided on the reserve for crucial management personnel.
23 000 ha of the GGNR is game fenced to 1.8m with 4 800 ha currently fenced with 1.4m stock proof fencing. 4 945 ha is fenced with 1.6m stock proof fencing. 28 000 ha has officially been declared as Protected Area, with 7 000 ha in process.
The local authority supplies water and electricity to the administrative section of the PA, whilst electricity to the tourism facilities is supplied by means of solar systems. Water at the 4x4 trails camp is provided by a bore hole equipped with a solar pump.

The reserve is included in one of the 42 focus areas identified for protected area expansion by the National Protected Area Expansion Strategy (NPAES) (DEA, 2008), namely the Kamiesberg Bushmanland Augrabies focus area (#15). This focus area represents the largest of remaining natural area for the expansion of the protected area and forms part of the planned Lower Orange River TFCA. It provides an opportunity to protect 22 Desert and Succulent Karoo vegetation types, mostly completely unprotected, several river types that are still intact but not protected, and important ecological gradients and centers of endemism.

The Namakwa District Biodiversity Sector Plan (2008) also identifies the area as a terrestrial and aquatic critical biodiversity area and Ecological Support Area (CBA 2).
An expansion project has also been identified for the GGNR by the Management Authority. The vision is to expand the reserve to the Namaqua focus area (#28), providing a link to the Kamiesberg Bushmanland Augrabies focus area (#15) thereby creating an important upland/lowland corridor and contribute to the maintenance of biodiversity thresholds, ecological processes and climate change resilience.

## iii. Reserve values

The following key values have been identified during the situational assessment and refined through a series of stakeholder workshops to inform implementation and planning.

Institutional

- The PA potential to demonstrate the efficacy and benefits of functional partnerships between DAERL, NGO's, Private landowners and other State Departments in the collaborative administration and management of the GGNR.
- The reserve is committed to management in accordance with best practice and rationally driven by current knowledge.
- The reserve is committed to good administration and the efficient use and good maintenance of resources.
- The reserve is committed to being a good employer and socially affirmative neighbour in the local communities.

Ecological

- The GGNR is of biodiversity significance and falls within a global biodiversity hotspot namely the Succulent Karoo (SK).
- The GGNR falls within the SK which was selected by WWF as a Global 200 terrestrial ecoregion and is an area most crucial to conservation of global biodiversity.
- The reserve includes areas, which have been identified as irreplaceable, and vulnerable through the SKEP biome-wide conservation planning projects.
- It forms part of the Kamiesberg Bushmanland Augrabies focus areas for land based protected area expansion in terms of the National Protected Area Expansion Strategy (NPAES, 2008).

- The reserve contains areas classified as CBA 2: Important Areas as well as Ecological Support Areas in terms of Critical Biodiversity Values (CBA's) Map of the Nama Khoi Municipality.

Socio-Economic

- The reserve is easily accessible by tourists and offers some of the best flower viewing and recreational opportunities in the area.
- Good quality accommodation is available on and close to reserve.
- The reserve is regarded as playing an important social support role in local and surrounding communities.

## iv. Management issues and challenges

The following key management issues and challenges facing the reserve have been identified during the situational assessment and refined through a series of stakeholder workshops to inform implementation and planning.

Institutional

- There are insufficient resources and capacity to coordinate and implement effective management of the PA site;
- Centralized budget and de-capacitated reserve management;
- Lack of supported budget to operate the reserve properly;
- The middle management staff gap between the Assistant Reserve Manager and the Field Rangers will need to be occupied by a Senior Field Ranger;
- Law enforcement is insufficient or lacking due to lack of relevant reserve staff capacity.
- Staff members do not have uniforms/protective clothing and resources to conduct day to day work;
- Poor quality equipment and building infrastructure;
- Poor support from the Department of Roads and Public Works regarding maintenance of reserve infrastructure including buildings, electricity supply and roads;
- Lack of effective communication devices: Telkom lines are unreliable; poor internet facilities; no cellphone reception on portions of the reserve and no two way radio system;
- No Eskom power on sections of the reserve;
- There is a need to ensure regular review of management activities and revision of management planning;
- There is a need to improve and formalize NGO and other organs of State agreements and contracts.
- There is potential for greater collaboration with other conservation organizations e.g. SANParks to support management objectives;
- Appropriate institutional arrangements are required to facilitate active involvement of local stakeholders in decision making;
- There is a potential for management objectives to be undermined if not clearly communicated to and supported by institutions responsible for management of the PA and conservation domain; and
- There is a need to assess and address the threat of groundwater quality deterioration.

Ecological

- Formal protection of newly acquired properties is required to better secure management of the area;
- Corridors for critical game movement and migration patterns from varying habitats are extremely limited;
- The size of the area could result in edge effects and fragmentation of biological communities. This in turn might lead to a lack of migration, lack of species diversity (especially the terrestrial fauna and flora) and loss of genetic diversity;

- Soils are highly erodible and the reserve's erosion control program is inadequate;
- Ecologically sensitive area with small portions that have been transformed due to historical farming practices.
- Erratic rainfall effects carrying capacity of the vegetation which limits game densities;
- Game removal activities are not implemented timeously which can lead to ecological degradation due to overgrazing.
- The occurrence of alien invasive plants within drainage lines and dry river beds;
- More monitoring is required to improve baseline data;
- There is a need to promote scientific research and disseminate results to better understand the functioning of the ecosystems;
- A possible decrease in groundwater quality as a result of activities taking place within catchment areas (particularly waste water works at Carolusberg town and OCC mining history);
- Appropriate mechanisms of waste management and recycling are required to limit waste accumulation;
- Appropriate restrictions are required to prevent unnecessary disturbance of biota as a result of aircraft activities;
- Poaching of wildlife in areas close to public roads and neighbouring communities;
- Illegal collection of plants and reptiles on the reserve can negatively impact populations.

Socio-Economic

- Overall reserve marketing is fragmented and need to be consolidated in order to encourage tourists to visit the area;
- Individual activity marketing is mostly at a low-level;
- Marketing strategies and activities need to be developed to encourage tourists to visit the area outside of the flower season;
- Activities associated with mining activities implemented on the reserve borders could be detrimental to the health of the surrounding vegetation;
- A focused tourism development plan is required to grow tourism activities associated with the PA;
- There is a need to improve environmental education to communities and schools of the surrounding areas;
- There is a need to ensure that tourism-related benefits accrue to local target communities;
- Potential conflict between conservation and surrounding land use objectives could undermine the proposed expansion of the PA;
- There is a need to review and refine the draft zonation plan to manage tourism activities within the PA;
- There is a need to support the local economy of surrounding towns by procurement of goods and services by the PA.

## v. Desired condition of the reserve

The vision of the reserve describes the overall long-term goal for the operation, protection and development of the GGNR. The following vision was developed by the RPT:

**VISION**

***To conserve the GGNR with its unique desert biodiversity and sensitive eco-systems for the benefit of people and the environment.***

***From this, it is envisaged that the following will be secured:***

- ***Conservation of genetic diversity essential for the functioning of ecological processes;***
- ***Conservation of the biodiversity of the fauna and flora and life-support mechanisms;***
- ***Preservation of the important cultural and historical heritage attributes;***
- ***The integrity of the natural environment is protected to sustain its wilderness and scenic qualities to serve as a basis for tourism;***
- ***Quality of life of rural communities are improved by developing opportunities for tourism;***
- ***Equitable access to, and responsible use of, the reserve and its natural resources for the benefit of present and future generations through strategic partnerships.***

## vi. Key management activities and targets

Twenty-four objectives, grouped according to six key performance areas, is anticipated to contribute to realizing the vision of the GGNR. These key performance areas with their objectives as identified by the RPT is as follow:

**KPA 1: Biodiversity and Heritage Conservation**

Objective 1.1: Obtain Biodiversity knowledge about the GGNR;
Objective 1.2: Restoration and mitigation of degradation in the GGNR;
Objective 1.3: Maintenance of ecological processes in the GGNR;
Objective 1.4: Maintenance of critical ecosystem services in the GGNR;
Objective 1.5: Land use planning and management outside of the protected area;
Objective 1.6: Water use planning and management influencing the protected area;
Objective 1.7: Audit achievement of biodiversity targets;
Objective 1.8: Manage and mitigate the environmental impacts of conservation management, tourism, recreation and natural resource use in the GGNR;
Objective 1.9: Obtain Cultural Heritage knowledge about the GGNR.

**KPA 2: Recreation, Marketing, Education, Awareness and Interpretation**

Objective 2.1: Develop, deliver and maintain a diverse range of tourism and recreational services for visitors to the GGNR in accordance with CDF;
Objective 2.2: Develop and implement a focused and cost-effective marketing program for the GGNR;
Objective 2.3: Develop and implement a focused and cost-effective awareness raising and educational program for the GGNR.

**KPA 3: Enforcement, Security and Access Control**

Objective 3.1: Secure the legal tenure of, and management authority for the GGNR;
Objective 3.2: Secure the boundaries of, and maintain controlled access to the GGNR;
Objective 3.3: Sustain an effective law enforcement and compliance capacity in the GGNR.

**KPA 4: Infrastructure and Equipment**

Objective 4.1: Acquire and maintain operational equipment and vehicles for the GGNR;
Objective 4.2: Construct, maintain and upgrade the administration infrastructure and bulk services infrastructure in the GGNR;
Objective 4.3: Construct, upgrade and maintain day and overnight visitor buildings and infrastructure in the GGNR.

**KPA 5: Stakeholder Involvement**

Objective 5.1: Interaction with stakeholders and communities in the planning, development and management of the GGNR;

Objective 5.2: Actively participate in local and regional conservation and socio-economic development initiatives that may affect or benefit the GGNR;
Objective 5.3: Develop, implement and maintain effective mechanisms for ongoing communications with co-management partners.

**KPA 6: Administration and Planning**

Objective 6.1: Institute and maintain an effective management planning capability in the GGNR;
Objective 6.2: Maintain an adequately equipped, resourced and trained staff complement for the GGNR;
Objective 6.3: Institute and maintain an effective financial and administration and planning capability in the GGNR.

### vii. Institutional arrangements and budget requirements

The following recommendations regarding the minimum staffing complement and funding required for the successful implementation of the Integrated Management Plan (i.e. the APO) was made by the RPT making use of the RB Martin formula. Martin has developed formulae which give a crude estimate of the number of field staff, the required operating costs and the necessary capital expenditure for a protected area of any given size.

The RB Martin formula has been used to estimate minimum conservation costs for protected areas and compare these with disclosed budgets, which suggests a 30% aggregate underfunding of conservation. Conservation functions in provinces appear seriously underfunded, largely because they must vie for provincial allocations along with other critical social functions such as health, education and social welfare. Regardless of the final figure, there appears to be ample evidence from a number of sources that conservation is seriously underfunded in aggregate, and that a comprehensive review of the funding requirements for conservation is required (DEA, 2012). It is proposed that a total of 24 staff members, (consisting of a reserve manager, assistant reserve manager, 7 field rangers, 6 logistical supporters, 1 administrative officer, 1 messenger, 1 facility manager, 1 artisan, 3 gate guards and 2 cleaners) would be required for the successful implementation of this Integrated Management Plan.

**The following capital and operational budgets are proposed for the successful implementation of this IMP. The proposed budget in terms of the R.B. Martin formula is also provided for comparison.**

| *ECONOMIC CLASSIFICATION - SCOA* | *2020-2021* | *2021-2022* | *2022-2023* | *2023-2024* |
|---|---|---|---|---|
| | *Budget* | *Budget* | *Budget* | *Budget* |
| *PERSONEEL* | *R 2 537 952,75* | *R 2 218 852,33* | *R 2 090 168,52* | *R 2 385 139,76* |
| *GOODS AND SERVICES* | *R 975 153,88* | *R 3 485 860,88* | *R 2 901 352,48* | *R 3 531 346,11* |
| *CAPITAL ASSETS >R5000* | *R -* | *R 262 800,00* | *R 144 500,00* | *R 73 000,00* |
| *Total activity based budget* | *R 3 513 106,63* | *R 5 967 513,21* | *R 5 136 021,00* | *R 5 989 485,87* |
| | | | | |
| Total activity based budget without Persal | R 975 153,88 | R 3 748 660,88 | R 3 045 852,48 | R 3 604 346,11 |
| Total budget required in terms of RB Martin formula | R 6 213 512,85 | R 9 097 585,60 | R 8 662 223,43 | R 9 501 535,61 |

# 1. INTRODUCTION

## 1.1 Integrated Environmental Management System

The Integrated Environmental Management System (IEMS) assists DAERL in managing its ecological, social (including human resources) and financial resources to meet the Nature Reserve management objectives. It is a system that meets the requirements of relevant ISO 14001 standards but also enables the DAERL and its Nature Reserves to plan for and meet strategic (five-year) objectives as well as assist with the implementation of annual planning objectives within a coherent system of continual improvement. Linking the strategic planning cycle and the annual planning cycle enables the Department to ensure that operations are focused to meet Departmental and Nature Reserve strategic objectives. At a Nature

Reserve level, the strategic objectives and annual planning objectives will be guided by the Departments objectives within these two cycles of planning.

## 1.2 Integrated Management Planning

The Integrated Management Plan (IMP) is drafted every five years with the involvement of representative stakeholders. The IMP forms a bridge between the long-term policy and vision for the Reserve, and the medium term (five year) priorities to attain that vision.

Rather than detailing all operational and potential reactive courses of action in the next five years the IMP focuses on strategic priorities. These priorities are considered strategic because they will shape the future development of the Nature Reserve, as well as ensuring responsible operational management on a day-to-day basis. In drafting the IMP, significant efforts are directed towards integrating the vision with operational reality.

To ensure its survival as an action plan, the IMP is presented as an operational management framework (OMF) with a series of Key Performance Areas, each of which contains objectives that the reserve staff will need to address. For each one of the aforementioned objectives, a number of guiding management principles (i.e., norms and standards by which operational decisions with regard to the reserve will be made); management actions (i.e., key strategic activities to be implemented in order to achieve the reserve's objectives); and management targets were set by the RPT.

Each management action was defined and prioritized as being of a high, medium or low priority for the five-year horizon covered by this Integrated Management Plan. Time frames, targets, key performance indicators and responsibilities were also allocated to each management action, or to a group of linked management actions.

The aforementioned principles, actions and targets will be used to inform the annual plan of operation (APO) of the reserve, as well as the resources required to implement it. To provide a spatial context to the strategic reserve objectives, a Conservation Development Framework (CDF) is formulated to demarcate the reserve into functional areas (use zones) with a specification of management guidelines for each use zone and to provide a spatial framework for visitor facility provision and access with a specification of management guidelines for the range of visitor sites, facilities and access.

### 1.2.1 The GGNR Management Plan

The Reserve Management Plan (RMP) is the overarching management planning document for the GGNR.

The GGNR Management Plan comprises two complementary documents[1]:

- An IMP including a OMF covering a period of five years (this document); and
- an Annual Plan of Operations (APO) covering the current financial year.

All the information necessary to guide the management of the nature reserve is included in these two documents. The structure used for the GGNR IMP (Table 1) is the same as for all DAERL Nature Reserves.

No major decisions potentially affecting the future of the reserve will be taken without reference to the IMP.

**Table 1: Structure of the IMP for GGNR**

| SECTION 1 | INTRODUCTION |
|---|---|
| This section briefly describes the: (i) planning context for the IMP; (ii) purpose of the IMP; (iii) structure of the IMP; and (iv) approach to developing the IMP. | |
| **SECTION 2** | **CONTEXTUAL FRAMEWORK** |
| This section provides a succinct summary of contextual information about the GGNR. Context identify the defining qualities and characteristics of the GGNR What makes it special and unique and also describe the GGNR's management issues and challenges | |

[1] These two planning documents may, in turn, be supported by a **State of Knowledge Data Repository (SKDR)** and program-specific, more detailed **Subsidiary Plans**.

| SECTION 3 | STRATEGIC PLANNING FRAMEWORK |
|---|---|
| This section defines the ambitions for the GGNR, through the formulation of a vision and a set of objectives. This section also spatially represents the desired state of the GGNR in the form of a use zone map for the GGNR. Strategic planning is an organization's process of defining its strategy, or direction, and making decisions on allocating its resources to pursue this strategy. Set out medium- and long-term ambitions for the desired state of the GGNR | |
| **SECTION 4** | **OPERATIONAL MANAGEMENT FRAMEWORK** |
| This section defines how the vision and the objectives will be delivered. It details the key management guidelines and management actions for six thematic areas (Key Performance Areas). Operations management is a dynamic, iterative and complex process, which is comprised of a series of decisions and activities by managers and employees – affected by a number of interrelated internal and external factors – to turn strategic plans into reality in order to achieve strategic objectives. Operational Management Framework-<br>- Translates the strategic planning framework for each set of objectives into management actions; and management targets to accomplishing objectives and the resources required to implement it, including specific activities to be implemented on an annual basis;<br>- Identify the measures required to evaluate if the management actions are collectively contributing to achieve the desired state;<br>- Describe control mechanisms (legislation, policies, norms and standards) for guiding implementation and decisionmaking; and<br>- Provide procedures on how to implement operations (standard operating procedures) | |
| **SECTION 5** | **RESOURCING AND GOVERNANCE FRAMEWORK** |

### 1.2.2 Purpose of the GGNR IMP

The National Environment Management: Protected Areas Act No. 57 of 2003 requires that DAERL produces management plans for all Nature Reserves in consultation with relevant stakeholders.
The overall aim of the Management Plan as per the NEMPAA is to:

- Ensure the protected area is managed according to the reason it was declared;
- Be a tool to guide management of a protected area at all levels, from the basic operations to the level of the Minister of Environmental Affairs;
- Be a tool which enables the evaluation of progress against set objectives;
- Be a document which can be used to set up key performance indicators for Reserve staff;
- Set the intent of the Reserve, and provide explicit evidence for the financial support required for the Reserve; and
- Provide for the scoping process required as part of the Environmental Impact Assessment (EIA) process for development in the Reserve.

The purpose of the IMP is in line with the aim of the NRMPAA and is to:

- Identify the defining qualities and characteristics of the reserve (i.e., what makes it special and unique);
- Describe the reserve's management issues and challenges;
- Set out medium- and long-term ambitions for the desired state of the reserve;
- Provide a five-year implementation framework for delivering this desired state;
- Describe the specific activities to be implemented on an annual basis;
- Identify the measures required to evaluate if the management actions are collectively contributing to achieve the desired state; and
- Describe the institutional, human resource and budget requirements for implementing the management plan.

The overall purpose of the IMP is to set out the medium-term ambitions for the reserve. These ambitions are expressed through the **vision** and **objectives**. The IMP then describes how these ambitions will be delivered through a range **of management guidelines** and **management actions**.

Eight basic steps were taken in preparing the IMP, these steps are outlined in the Table 2 below.

**Table 2: The eight basic steps taken in preparing the IMP of the GGNR**

| Step | Purpose of step |
|---|---|
| STEP 1: Data collection, background research and site visit. | To collect, collate and review the contextual reserve information that informs the GGNR management planning process. |
| STEP 2: Establishment of a Reserve Planning Team (RPT). | To establish an inter-disciplinary team to guide and advise on the preparation, and ongoing review and evaluation, of the IMP. |
| STEP 3: Identification of the reserve values. | To describe why the reserve was designated, and its associated values and benefits. |
| STEP 4: Deciding on the desired state for the reserve. | To develop and articulate a desired condition, state or appearance of the reserve (vision, objectives and use zone plan). |
| STEP 5: Development of an action plan for the reserve. | To identify and develop the key management actions needed to achieve the desired state for the GGNR. |
| STEP 6: Preparation of the first draft of the IMP for the reserve. | To integrate all the information from Step 1 and Steps 3 to 5 into a first draft of the IMP. |
| STEP 7: Stakeholder consultation. | To create an opportunity for the RPT, and later the general public and other stakeholders/interested parties, to review and comment on iterative drafts of the IMP. |
| STEP 8: Revision of the IMP to include comments and recommendations from the RPT and other stakeholders. | To revise the draft IMP, taking into account the comments received from the RPT and other stakeholders/interested parties and the public. |

## 1.3 IEMS audit

An audit of the Integrated Environmental Management System is undertaken on an annual basis. An audit is designed to obtain objective information that provides an evaluation of the PA's conformance to the criteria it has set itself. These criteria may include legal compliance, conformance with PA procedures, achievement in Key Performance Areas, and compliance with any other standard the Department may have adopted. The annual management review below and progress against Key Performance Areas forms the basis of the annual IEMS Audit

The results of this process are communicated to management, staff and other stakeholders through the management effectiveness improvement strategy (MEIS).

## 1.4 Management review

A review of the IEMS is undertaken on an annual basis to prevents it from constraining new initiatives and innovative approaches to challenges that may arise. The review takes account of the changing circumstances that comprise the reserve environment.

In undertaking such a review or assessment, the Protected Area Manager considers the results of the METT-SA, relevant recommendations by Stakeholders, and any other information considered relevant to the review. The Management review provides the framework within which Protected Areas will develop their Operational Management Framework (OMF) for the following year.

## 1.5 Operational Management Framework

The PA is required to develop and maintain an OMF. This Framework translates the expectations of the Integrated Management Plan into workable objectives or project areas in a manner that serves the management style of the respective operational sections within the PA. The OMF provides an indication of required human and financial resources for each of the objectives or project areas. The development of OMF therefore serves as an important interface between the project-planning and budgeting exercises.

## 1.6 Strategic review

A Strategic Review of the IMP is held every five years and seeks to evaluate the effectiveness, suitability and adequacy of the Integrated Environmental Management System, within the context of a changing PA environment. The Strategic Review differs from the Management Review in that it includes the

participation of relevant stakeholders. The Strategic Review may recommend changes to Policy and Procedures. Participants may also decide to commission further Environmental Reviews (including a Legal Review) to provide information necessary for the assessment. The results of the Strategic Review provide the framework for the development of a five-year Strategic Management Plan for the following 5-year planning cycle of the PA.

## 1.7 Implementation

Implementation and maintenance of the IMP is the responsibility of all reserve staff. Specific procedures are developed and followed to ensure there is continuity in the implementation.

## 1.8 Responsibilities

General responsibilities for reserve operations are set out in job descriptions. An assessment of personal performance in respect of allocated tasks and applicable Key Performance Areas is undertaken on an annual basis for all reserve staff. This is described in the Northern Cape Provincial Administration's Performance Management and Development Policy.

## 1.9 Training

As part of the Performance Management and Development Policy training needs in relation to job descriptions is described in the Personal Development Plan of staff members. This system aims to ensure that reserve staff is competent to carry out allotted tasks in a manner that supports the goals of the Environmental Policy.

## 1.10 Communications

Communication within the reserve is regarded as a two-way dialogue, and all reserve staff are encouraged to raise issues and concerns they have regarding the operation. Effective communication is seen as imperative in creating a reserve community.

## 1.11 Documentation and Records

Documentation is maintained to provide management, staff, visitors and other stakeholders with an understanding of the management priorities and systems that operate within the reserve. Wherever possible, documentation is available electronically to facilitate access and avoid unnecessary paper waste. A document control system is employed to ensure documents remain relevant, up-to-date and accessible. All documentation and records form part of the SKDR of the reserve.

## 1.12 Monitoring

According to McGeoch et al. (2011) the measurement and monitoring of biodiversity in protected areas is generally aimed at,

- assessing and improving the efficiency and effectiveness of conservation action,
- informing management action and policy at both local and national levels,
- providing evidence of conservation success and
- strengthening the case for conservation among policy makers, funding agencies and land owners.

In addition, biodiversity monitoring systems in protected areas are intended to provide early recognition of unforeseen changes that impact on biodiversity, and to contribute to understanding potential impacts of current and new activities on biodiversity. These data will also feed into national and international assessments of the state of biodiversity. Monitoring systems are thus necessary to both identify where policy or management intervention may be required, and to inform and evaluate the effectiveness of any interventions.

DAERL has developed a Biodiversity Monitoring Framework (BMF) that maps the way forward for biodiversity monitoring in DAERL nature reserves. The BMF provides the principle motivation for the

development and implementation of a Biodiversity Monitoring System (BMS) for DAERL that addresses and prioritises the full range of key biodiversity concerns, conservation, and reporting commitments and obligations across reserves, taxa and environments. As such, it is intended to play a significant role in guiding investment in research, monitoring, and resulting policy and management action in nature reserves for the foreseeable future.

Two main approaches were used to guide the design and development of the DAERL BMF and to identify Biodiversity Monitoring Programs (BMPs).

The approach that will be used to track and evaluate progress in the development and adoption of DAERL s' BMS will be based on the evaluation and monitoring principles set for the PA IMP. This approach adopts a logical series of steps to measure progress with the implementation of the BMS. It ensures ongoing assessment of the effectiveness of the framework and its implementation, and ultimately the organisations' mandate to enable informed and accountable decision-making through monitoring and analysis. As part of this process, the BMF should be regularly reviewed and evaluated, as is the case with management plans.

# 2. CONTEXTUAL FRAMEWORK

## 2.1 Location and interface

The GGNR is located 15Km southeast of Springbok Namaqua Region of the Namakwa District of Northern Cape Province. The reserve is situated within the Kamieskroon, Bushmanland, Augrabies focus area for protected area expansion.

The PA is included in one of the 42 focus areas identified for protected area expansion by the National Protected Area Expansion Strategy (DEA, 2008) and represents the largest of remaining natural area for the expansion of the protected area and forms part of the planned Lower Orange River TFCA.

The GGNR is situated between the N14 and R355 and expands into the Bushmanland Arid Grassland vegetation type. Large portions of the PA is owned by the WWF but is managed through approved Management Agreement by the DAERL.

In managing areas of this nature, it is important that agreements between all relevant parties, are strictly adhered too. The surface area of the GGNR expands over an area of 36 941.10409 ha and consists of portions of the properties as indicated in Table 3.

**Table 3: Properties included in GGNR**

| Farm | Size Ha | Tile deed | Landowner | Declaration No. |
|---|---|---|---|---|
| Ptn 1 Melkboschkuil 132 | 14 | To be registered - donation | OCC | To be completed |
| Ptn 3 & 5 Melkboschkuil 132 | 4563.2541 | T11205/1966 | Republic of SA | No. 36/1994 |
| Ptn 8 Melkboschkuil 132 | 1900.5690 | T16361/1981 | Republic of SA | No.36/1994 |
| Ptn 19 Melkboschkuil 132 | 46.3798 | To be registered – donation: consolidated with Ptn 8 as Ptn 21 | OCC | To be completed |
| Ptn 1 Karehoute Kloof 221 | 8436.7859 | T12292/1990 | Republic of SA | No.50/1990 |
| Ptn 2 Karehoute Kloof 221 | 1204.7030 | T642/2015 | WWF | To be completed |
| Rem Ratelkraal 131 | 4443.6860 | T3161/2009 | WWF | No. 10/2021 |
| Ptn1 Ratelkraal 131 | 4443.6329 | T5164/2009 | WWF | No. 10/2021 |
| Rem Kaip 130 | 3414.46 | T54873/1988 | WWF | To be completed |
| Kaip 130 Port 3 | 3428.2414 | | WWF | To be completed |

| | | | | |
|---|---|---|---|---|
| Rem Oranjefontein 129 | 4945.3288 | T861/2019 | PGNC | No. 34/2021 |

## 2.2 Legal status

The National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003) (''the Act'') has as one of its aims the protection of conservation and ecologically viable areas representative of South Africa's biological diversity and its natural landscapes and seascapes and makes provision for the declaration of various types of protected areas. Section 9(a) provides for special nature reserves, national parks, nature reserves (including wilderness areas) and protected environments and Section 9(c) provides for Marine protected Areas.

The GGNR covers an area of 36 941.10409 ha and portions were declared as a Nature Reserve in 1990 and 1994 in terms of Section 6(1) of the Nature and Environmental Conservation Ordinance (Ordinance 19 of 1974) proclamation no 50/1990, 36/1994, 10/2021 & 34/2021 and is therefore legally defined as a provincial nature reserve in terms of Section 12 of the National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003) (NEMPAA).
Three of the 11 properties included in the GGNR are registered in the name of the Republic of South Africa, while 5 are registered in the name of WWF SA. Two of the portions were donated by the OCC and are in process of registration. One of the properties is an Offset from the Alternative Energy Sector and was registered in the name of the Provincial Government of the Northern Cape.
The Northern Cape Department of Agriculture, Environmental Affairs, Rural Development & Land Reform (DAERL) is currently the Management Authority of the GGNR including the properties owned by WWF SA through contractual arrangements.
In addition to the NEMPAA, a Reserve Management Plan must comply with other related national legislation such as the National Environmental Management: Biodiversity Act (NEMA: BA), national policy and international conventions that have been signed and ratified by the South African Government. The key national, provincial and local legislation that has a direct influence on management activities are provided for in the Operational Management Framework.

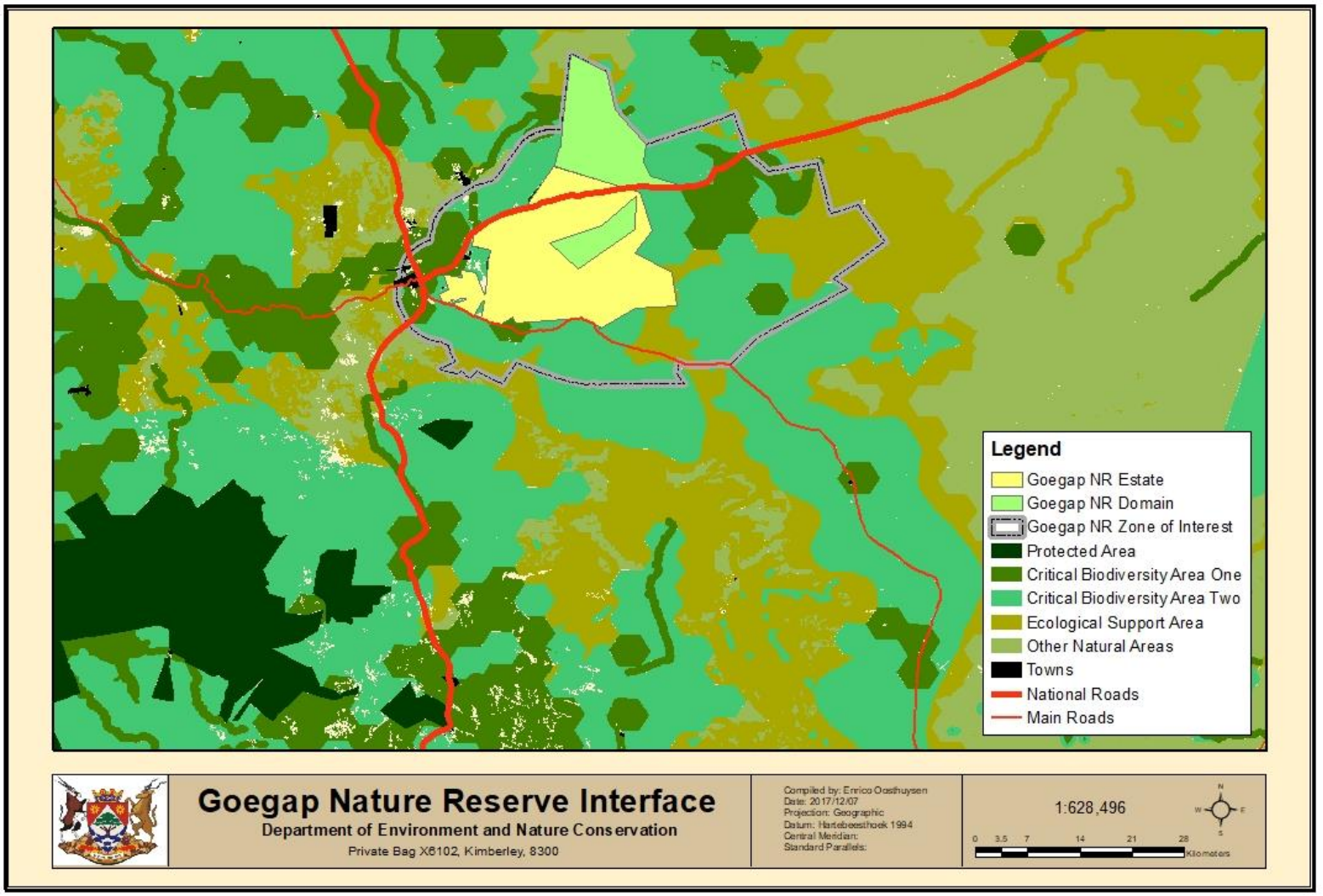



**Figure 1: GGNR Interface**

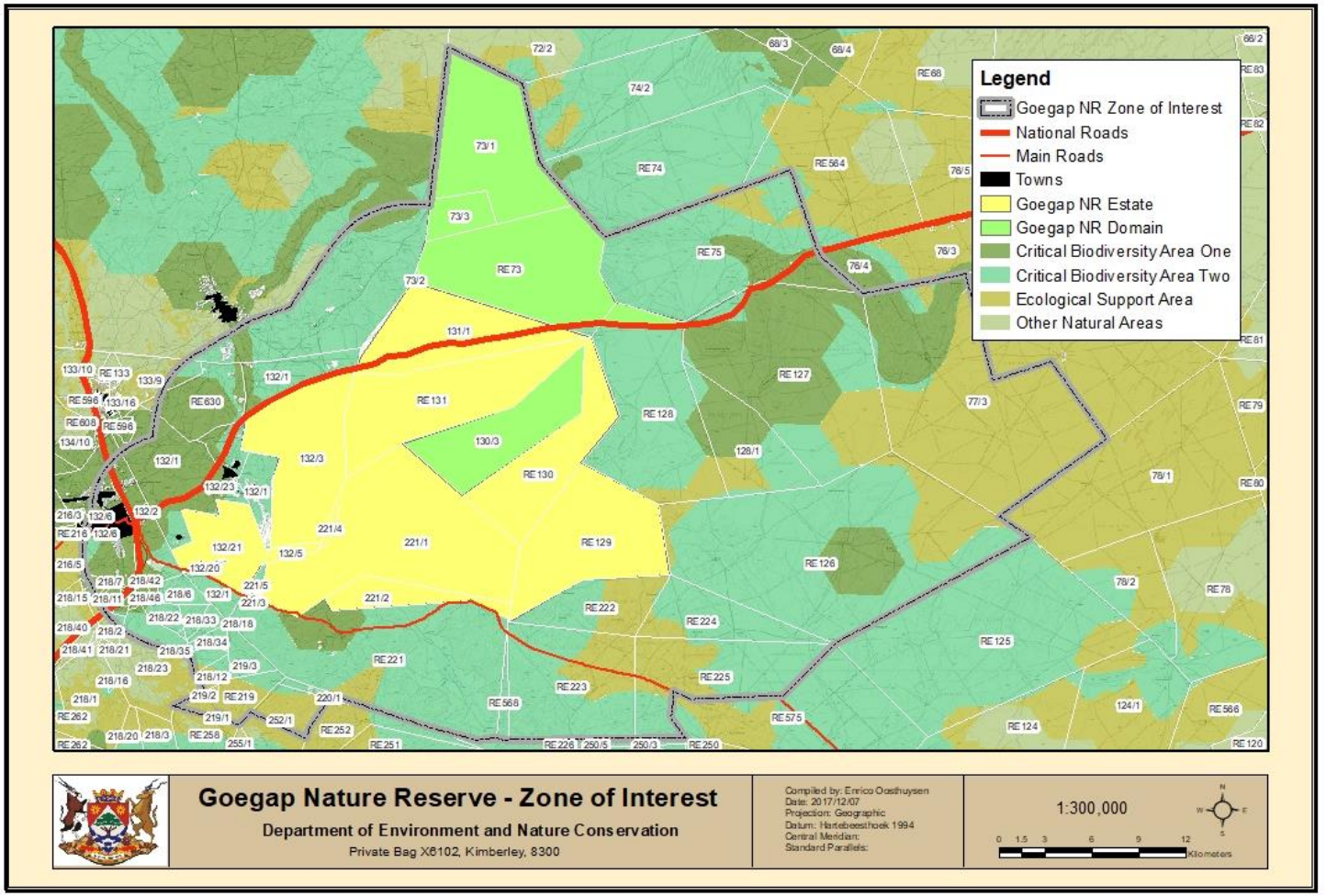



**Figure 2: GGNR Zone of Interest**

**Table 4: Demarcation beacon Co-ordinates**

| Beacon No | Y | X |
|---|---|---|
| 1 | S 29.605399° | E 17.959248° |
| 2 | S 29.575958° | E 18.023772° |
| 3 | S 29.526918° | E 18.055377° |
| 4 | S 29.558003° | E 18.159226° |
| 5 | S 29.695028° | E 18.204488° |
| 6 | S 29.722840° | E 18.110927° |
| 7 | S 29.718579° | E 17.991160° |
| 8 | S 29.693850° | E 17.929585° |
| 9 | S 29.681358° | E 17.916551° |
| 10 | S 29.658210° | E 17.922262° |
| 11 | S 29.677042° | E 17.968323° |
| 12 | S 29.673783° | E 17.979400° |
| 13 | S 29.623103° | E 17.956432° |

## 2.3 Institutional arrangements

### 2.3.1 General

In implementing the IMP, it is essential that Reserve Management understand the mandates of various role-players and the institutional framework in which decision making; implementation and monitoring will be carried out. In light of this, a brief outline of the mandates and responsibilities of the Management Authority and key supporting government departments is provided below.

The mission of the DAERL, as the current designated management authority of the GGNR, is to conserve and protect the natural environment for the benefit, enjoyment and welfare of present and future generations by integrating sustainable utilisation with socio-economic development. The Department's strategic goals are to conserve, value, sustainably use, protect and continually enhance environmental assets; enhance socio-economic benefits and employment creation for present and future generations from a healthy environment; and provide a department that is fully capacitated to deliver its services efficiently and effectively.

The current Strategic and Annual Performance Plan of DAERL aim at achieving 6 strategic goals for the current cycle that is reviewed in line with the Medium Strategic Framework and the Environmental Sector Strategic Plan.

The Strategic goals with goal statements of DAERL include the following:

| | |
|---|---|
| Goal 1 | Environmental Quality and Biodiversity Management |
| statement | Environmental assets conserved, valued, sustainably used, protected and continually enhanced |
| Goal 2 | Socio-economic benefits and Employment creation |
| statement | Enhanced socio-economic benefits and employment creation for the present and future generations from a healthy environment |
| Goal 3 | Cooperative Governance and Administration |
| statement | A department that is fully capacitated to deliver its services efficiently and effectively |
| Goal 4 | Environmental Education |
| statement | Environmental education provided to stimulate critical thinking and influence decision making |
| Goal 5 | Research and development support |
| statement | Ensure sustainable development and utilisation of natural resources while securing representative and resilient ecosystems through scientific research, spatial planning and cooperative governance |
| Goal 6 | Compliance and Enforcement |
| statement | Promote and enforce compliance with environmental legislation |

To achieve these strategic goals the Department is divided in 8 programs with their sub-programs (Annexure 1). Protected Area Management resorts under sub subprogram 8.3.2 Conservation Agencies and Services. The strategic objective of this sub-subprogram is that "The protected area network is secured, expanded and managed to ensure that a representative sample of biodiversity and key ecological processes are conserved".

The purpose of the sub-program is implementing mechanisms for management of ecologically viable areas, conserving biodiversity; protecting species and ecosystems of specific land areas, and related conservation activities.

Also, to build a sound scientific base for the effective management of natural resources and biodiversity conservation decision making.

Conservation agencies (either external statutory bodies or provincial departments) are primarily engaged in nature conservation as well as the tourism and hospitality industry, the management of provincial nature reserves, enforcement and monitoring within their areas and as well as research, education and visitor services.

This sub-program currently directly manages 8 nature reserves covering a total area of 75 261.5843 ha or 3.29% of the total Northern Cape protected area estate. This total area does not include areas managed in terms of management or co-management agreements.

In addition, a range of other core government departments have important roles to play in ensuring that the GGNR is appropriately conserved and managed as set out in the sections below.

#### 2.3.1.1. Department of Forestry, Fisheries and the Environment

South Africa's National Department of Forestry, Fisheries and the Environment (DFFE) is responsible for the overall coordination of environmental activities in South Africa and is also the custodian of all protected areas in terms of NEMPAA. It also coordinates environmental research, undertakes environmental education and ensures the implementation of environmental impact assessments, amongst other duties.

The DFFE is also tackling the critical challenge of natural resource management, environmental protection and infrastructure under the management of Environmental Programs (EP) through two divisions, namely Natural Resource Management (NRM) Programs and the Environmental Protection and Infrastructure (EPI) Programs.

Natural Resources Management (NRM) Programs address threats to the productive use of land and water, and the functioning of natural systems. These range from invasive alien species clearing programs to wild fires and land degradation.

NRM programs include the following:

- Working for Water
- Working for Wetlands
- Working on Fire
- Working on Land
- Working for Forests
- Working for Energy

Environmental Protection and Infrastructure (EPI) Programs manage the identification, planning and implementation of focal areas such as:

- Working on Waste
- Working for the Coast
- People & Parks
- Eco-Furniture Factories, a component of Working for Land,
- Greening and Open Space Management.

DFFE's directorate – Transfrontier Conservation Areas is also tasked with the establishment and co-ordination between partners within Trans-frontier Conservation Areas.

#### 2.3.1.2. Department of Water and Sanitation

The DWS has the responsibility of developing tools and legislation related to water resource management; establishing appropriate institutional arrangements (CMA, other forums & advisory committees); and creating awareness and building capacity. Water resource planning, both quantity and quality, at catchment level, as well as the issuing of water use licenses and the enforcement and compliance of the provisions of the NWA also fall within the responsibilities of DWS.
It is also the responsibility of the DWS to develop legislation and policies related to water resource management, namely:

- Developing approaches, systems, tools, standards, objectives and strategies that support and promote the sustainable utilisation of water resources;
- Facilitating the implementation of catchment management and other related strategies;
- Monitoring resource quality (this includes hydrological, water quality and bio monitoring);
- Auditing the state of South Africa's water resources against set objectives;
- Constructing & maintaining water-related infrastructure; and
- Setting water quality standards for the specific Water Management Area

#### 2.3.1.3 Department Roads and Public Works

The Northern Cape DRPW, in accordance with their Constitution, is responsible for Public Works functions, which relate to provincial functions and provincial state property (including State-owned Nature Reserves). The Department's mission is to provide and maintain all provincial land, buildings and road infrastructure in an integrated, sustainable manner.
The core functions of the DRPW include:

- The provision and management of immovable properties that serve as a platform for the efficient delivery of various government services;
- Rendering an expert-built environment function that involves technical planning, design and construction management; and
- Coordination of the expanded Public Works Program.

#### 2.3.1.4 Department Sports, Arts and Culture

Only the Western Cape, Eastern Cape and Kwa-Zulu Natal have Provincial Heritage Authorities, and consequently the national heritage authority, SAHRA administers heritage in the remaining provinces particularly where archaeology and palaeontology are the dominant concerns. Archaeology, including rock art, graves of victims of conflict and other graves not in formal cemeteries are administered by the South African National Heritage Authority, SAHRA.
World Heritage Sites are administered by DFFE. Heritage Northern Cape (Ngwao Boswa Kapa Bokoni) a public entity established in terms of the National Heritage Resources Act is responsible for the protection, conservation, management and interpretation of the heritage resources of the Northern Cape. Amongst other things the latter administers:

- World Heritage Sites;
- Provincial Heritage Sites (except those defined as archaeological and palaeontological sites, which are administered by SAHRA);
- Heritage Areas;
- Register Sites;
- Structures older than 60 years, but younger than 100 years or structures older than 100 years and still in use; and
- Public monuments & memorials.

#### 2.3.1.5 Department: Cooperative Governance, Human Settlements and Traditional Affairs (CoGHSTA)

The mission of the Northern Cape Department of CoGHSTA is to facilitate and manage:

- integrated sustainable human settlements and infrastructure development for effective service delivery;

- facilitate, monitor and support the consolidation and sustainability phases at municipalities for integrated, sustainable service delivery;
- promote and support inter-sphere engagement for integrated planning and coordination;
- facilitate, develop and support systems and structures to enhance traditional leadership; and
- ensure the efficient, effective and economic utilisation of departmental resources to maximise service.

#### 2.3.1.6 Department of Rural Development and Land Reform

The Spatial Planning and Land Use Management Branch of the department are to:

- Develop policy and standards, provide support and monitor implementation of SPLUM legislation and capacitate planning institutions;
- Provide spatial planning information and environmental planning services;
- Provide integrated spatial planning support;
- Manage projects at Branch level;
- Provide program management support; and
- Provide service delivery coordination services.

This branch through the local municipality will be responsible for the implementation of the Northern Cape Spatial Planning and Land Use Management Act, 2013 (Act No. 16 of 2013). This act provides for the spatial planning, land use management and development of land in the Northern Cape Province in a sustainable manner, by means of the coordination and alignment of land use, land development policies, plans and systems of all spheres of government through the development of a single spatial structuring system, which ensures that sustainable development is developmental, consistent, uniform, transparent and inclusive in nature.

The function of the Land Redistribution and Development Branch of the department is to:

- Provide land acquisition and strategic institutional partnerships;
- Provide PLAS trading account's financial management services;
- Develop and provide strategic support to farmers and cooperatives;
- Provide land reform program support and service delivery coordination; and

Provide land acquisition and recapitalisation & development services at regional and district level

#### 2.3.1.7 Department of Transport, Safety and Liaison

The mission of the Northern Cape Department of Transport, Safety and Liaison is to enable a safe and secure environment and mobility for the community of the Northern Cape through:

- good corporate governance, management, administration and support;
- establishing and supporting community safety partnerships;
- monitoring and oversight of the police;
- facilitating and coordinating social crime prevention and road safety programs;
- educating, enforcing and administering road traffic legislation;
- liaison with all relevant stakeholders, role-players and clients pertaining to policing, safety and security; and
- provision of an integrated transport system and operation for goods and people.

### 2.3.2 Institutional Arrangements Specifically Relevant to GGNR

#### 2.3.2.1 Local Community, NGO's and Private Landowners

Most of the properties included in the GGNR is State-owned and no community or private land is included in the reserve. Some of the properties however is owned by WWF SA who purchased the properties with funds made available through the Leslie Hill Succulent Karoo Trust. A committed supporter of the conservation of the Succulent Karoo, Mr. Leslie Hill and WWF, initiated the Leslie Hill Succulent Karoo Trust in 1995 to fund vital conservation initiatives in the Succulent Karoo.

In addition, the property registered as Oranjefontein Rem/129 was obtained through an Offset Agreement between the Department Agriculture, Environmental Affairs, Land Reform & Rural Development (formerly DENC) and the South Africa Mainstream Renewable Power Developments PTY Ltd. This agreement

enables the property to be managed as part of the GGNR enabling Mainstream to contribute to the biodiversity economy though the Asset Based Community Development approach. Management funding will be made available to the Department Agriculture, Environmental Affairs, Land Reform & Rural Development, through the company in order to assist with the Management thereof.
Stakeholder consultation and support is an important aspect of effective protected area management. It is also a requirement in terms of Sections 39(3) and 41(2)(e) of the National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003). Accordingly, the development of this 5-year IMP has been undertaken through a collaborative process involving local communities and other key stakeholders. Stakeholder engagement has furthermore also been set as a Key Performance Area in this 5-Year IMP: Strategic Implementation Framework: KPA 5 - Stakeholder Involvement.
To give effect to the objectives of the NEM:PAA section 2(f) to promote participation of local communities in the management of protected areas, where appropriate, and Section 41(2)(e) that states a management plan must contain procedures for public participation, including participation by the land owner, any local community or other interested party GGNR has establish an protected area advisory committee (PAAC).
A PAAC provides a means for a legitimate platform through which to communicate Nature Reserve and Protected Environment issues to ensure participation of all stakeholders on matters of mutual relevance affecting the Reserve. It is expected that the PAAC will facilitate a constructive interaction between the Reserve and the surrounding communities / stakeholders. PAACs are established to encourage the building of constituencies in support of the natural and cultural heritage conservation goals of the Northern Cape. PAACs are not decision-making institutions, but are crucial for adherence to Batho Pele Principles.

## 2.4 Reserve description

### 2.4.1 History

The archaeology of the Northern Cape is rich and varied, covering long spans of human history (Beaumont & Morris 1990; Morris & Beaumont 2004). Stone Age material found in the wider region spans the Earlier, Middle and Later Stone Ages through Pleistocene and Holocene times. Some areas in any given environment would be richer than others, and not all sites are equally significant. Originally (pre-history excluded) the first peoples to the area could be seen as the Khoi-San, the Nama-Hottentot and the Mountain Damara, e.g. people speaking the Nama languages. These people were hunters and semi-nomadic pastoralists. They used the area for purposes of habitation, cultural and religious practices, grazing, cultivation, hunting, and exploitation of natural resources. The Bushmen or Khoi-San had possibly been living in the area at least 300 years before the first European had landed at the Cape.
Of significance is a small rock shelter immediately west of and above a day visitor picnic facility. The shelter, at 29.684125˚ S 17.946909˚ E, has what could be colonial era stone walling partly across the entrance, behind which there is archaeological deposit containing stone artefacts. There are also artefacts on the talus slope below the shelter. The ceiling of the shelter is blackened from fires. It is not known if finger paintings, such as those documented at Kangnas and at sites south west of Springbok, might have existed beneath the layer of soot. Of particular significance in the local environment would be any evidence bearing on the introduction of a herding way of life, which was well established at the time of first colonial contact from the late seventeenth century (e.g. Webley 2007).
There are in addition ample traces locally of the colonial era reflecting the extension of a colonial farming frontier as well as the major mid-nineteenth and subsequent exploitation of copper, which gave rise to the local towns. Simon van der Stel's journey to Namaqualand in search of copper in 1685 is well documented. During 1836 Sir James Alexander travelled through the area, as a follow-up to the copper exploration of Van der Stel. In 1850, the farm Melkboschkuil in the "Klein Koperberge" was obtained by the 7 Cloete brothers, after which it changed hands a number of times. Copper was mined at great length and during this period to the 1930's, trees were eradicated to a large extent, especially *Pappea capensis*, *Vachellia erioloba* and *Ficus cordata*, for firewood at the mines. During the period 1937 to 1942 it was managed by the O'Kiep Copper Mining Company (OCC).

A number of significant colonial era settlements, possibly “veeposte” as well as probable permanent farm house structures, consisting of at least one, perhaps two dwelling units, several kraals, “kook skerms” and other elements (including a number of graves) are scattered throughout the reserve. These structures may represent part of a seasonal transhumance cycle when stock farmers in the past would trek between summer and winter grazing as well as aspects of the copper mining activity on the reserve. The sites show skilled use of environmental features in construction, with the dwellings and kraal elements maximizing natural rock formations for economy of materials and shelter from prevailing winds and weather. Beautifully preserved examples of very high skilled stonework kraals can be found on the Oranjefontein section of the reserve.

During the Anglo-Boer War 1899 – 1902, the area was used by both the Afrikaner Commando’s as well as the British regiments for livestock provision areas. Contacts also took place between the Boer and British soldiers on the farm Ratelkraal. Watering points, look out points and shooting shelters are still found on the property. During 1966 the OCC donated a portion of the farm Melkboschkuil to the Provincial Administration of the Cape of Good Hope. In 1988 the Provincial Administration purchased the farm Karéhoutekloof and the Hester Malan Namaqualand Wild Flower Reserve, was opened in honor of the then Administrator off the Cape of Good Hope, Dr Nico Malan’s wife.

### 2.4.2 Climate

The temperature for the area ranges from between -2,8°C in July to 39,3°C in January/February. According to the historical weather data from the O'Kiep weather station the average maximum temperature is 24,3°C and the minimum temperature, 10,3°C. Summers throughout the area are hot and dry, and winters usually cool to mild, although there may be very cold post-frontal snaps when frost is common (Helme, N. A. 2007). The rainfall varies, as the reserve is situated partially in the summer rainfall area and partially in the winter rainfall area. Within the reserve the rainfall varies between 100 and 300mm per year. According to Schulze (1965) the rainfall in this area has an unpredictability of 40%, which is also found in Israel, for instance. Snow is uncommon in winter and early spring, but a light dusting seems to occur at least once every few years. Rainfall in the most easterly portion of the reserve can vary from 50 to 200mm per year. The rainfall in this section is mainly limited to the summer and autumn months.

The CSIR created a detailed new Köppen-Geiger map to quantify the current climatic conditions as accurately as possible in South Africa. This classification uses a concatenation of a maximum of three alphabetic characters that describe the main climatic category, amount of precipitation and temperature characteristics. GGNR is unique in the sense that four of the climatic categories converge in this region namely the BWh (Arid, Desert, Hot arid), Bwk (Arid, Desert, Cold arid), BSh (Arid, Steppe, Hot arid) and BSk (Arid, Steppe, Cold arid) regions (Figure 4). The site-specific climate data for the reserve over the past 5 years is provided in Figure 3.

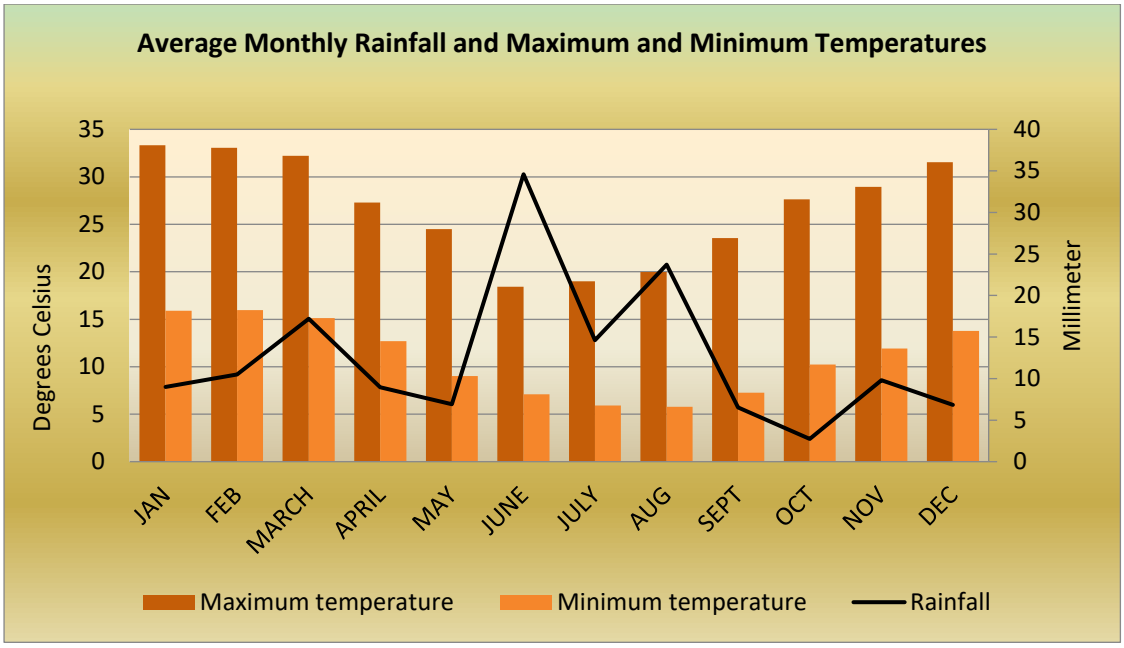



**Figure 3: Average monthly rainfall and maximum and minimum temperatures**

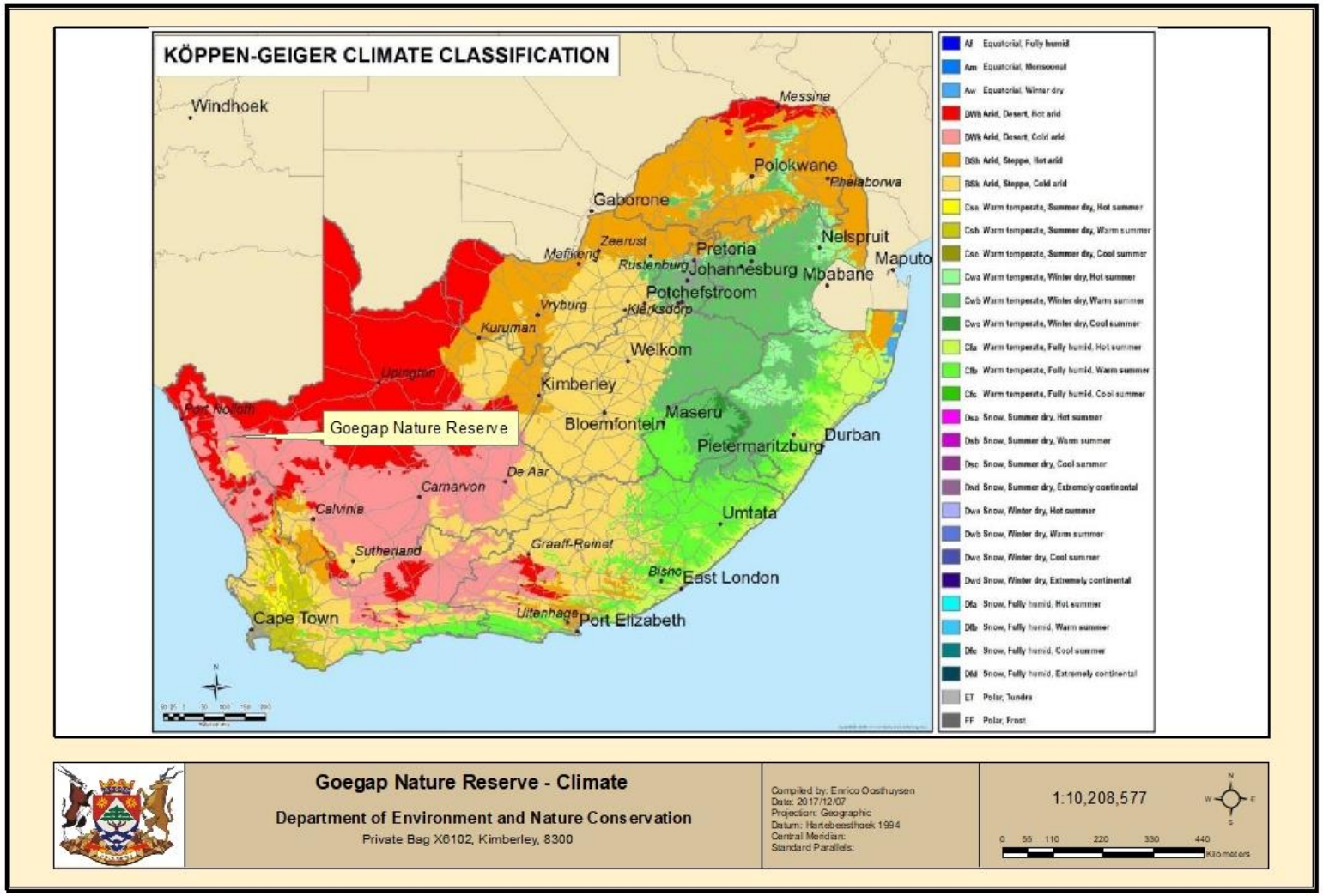



**Figure 4: Climate regions**

#### 2.4.2.1 Climate change

The Namakwa District Municipality IDP/Budget (2012) recognizes that the Northern Cape specifically will be affected very adversely by climate change. Already the effects are evident in the dying quiver (*Aloidendron* sp.) trees in the north and the shift of habitat to higher and more southern latitudes; marine life along the coast is changing, and large numbers of the Namaqualand flowers are endangered. It also stressed that eco-systems-based adaptation approaches, using nature and biodiversity to help people cope with and respond to the negative impacts of climate change, will have an important role to play in the Namakwa District.

Protected areas play a vital role in contributing to climate change mitigation and adaptation, both on global and local scales.

Thus in general, climate change is likely to lead to impacts on species distributions (i.e. the ranges in which species can occur), and community composition (the mix of species at any point). Climate change also changes the rates at which water evaporates from plants and soils, and can affect the conditions for the occurrence of fire. In this way, ecosystem functioning is affected (including water yield and nutrient cycling), disturbance regimes (such as fire), and ecosystem services (see previous page). At worst, this combination of stresses might result in extinctions of species that are not able to adapt to rapidly changing climates.

Climate change will exacerbate these challenges, especially if species are likely to shift geographically as their optimum climate zones shift, shrink or even disappear.

Bomhard and Midgley (2005) summarizes the potential climate change impacts on biodiversity as follow:

- Species distributions
  - Individualistic species responses in latitudinal and altitudinal directions
  - Individualistic species responses to warmer/cooler and drier/moister conditions
  - Geographic variation in the magnitude of species responses to the changing conditions
  - Species range shifts/losses due to range expansions, contractions and eliminations
  - Species range shifts relative to reserve boundaries: net loss/gain of species in reserves
  - Local, regional and global extinctions of species due to the changing conditions
  - Spread of invasive alien species and/or pathogens and parasites
- Community composition and configuration
  - Changes in presence/absence and relative/absolute abundance (evenness/richness)
  - Formation of non-analogue communities (new species assemblages)
- Ecosystem functioning, services and states
  - Changes in phenology (the timing of events such as flowering)
  - Changes in nutrient cycling and natural resource supply (e.g. water)
  - Changes in predator-prey, parasite-host, plant- pollinator and plant-disperser relationships pollination and soil stabilization
  - Ecosystem switches following changes in ecosystem functioning and disturbance regimes
- Disturbance regimes
  - Changes in the intensity, frequency and seasonality of periodic and extreme events such as fires, floods, droughts and other extreme weather events
  - Changes in human land use pressures (global change synergies)

### 2.4.3 Topography

The GGNR can be described as mountainous, with a large part being at a much higher elevation than the surrounding terrain. This consists of rocky hills with exposed rock from a granite origin approximately 1 100 million years ago. Aspect plays an important role due to the nature of the terrain. The contrast between the warm Northern and Western slopes and the considerable cooler Southern and Eastern slopes are visibly noticeable and form areas with unique micro-climates. The altitude ranges from 800m to 1342 m above sea level with the highest point being Carolusberg. The Droëdap River has its origin on the reserve and drains southwards into the Buffels River.

In contrast to edaphic variability, topographic variation does not appear to hold the key to explaining the species richness within the GGNR, whereas aspect could have an influence (Mucina & Rutherford, 2006)

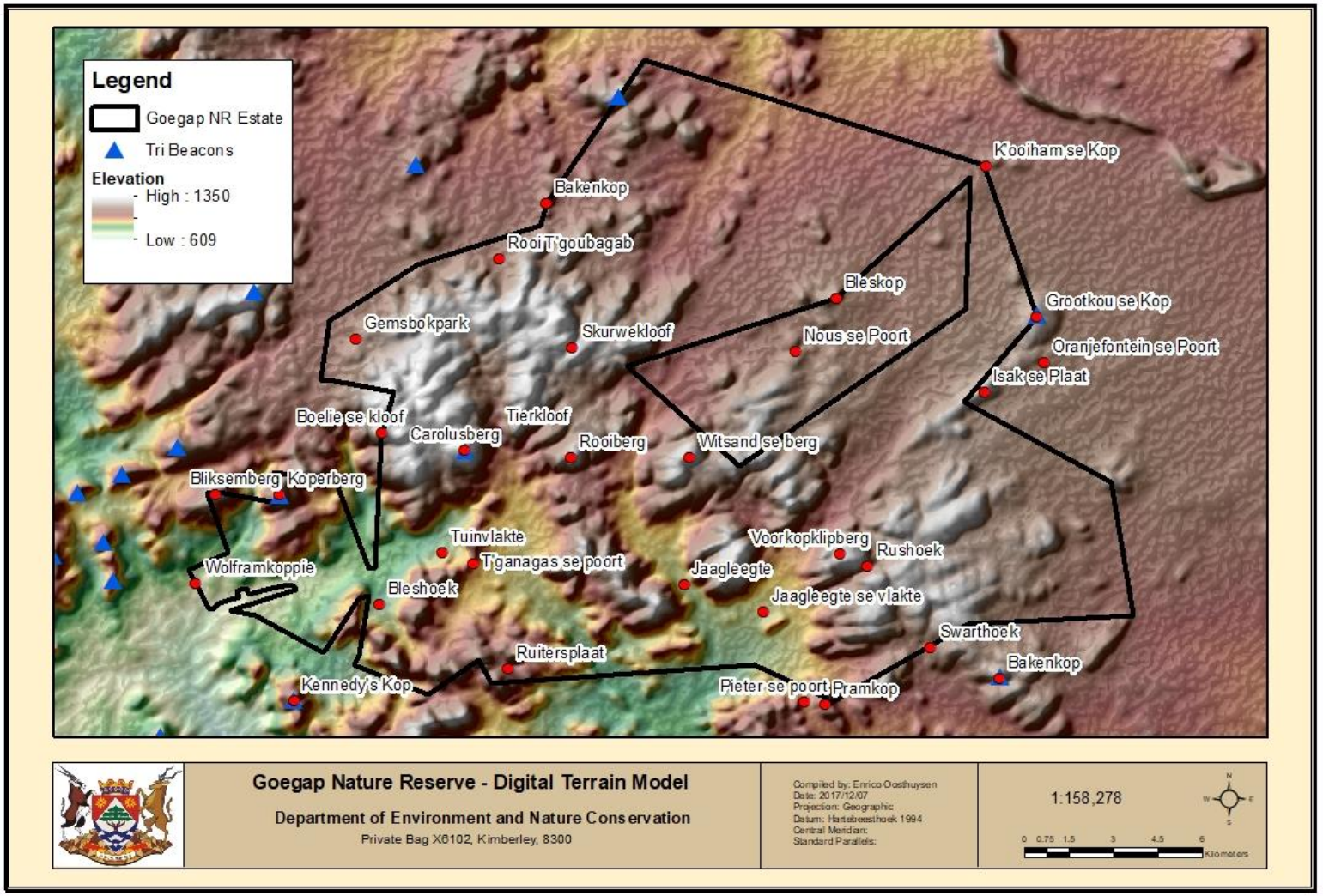



**Figure 5: Digital Terrain Model Map for the GGNR**

### 2.4.4 Geology and Soils

#### 2.4.4.1 Geology

The geographical area forms part of the Namaqualand Metamorphic Complex Unit Namaqua-Natal Metamorphic Provinces with highly deformed and metamorphosed sedimentary, volcanic and intrusive rocks, with granitic gneisses dominant. The province evolved on relatively thin continental crust over a lengthy period ending around 1 100 million years ago. It forms part of the oldest geomorphological feature i.e. the Great Escarpment dating from the mid-Miocene to late Pliocene Age.

The high-lying areas of the protected area are mainly dominated by the following igneous/intrusive geological/rock formations:

- Kweekfontein Granite of the Corridor Suite, (lithology - fine to coarse grained equi-granular leucogranite),
- Concordia Granite of the Spektakel Suite (equi-granular, medium-grained leucogranite) and
- Nababeep Gneiss of the Little Namaqualand Suite (coarse-grained, mesocratic biotite augen gneiss).
- Isolated areas of Modderfontein Gneiss of the Little Namaqualand Suite (leucocratic augen gneiss, minor fine-grained gneiss), Brandewynsbank Gneiss of the Gladkop Metamorphic Suite (fine grained grey biotite gneiss, in places megacrystic) and Koperberg Suite (Norite, diorite and anorthosite) are also found.

Witsandberg consists of:

- the Noenoemaasberg Gneiss of the Gladkop Metamorphic Suite (pink weathering, fine-grained, equi-granular gneiss) and Steinkopf Gneiss of the Gladkop Metamorphic Suite (fine grained, grey, banded to massive biotite-hornblende gneiss)

The low-lying areas of GGNR are covered with red Aeolian sand and pediment deposits (sand, scree, rubble and sandy soil). The low hills that rise above the surrounding plains often consist of a capping quartzite, with the slopes consisting of schists and amphibolites, while the base of the slope is granitic gneiss.

On WWF and Offset properties (Kaip, Ratelkraal and Oranjefontein) gneiss, quartzite and tillite is found. The tillite, consisting of consolidated masses of unweathered blocks and unsorted till is visual on the properties. The slopes are often steep and covered with a coarse mantle of cobbles and boulders. Where they are shallow, lithosols are developed on these pedologically young features and the change in lithologies with topography results in a variation of soil fertility. The highly siliceous quartzites are infertile, whereas the schists and amphibolite contain major elements such as potassium, calcium and magnesium with variable amounts of copper and zinc.

#### 2.4.4.2 Land Type and Soils

As is typical of the more arid areas of South Africa, the A horizon is orthic (a lack of organic, humic, vertic of melanic topsoil). It is free from waterlogging and, in the west, is typically very sandy (<6% clay), whereas in the east it is sandy (6-15% clay).

The most common soils of the region are red and yellow soils reflecting weathering of the granitic parent material in a well-drained, oxidizing environment. The dominant lithology of the reserve is Augen, covering approximately 95% of the area. A number of lithological classes are found in the reserve, i.e. Augen, Aplo granite, Porfiritic granite and Biotite. The dominant land type within the borders of the reserve is land type Ib 127 and is described as rocky areas with diverse soils. It comprises about 90% of the surface of the reserve. Only three soil pattern classes are found within the reserve, i.e.:

- Land type Ib – Rocky areas with diverse soils, comprising about 90% of the surface;
- Land type Ae – Red Apedal, high base status soils more than 300 mm deep with no dunes and
- Land type Ag – Red Apedal, freely drained soils with a high base status less than 300mm deep.

Due to the physical heterogeneity associated with the soils, the species diversification on a local as well as landscape –scale could be explained.

#### 2.4.4.3 Soil Erosion

In terms of the United Nations Convention to Combat Desertification in Countries Experiencing Serious Drought and/or Desertification, particularly in Africa (UNCCD), to which South Africa is signatory, land degradation refers to the reduction or loss of biological or economic productivity of agricultural lands, woodlands, and forests that result mainly from human activities. Desertification refers to land degradation in drylands that result from both climatic variability and human activities. Desertification occurs when several degraded patches of land expand and join to form large, unproductive areas. Thus, desertification occurs over a larger scale than land degradation and results in the 'permanent' loss of productivity and supply of ecosystem services (DEA, 2006).

The protected area is characterized by a gently sloping topography with an average gradient of less than 5%, although steep rocky outcropping and ridges are found. The GGNR soils are highly erodible and are extremely vulnerable to wind and water erosion. Under natural conditions the low rainfall and vegetation, although sparse, limits erosion. Bad land-use practices such as mining, overgrazing of the terrestrial vegetation and incorrect placement of roads, have resulted in gully and sheet erosion, despite the region's low rainfall. The hot, dry berg winds that frequently occur in winter also causes wind erosion. High priority will be given to the rehabilitation of disturbed areas to as near a natural state as possible as well as the proper re-enforcement of the existing road infrastructure.

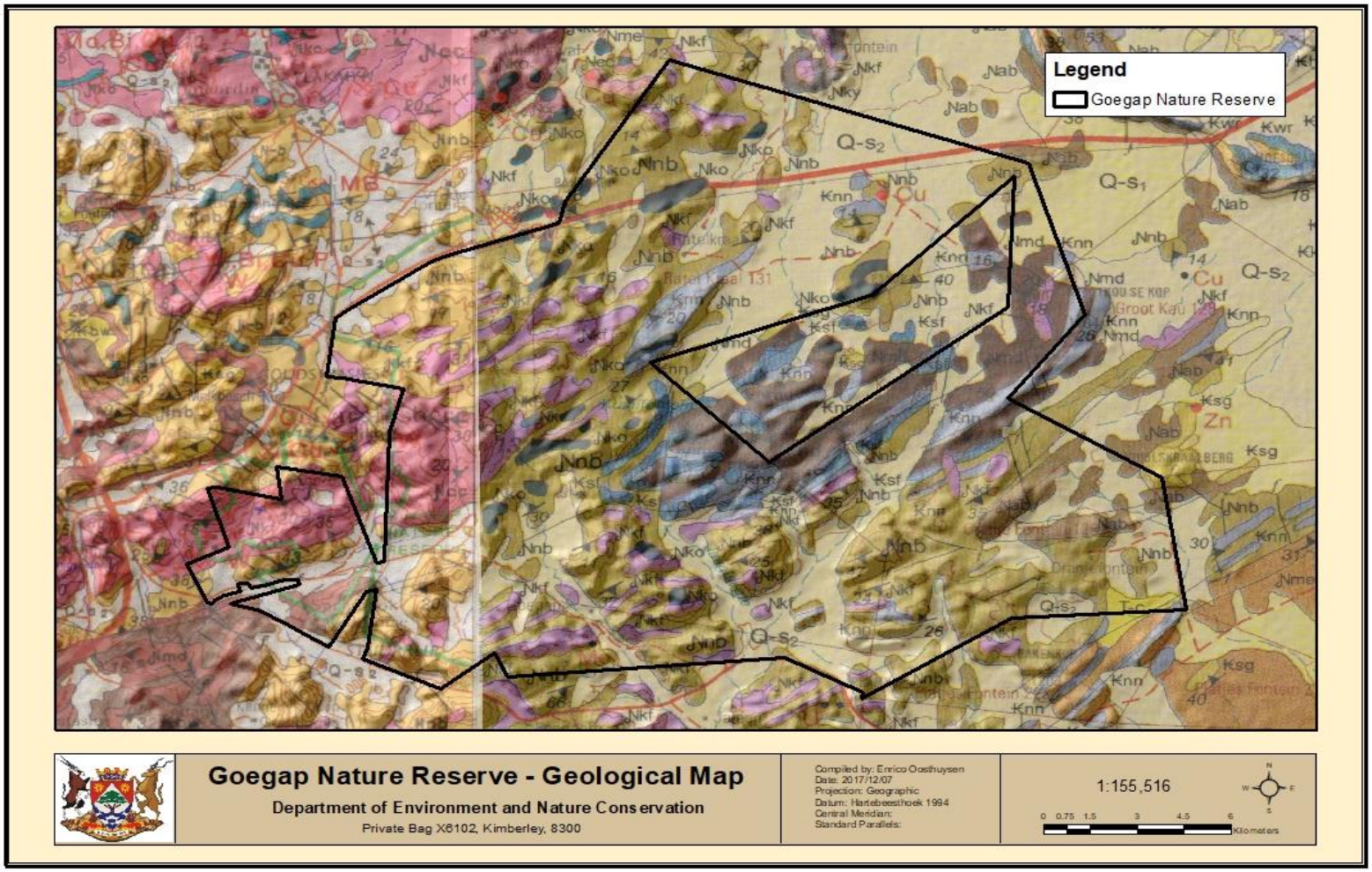



**Figure 6: Geological Map for the GGNR**

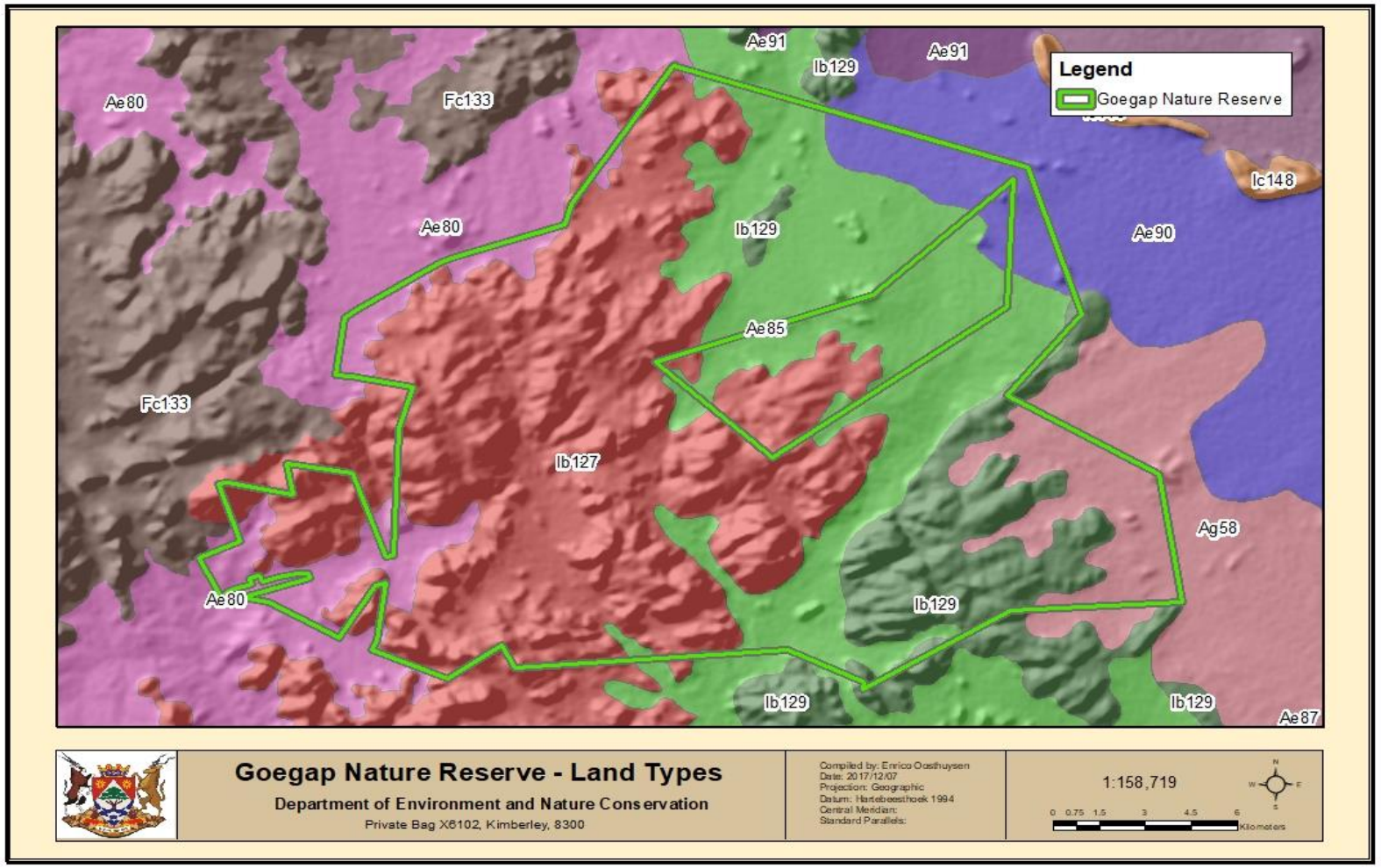



**Figure 7: Land Types of GGNR**

### 2.4.5 Wetlands and other Aquatic Ecosystems

The Water Research Commission and the South African National Biodiversity Institute (SANBI) commissioned the development of a National Wetland Classification System for the South African National Wetland Inventory, to encompass the broad suite of 'wetlands' as defined by the Ramsar Convention (Ollis et al. 2013; SANBI 2013). The classification system developed for SANBI was previously called a 'National Wetland Classification System'. The name of the classification system has been changed to a 'Classification System for Wetlands and other Aquatic Ecosystems in South Africa'. This change was made to avoid confusion around the term 'wetland', which is defined differently by the Ramsar Convention and the South African National Water Act (Act No. 36 of 1998).

According to the classification system a further distinction is made between seven Hydrogeomorphic (HGM) units namely Floodplain wetlands, Un-channeled valley-bottom wetlands, Wetland flats, Channelled valley-bottom wetlands, Depressions, Seeps and Rivers (Figure 8). Looking at the criteria of these units it is possible that the last two units may be present on GGNR.[2]

#### 2.4.5.1 Rivers

The largest part of the reserve is drained via the seasonal Buffels River system, disemboguing at Kleinzee. The Droëdap River originates in the GGNR and joins with the Buffels River system. The smaller northern portion of the reserve drains via the Orange River system. The eastern portion of the protected area has been identified as having conservation importance to Freshwater Ecosystem Protected Areas (FEPA) and is seen as strategic spatial priorities for conserving freshwater ecosystems and associated biodiversity. Drainage lines are dependent on the seasonal rainfall of the area. There are no permanent river systems within the reserve.

#### 2.4.5.2 Aquifers/Seeps

A number of permanent aquifers/seeps are found on the protected area. These aquifers/seeps are primarily recharged with freshwater from thunderstorms and seasonal winter rains and plays an integral role in water provision to the game species occurring on the reserve.

[2] The Aquatic Ecosystems of the GGNR must be formally classified according to the six-tiered structure of the Classification System for Wetlands and other Aquatic Ecosystems in South Africa' as part of KPA 1: Biodiversity and Heritage Conservation (Objective 1.5)

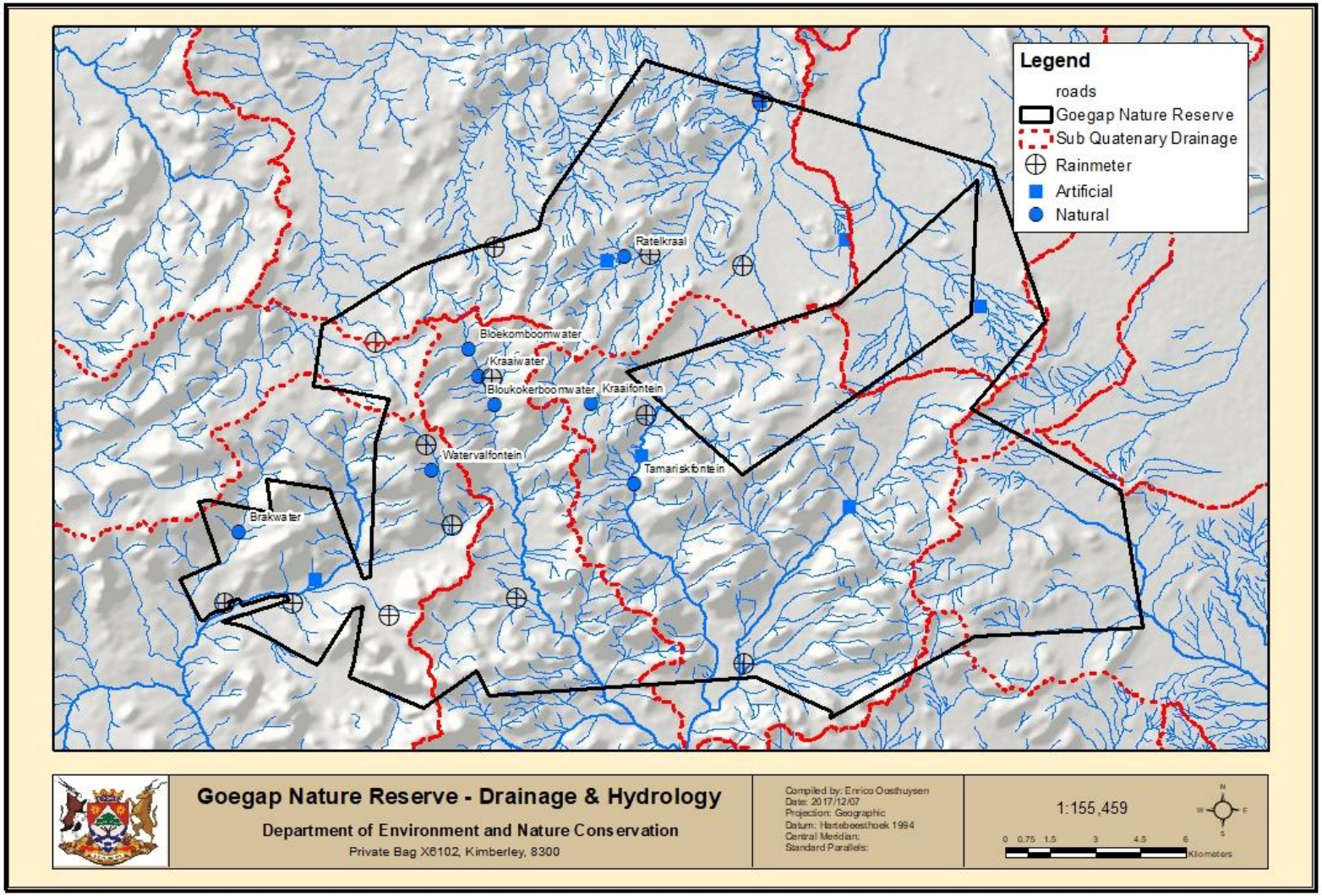



**Figure 8: Drainage and Hydrology of GGNR**

### 2.4.6 Broad-Scale Processes & Critical Biodiversity Areas

The GGNR include two biomes the Succulent Karoo and Nama Karoo Biome (Figure 9). The Succulent Karoo Biome covers an interrupted belt of unequal depth spanning the coastal regions near Lüderitz (Namibia) and Namaqualand, the Hantam, Tanqua and Roggeveld region as well as the Little Karoo (in a broad sense.

Succulent Karoo Biome (SKB)

The Succulent Karoo Biome is found mostly west of the western escarpment from the Lüderitz District of Namibia through the western belt of the Northern Cape and Western Cape Provinces, and inland of the Fynbos Biome to the Little Karoo. The biome covers approximately 111 000 km, making it the fourth largest biome in southern Africa after the Savanna, Nama-Karoo and Grassland Biomes. Much of the terrain is flat to gently undulating, such as the western coastal platform, Knersvlakte and Tanqua Karoo. Hilly and more rugged topography occurs in Namaqualand, the Robertson Karoo and Little Karoo and parts of the western escarpment.

The biome has the shortest summers with duration of less than 198 days (Schulze, 1997). Incoming radiation in summer ranges from 270–280 J m-2 day-1, which is higher than that for the other biomes according to Schulze & McGee (1978). The average rainfall for the biome is about 170 mm and the rain events tend to be widespread, mostly gentle showers—while much of the rainfall of the Nama-Karoo is highly localised, intense and short thunderstorms (Schulze, 1997).

A mere 5.8% or 6 500 km2 of the Succulent Karoo Biome is formally protected in statutory and non-statutory reserves (Driver et al. 2003). This area substantially under-represents the diversity associated with the biome, Driver et al. (2003) highlighted the fact that the current protected area system does not incorporate key ecological processes and evolutionary biodiversity drivers. These include riverine and sand movement corridors, quartz patches, edaphic interfaces, climatic and upland-lowland gradients.

About 5% of the geographic area of the Succulent Karoo Biome has been irreversibly transformed (Driver et al. 2003), providing a relatively good situation for conservation planning, since there are still options for meeting conservation targets for most biodiversity features. The unique botanical diversity of the region has been a major advantage, as it has provided solid justification for conservation planning based on plant diversity.

Nama Karoo Biome (NKB)

Most of the Nama Karoo occurs on the central plateau of the Cape Province in South Africa, although it extends over the Orange River into Namibia in the northwest. It is considered the third largest biome in South Africa after the Grassland and Savanna biomes and comprises an area of approximately 248 278 km², of which only approximately 1.6% is formally protected in statutory reserves such as the Augrabies and Karoo National Parks (Hoffmann et al., 2018).

The climate is typically harsh. Droughts are common, and both seasonal and daily temperatures fluctuate considerably. Temperature variations of 25°C between day and night are common (Venter et al. 1986). Mean maximum temperatures in mid-summer (January) exceed 30°C, whereas mean minimum mid-winter (July) temperatures are below freezing (Palmer and Hoffman 1997). Rainfall is highly seasonal, peaking between December and March (Palmer and Hoffman 1997). Annual rainfall ranges between 100 mm to 500 mm, decreasing from east to west and from north to south (Palmer and Hoffman 1997, Desmet and Cowling 1999). Variability in inter-annual rainfall tends to increase with increasing aridity (Schulze 1997).

Critical Biodiversity Areas (CBA)

The GGNR lies within the planning domain of the Namakwa Biodiversity Sector Plan (Desmet & Marsh 2007). This biodiversity assessment identifies Critical Biodiversity Areas (CBAs) which represent biodiversity priority areas which should be maintained in a natural to near natural state. The CBA maps indicate the most efficient selection and classification of land portions requiring safeguarding in order to maintain ecosystem functioning and meet national biodiversity objectives. The CBAs in the area are complex and reflect the landscape diversity in the area as well as the abundance of specific habitats of conservation significance.

Of all the commonly reported threats to the biodiversity of the Namakwa District, livestock grazing is the most pervasive as well as the most pernicious. While mining and cropping are severe and conspicuous, their extent is limited. Less than 5% of the Namakwa District is transformed by mining and cropping. Other threats include illegal collection of plants, alien invasive plants and unsustainable water abstraction, all of which are restricted to certain species or habitats. The importance of these threats should however not be overlooked because the impact they have is often severe, resulting in the local extinction of affected species or extensive transformation of habitats. More than 90% of the Namakwa District is however utilized for livestock grazing, making this by far the most widespread landuse.

## 2.4.7 Vegetation

### 2.4.7.1 Vegetation Types

The vegetation type descriptions are from the SA Vegetation Map (Mucina & Rutherford 2006) categories. The protected area falls within the Succulent Karoo (Namaqualand Hardeveld Bioregion) and the Nama Karoo Vegetation Biome (Bushmanland Bioregion).

- **The Namaqualand Klipkoppe Shrubland (SKn 1)**

**Conservation**

Least Threatened. Although this vegetation unit is considered re its conservation status as least threatened, only 6% of this unit is statutorily conserved in Namaqua National Park, Goegap Nature Reserve with spectacular granite-koppie landscapes, and a small portion in the Moedverloren Nature Reserve. The conservation target is 28%. Erosion is moderate (35%), very low (35%) or low (30%).

**Distribution**

Northern and Western Cape Provinces: Central and north-central regions of Namaqualand spanning Steinkopf in the north and Nuwerus in the south. Altitude 120–1 260 m.

**Vegetation & Landscape Features**

Dramatic landscape of huge granite and gneiss domes, smooth glacis and disintegrating boulder koppies supporting open shrubland up to 1 m tall, dominated by shrubs of dwarf to medium stature and with ericoid or succulent leaves. Scattered kokerboom trees (*Aloidendron dichotoma* var. *dichotoma*) are found mostly on north-facing slopes. Flat or gently sloping rock sheets (the dominant feature of this unit) support dwarf or prostrate succulents in shallow pockets with soil or in cracks. Fringe vegetation at the bottom of steep rock sheets (collecting run-off water) consists of 1–3 m tall shrubs with non-succulent leaves and canopy cover reaching 40–100%.

**Geology & Soils**

A number of Mokolian granites and gneisses (most widespread is the Kamieskroon Gneiss) form gentle to moderate rocky slopes, rock sizes varying from medium to large with flat to gentle rock sheets as well as rock domes, yellow-brown to brown loamy sand, 0.15–0.6 m deep. Ag and Ib land types (35% each), followed by Fb and Fc (10% each).

**Climate**

Seasonal winter rainfall (May to September). MAP about 170 mm, with epizodic drought periods (well below 100 mm per year) of one or two years in succession. Dew is present throughout the winter. MAT 16.6°C. Hot summers, with mean maximum and minimum daily temperatures 30°C and 5°C for January and July, respectively. Frost occurs about 8 days per year, but can vary widely from year to year.

**Important Taxa**

Succulent Tree: *Aloidendron dichotoma var. dichotoma (d).*

Small Trees*: Ficus ilicina, Pappea capensis*

Succulent Shrubs*: Didelta spinosa (d), Euphorbia rhombifolia (d), E. mauritanica (d), Leipoldtia schultzei (d), Adromischus marianiae var. immaculatus, Cotyledon orbiculata var. orbiculata, Crassula atropurpurea var. watermeyeri, C. tetragona subsp. robusta, Manochlamys albicans, Othonna cylindrica, O. furcata, Pelargonium crithmifolium, Ruschia goodiae, R. viridifolia, Sarcocaulon crassicaule, Senecio junceus, Stoeberia utilis, Tetragonia fruticosa, Tylecodon paniculatus, T. wallichii subsp. wallichii, Roepera foetidum, R. morgsana*

Tall Shrubs*: Dodonaea viscosa var. angustifolia, Euclea tomentosa, Montinia caryophyllacea, Putterlickia pyracantha, Searsia undulata*
Low Shrubs*: Berkheya fruticosa (d), Eriocephalus microphyllus var. pubescens (d), Galenia africana (d), Hermannia disermifolia (d), Lebeckia sericea (d), Acanthopsis spathularis, Antizoma miersiana, Asparagus capensis var. capensis, Ballota africana, , Eriocephalus brevifolius, Galenia fruticosa, Gnidia meyeri, Helichrysum scabrum, H. tricostatum, Indigofera nigromontana, Maytenus oleoides, Passerina galpinii, Pelargonium grandicalcaratum, P. praemorsum, Pharnaceum albens, Phylica montana, P. oleaefolia, Pteronia divaricata, P. incana, Selago divaricata, S. glutinosa, Senecio cinerascens, Solanum burchellii, S. giftbergense, Tripteris oppositifolia, T. sinuata*
Semiparasitic Shrubs*: Thesium lineatum, T. patulum, T. polycephalum, T. spinosum*
Woody Succulent Climber*: Sarcostemma viminale*
Woody Climbers*: Asparagus retrofractus, Astephanus triflorus, Microloma sagittatum*
Herbaceous Climber*: Cysticapnos grandiflora* Semiparasitic
Epiphytic Shrub*: Viscum capense.*
Herbs: *Tripteris amplectens (d), T. hyoseroides (d), Adenogramma glomerata, Aizoon canariense, Arctotis revoluta, Diascia diffusa, Felicia bergeriana, Galium tomentosum, Heliophila amplexicaulis, H. thunbergii, H. variabilis, Hemimeris racemosa, Hermannia althaeifolia, Oncosiphon suffruticosum, Plantago cafra, Senecio glabrifolius, Trichogyne paronychioides, Tripteris microcarpa, Ursinia cakilefolia, Wahlenbergia oxyphylla*
Geophytic Herbs*: Ornithogalum multifolium, O. rupestre, Oxalis ambigua, O. obtusa, O. pes-caprae, Trachyandra falcata*
Succulent Herbs: *Conophytum breve, C. depressum, Crassula muscosa, C. tomentosa, Tetragonia microptera*
Graminoids: *Ehrharta calycina (d), Chaetobromus involucratus subsp. dregeanus, Ehrharta barbinodis, E. delicatula, Fingerhuthia africana, Tribolium echinatum*

**Endemic Taxa**

Succulent Shrubs: *Ottosonderia monticola, Tylecodon nigricaulis*. Low Shrubs: *Lotononis benthamiana, L. longiflora, L. quinata, Wiborgia incurvata*. Herbs: *Tripteris spathulata, Zaluzianskya collina*. Geophytic Herbs*: Ornithogalum leeupoortense, Oxalis clavifolia, O. louisae, Xysmalobium pearsonii.* Succulent Herbs*: Quaqua bayeriana, Q. pallens, Stapeliopsis khamiesbergensis*

**Invasive plant species**

Largely without any alien invaders but the most widely spread species are: *Amsinckia retrorsa, Atriplex lindleyi subsp. inflate, A. nummularia, Bromus pectinatus, Erodium cicutarium, Nicotiana glauca, Prosopis glandulosa var. glandulosa, Ricinus communis, Schinus mole*

- **The Namaqualand Blomveld (SKn 3)**

**Conservation**

Least threatened. Approximately 3% of the vegetation type is statutorily conserved in GGNR with the conservation target being 28%. Overgrazing is a serious threat to this vegetation unit outside of protected areas. Only about 6% of the total area is transformed, mainly by grain cultivation and some planting of salt-bush (*Atriplex nummularia*). Erosion is low (40%), very low (30%) or moderate (30%).

**Distribution**

Northern Cape Province and to a small extent also Western Cape Province: Valleys and flat areas (piedmonts, vlaktes) between granitic rocky hills of the Namaqualand Escarpment, from Steinkopf southwards to Bitterfontein. Most of the area at altitudes 460–1 080 m.

**Vegetation & Landscape Features**

Level to slightly undulating sedimentary surfaces between rocky granitic hills and mountains, such as wide plains and broad valleys with dry channels of intermittent water courses. Sparse dwarf shrubs with succulent or ericoid leaves dominate these shrublands. Geophytes and ephemeral herbs and in places

also low, spreading, leaf-succulents show spectacular flower displays (hence the name of the unit) in wet years.

**Geology & Soils**

Underlain by granite-gneisses and metasediments of Mokolian age, affected by the Namaqualand Metamorphic Event. Supporting relatively deep, yellow-brown, fine to coarse loamy sand derived through weathering of the granite rocks. Ag and Ae land types make up almost 80% of the area, followed by Fc land type accounting for a further 15%.

**Climate**

Seasonal winter rainfall (May to September) with sporadic drought periods (well below 100 mm per year) of one or two years in succession. Dew is present throughout the winter. MAP 145 mm. An average of 13 days of frost per year, but varying greatly from year to year. Mean maximum and minimum daily temperatures from January to February and June to August span 29–32°C and 3–5°C, respectively. See also climate diagram for SKn 3 Namaqualand Blomveld (Figure 5.29).

**Important Taxa**

Succulent Shrubs: *Drosanthemum hispidum (d), Euphorbia mauritanica (d), Galenia sarcophylla (d), Kewa salsoloides (d), Leipoldtia schultzei (d), Ruschia robusta (d), Mesembrianthimum noctiflorum, Euphorbia rhombifolia, Lycium cinereum, Ruschia brevibracteata, Tetragonia fruticosa, T. robusta var. psiloptera, Tylecodon wallichii subsp. wallichii*.

Low Shrubs: *Eriocephalus microphyllus var. pubescens (d), Galenia africana (d), Aptosimum indivisum, A. spinescens, Asparagus capensis var. capensis, Berkheya fruticosa, Hermannia disermifolia, H. trifurca, Peliostomum virgatum, Pentzia incana, Pteronia divaricata, Tripteris sinuata, Tetraena retrofracta*

Semiparasitic Shrub: *Thesium lineatum*

Woody Climbers: *Astephanus triflorus, Microloma sagittatum*

Herbaceous Climber: *Cysticapnos grandiflora*

Herbs: *Aizoon canariense (d), Arctotheca calendula (d), Arctotis fastuosa (d), Dimorphotheca sinuata (d), Felicia merxmuelleri (d), Foveolina dichotoma (d), Gazania lichtensteinii (d), Gorteria diffusa subsp. diffusa (d), Grielum humifusum (d), Heliophila coronopifolia (d), H. variabilis (d), Leysera gnaphalodes (d), L. tenella (d), Oncosiphon grandiflorum (d), O. suffruticosum (d), Plantago cafra (d), Senecio arenarius (d), S. cardaminifolius (d), Ursinia cakilefolia (d), U. nana, Adenogramma glomerata, Felicia bergeriana, F. namaquana, F. tenella subsp. cotuloides, Gazania leiopoda, Heliophila seselifolia var. nigellifolia, Hermannia althaeifolia, Jamesbrittenia racemosa, Lessertia diffusa, Lotononis falcata, Nemesia affinis, Pelargonium redactum, Trichogyne paronychioides, Zaluzianskya benthamiana*

Geophytic Herbs: *Massonia depressa (d), Oxalis obtusa (d), Eriospermum paradoxum, Hesperantha pauciflora, Lachenalia violacea, Moraea serpentina, Ornithogalum hispidum, Oxalis inconspicua Pelargonium triste, Tulbaghia dregeana*

Succulent Herbs: *Crassula thunbergiana (d), Conicosia elongata, Crassula muscosa, Tetragonia microptera*

Graminoids: *Chaetobromus involucratus subsp. dregeanus, Ehrharta barbinodis, E. calycina, E. longiflora, Schismus barbatus, S. schismoides*

**Endemic Taxa**

Herbs: *Lessertia capitata, Lotononis arenicola* Succulent Herbs: *Dorotheanthus bellidiformis* subsp. *hestermalensis, D. rourkei*

**Invasive plant species**

*Amsinckia retrorsa, Erodium spp., Bromus spp, Atriplex lindleyi* subsp. *inflata. Amsinckia retrorsa, Atriplex lindleyi subsp. inflate, A. nummularia, Bromus pectinatus, Erodium cicutarium, Nicotiana glauca, Prosopis glandulosa var. glandulosa, Ricinus communis, Schinus mole*

- **The Bushmanland Arid Grassland (NKb 3)**

**Conservation**

Least threatened. Target 21%. Only small patches statutorily conserved in Augrabies Falls National Park and GGNR. Very little of the area has been transformed. Erosion is very low (60%) and low (33%).

**Distribution**

Northern Cape Province: Spanning about one degree of latitude from around Aggeneys in the west to Prieska in the east. The southern border of the unit is formed by edges of the Bushmanland Basin while in the northwest this vegetation unit borders on desert vegetation (northwest of Aggeneys and Pofadder). The northern border (in the vicinity of Upington) and the eastern border (between Upington and Prieska) are formed with often intermingling units of Lower Gariep Broken Veld, Kalahari Karroid Shrubland and Gordonia Duneveld. Most of the western border is formed by the edge of the Namaqualand hills. Altitude varies mostly from 600–1 200 m.

**Vegetation & Landscape Features**

Extensive to irregular plains on a slightly sloping plateau sparsely vegetated by grassland dominated by white grasses (*Stipagrostis* species) giving this vegetation type the character of semidesert 'steppe'. In places low shrubs of *Salsola* change the vegetation structure. In years of abundant rainfall rich displays of annual herbs can be expected.

**Geology & Soils**

A third of the area is covered by recent (Quaternary) alluvium and calcrete. Superficial deposits of the Kalahari Group are also present in the east. The extensive Palaeozoic diamictites of the Dwyka Group also outcrop in the area as do gneisses and metasediments of Mokolian age. The soils of most of the area are red-yellow apedal soils, freely drained, with a high base status and <300 mm deep, with about one fifth of the area deeper than 300 mm, typical of Ag and Ae land types.

**Climate**

Rainfall largely in late summer/early autumn (major peak) and very variable from year to year. MAP ranges from about 70 mm in the west to 200 mm in the east. Mean maximum and minimum monthly temperatures for Kenhardt are 40.6°C and –3.7°C for January and July respectively. Corresponding values for Pofadder are 38.3°C and –0.6°C. Frost incidence ranges from around 10 frost days per year in the northwest to about 35 days in the east. Whirl winds (dust devils) are common on hot summer days.

**Important Taxa**

([W]Western and [E]Eastern regions of the unit only)

Graminoids: *Aristida adscensionis* (d), *A. congesta* (d), *Enneapogon desvauxii* (d), *Eragrostis nindensis* (d), *Schmidtia kalahariensis* (d), *Stipagrostis ciliata* (d), *S. obtusa* (d), *Cenchrus ciliaris*, *Enneapogon scaber*, *Eragrostis annulata*[E], *E. porosa*[E], *E. procumbens*, *Panicum lanipes*[E], *Setaria verticillata*[E], *Sporobolus nervosus*, *Stipagrostis brevifolia*[W], *S. uniplumis*, *Tragus berteronianus*, *T. racemosus*[E].

Small Trees: *Senegalia mellifera* subsp. *detinens*[E], *Boscia foetida* subsp. *foetida*.

Tall Shrubs: *Lycium cinereum* (d), *Rhigozum trichotomum* (d), *Cadaba aphylla*, *Parkinsonia africana*.

Low Shrubs: *Aptosimum spinescens* (d), *Hermannia spinosa* (d), *Pentzia spinescens* (d), *Aizoon asbestinum*[E], *A. schellenbergii*[E], *Aptosimum elongatum*, *A. lineare*[E], *A. marlothii*[E], *Barleria rigida*, *Berkheya annectens*, *Blepharis mitrata*, *Eriocephalus ambiguus*, *E. spinescens*, *Justicia incana J. spartioides, Limeum aethiopicum*, *Lophiocarpus polystachyus*, *Pentzia pinnatisecta*, *Phaeoptilum spinosum*[E], *Polygala seminuda*, *Pteronia leucoclada*, *P. mucronata*, *P. sordida*, *Rosenia humilis*, *Senecio niveus*, *Sericocoma avolans*, *Solanum capense*, *Talinum arnotii*[E], *Tetragonia arbuscula*, *Zygophyllum microphyllum*.

Succulent Shrubs: *Kleinia longiflora*, *Lycium bosciifolium*, *Salsola tuberculata*, *S. glabrescens*.

Herbs: *Acanthopsis hoffmannseggiana*, *Aizoon canariense*, *Amaranthus praetermissus*, *Barleria lichtensteiniana*[E], *Chamaesyce inaequilatera*, *Dicoma capensis*, *Indigastrum argyraeum*, *Lotononis platycarpa*, *Sesamum capense*, *Tribulus pterophorus*, *T. terrestris*, *Vahlia capensis*.

Succulent Herbs: *Gisekia pharnacioides*[E], *Psilocaulon coriarium*, *Trianthema parvifolia*.

Geophytic Herb: *Moraea venenata*

**Endemic Taxa**

Succulent Shrubs: *Dinteranthus pole-evansii*, *Larryleachia dinteri*, *L. marlothii*, *Searsia kenhardtensis*.

Herbs: *Lotononis oligocephala*, *Nemesia maxii*

**Invasive plant species**

*Amsinckia retrorsa, Atriplex lindleyi* subsp. *inflata. Amsinckia retrorsa, A. nummularia, Bromus pectinatus, Erodium cicutarium, Nicotiana glauca, Prosopis glandulosa var. glandulosa, Ricinus communis, Schinus molle*

### 2.4.7.2 Species of Conservation Concern

Table 5 lists the plant species of conservation concern with possible occurrence in the GGNR area[3].

**Table 5: Plant species of conservation concern**

| SCIENTIFIC NAME | TOPS 2015 STATUS[4] | RED DATA STATUS | IUCN STATUS |
|---|---|---|---|
| *Aloidendron dichotomum* | VU | VU A3ce | VU |
| *Mesembryanthemum tortuosum* | PR | LC | LC |
| *Crassula decumbens var. brachyphylla* | - | NT B1ab | NT |
| *Cyphia longiflora* | - | NT B1ab | NT |
| *Wahlenbergia asparagoides* | - | NT B1b | VU |
| *Oxalis senecta* | - | NT D2 | VU |

### 2.4.7.3 Invasive Alien Plants

There are 18 alien plant species recorded on the GGNR and some of these species have been completely eradicated. Individual plants that are sporadically seen are being removed. The most frequently encountered species are: *Amsinckia retrorsa, Argemone ochroleuca* subsp. *ochroleuca, Atriplex lindleyi* subsp. *inflata. A. nummularia, Nicotiana glauca, Prosopis glandulosa var. glandulosa, Ricinus communis, Schinus molle*

[3] The species of conservation concern indicated in this section have a strong probability of occurrence at this reserve, based on the Plants of South Africa (POSA) database. The POSA includes a database of all plants recorded by means of voucher specimens lodged with one of the recognised herbaria in South Africa. The actual occurrence of these species will, however, need to be ground-truthed as part of KPA 1: Biodiversity and Heritage Conservation (Objective 1.5) and compared with the SKDR (Biodiversity Data 02)

[4] **T**hreatened **O**r **P**rotected **S**pecies (TOPS) in terms of sec. 56(1), 57(2) and 57(4)(a), read with sec.63 and 100 of the National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004) Critically endangered (CR), Endangered (EN), Vulnerable (VU).

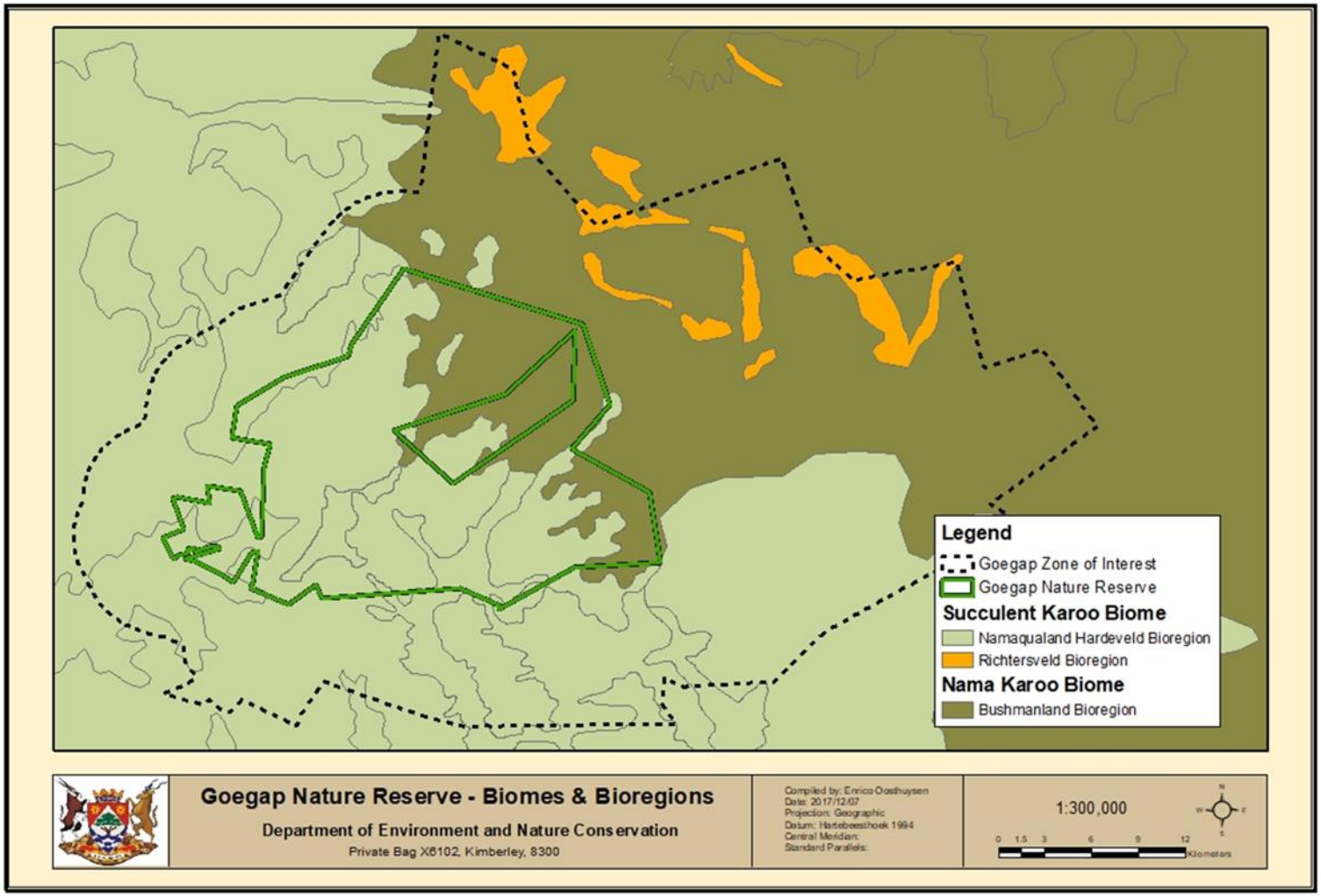



**Figure 9: Biomes and Bioregions of the GGNR**

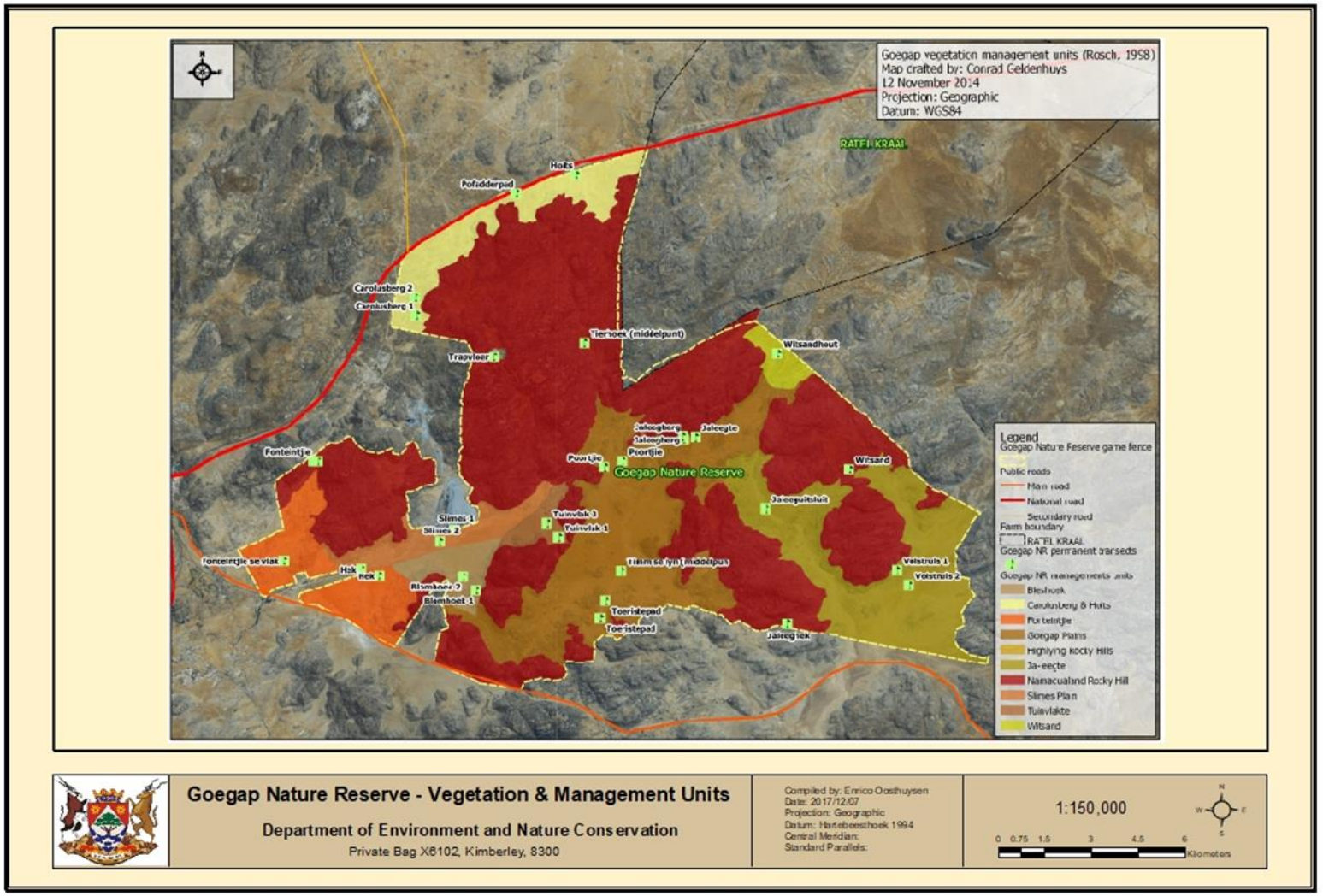



**Figure 10: Vegetation and Management Units of the GGNR**

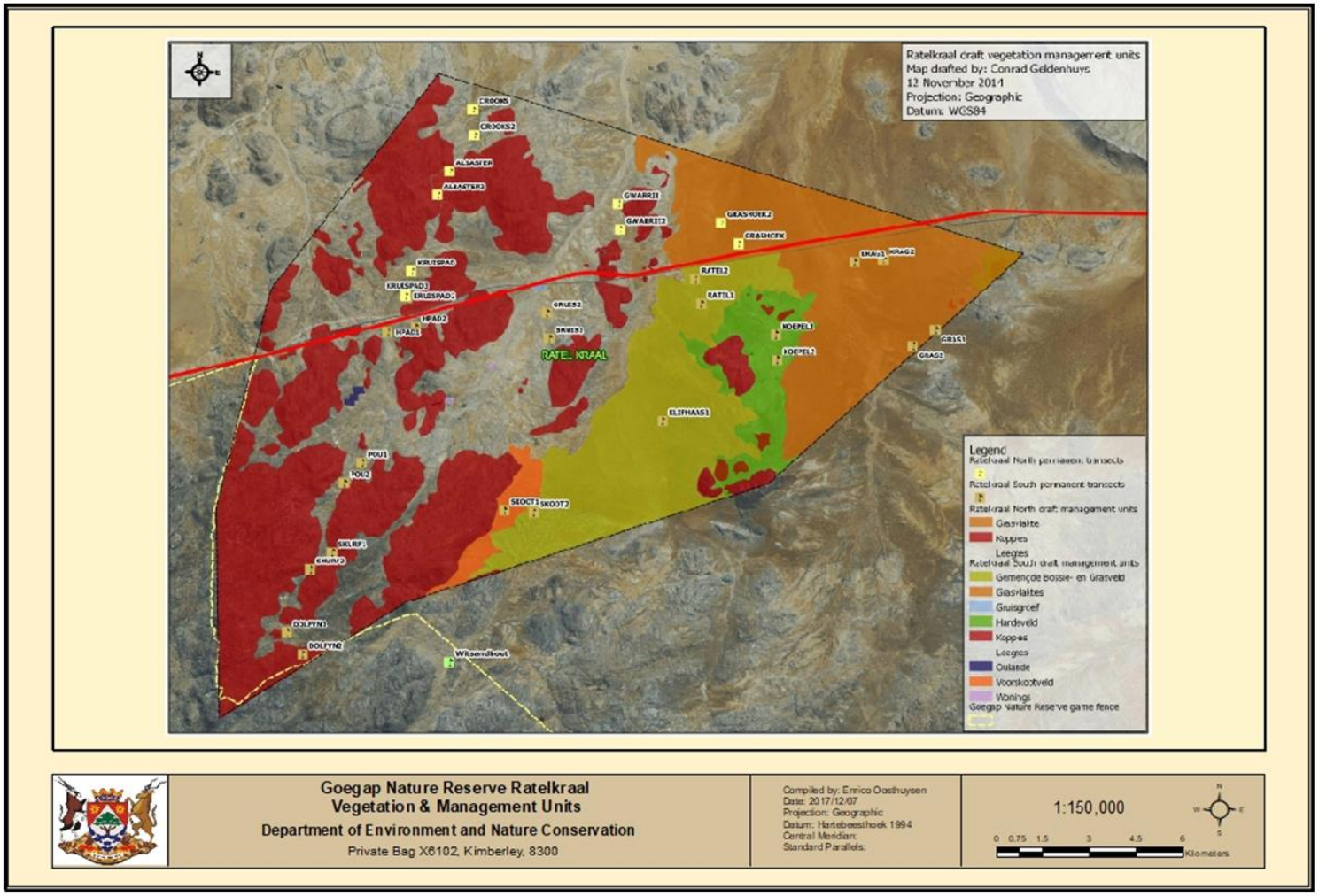



**Figure 11: Vegetation and Management units of the GGNR – Ratelkraal Portion**

### 2.4.8 Fauna

#### 2.4.8.1 Mammals

Twelve mammal species that historically occurred on GGNR and surrounds are now locally extinct e.g. Grey Rhebuck (*Pelea capreolus*) and Black Rhino (*Diceros bicornis* subsp. *bicornis*). Currently forty-nine mammal species from twenty three families have been recorded on the Reserve. Small mammal species are well represented and include species such as Smith's Red Rock Rabbit (*Pronolagus rupestris*), Cape Hare (*Lepus capensis*), Brant's Whistling Rat (*Parotomys brantsii*), Bush Karoo Rat (*Otomys unisulcatus*), Three-striped Grass Mouse (*Rhabdomys pumilio*), Namaqua Rock Mouse (*Micaelamys namaquensis*), Dassie Rat (*Petromus typicus*), and Round-eared Elephant-shrew (*Macrosceledis proboscideus*).
Predators include Black-backed Jackal (*Canis mesomelas*), Cape Fox (*Vulpes chama*), Bat-eared Fox (*Otocyon megalotis*), Caracal (*Caracal caracal*) and African Wild Cat (*Felis silvestris cafra*). Several nocturnal species are found such as Porcupine (*Hystrix africaeaustralis*), Aardwolf (*Proteles cristatus*), Aardvark (*Orycteropus afer*) and Egyptian Slit-faced Bat (*Nycteris thebaica*). Large herbivores include Hartmann's Mountain Zebra (*Equus zebra hartmannae*), Gemsbok (*Oryx gazella*), Springbok (*Antidorcas marsupialis*), Klipspringer (*Oreotragus oreotragus*), Duiker (*Sylvicapra grimmia*) and Steenbok (*Raphicerus campestris*).
The mammal species of conservation concern listed in Table 6 are known to occur at the GGNR[5].

**Table 6: Mammal species of conservation concern**

| SCIENTIFIC NAME | COMMON NAME | TOPS 2015 STATUS | RED DATA STATUS | IUCN STATUS |
|---|---|---|---|---|
| *Eidolon helvum* | Straw-coloured Fruit Bat | - | - | NT |
| *Equus zebra hartmannae* | Hartmann's Mountain Zebra | VU | EN | VU |
| *Orycteropus afer* | Aardvark | PR | LC | LC |
| *Otocyon megalotis* | Bat-eared Fox | PR | LC | LC |
| *Panthera pardus* | Leopard | PR | LC | NT |
| *Vulpes chama* | Cape Fox | PR | LC | LC |
| *Petromus typicus* | Dassie Rat | - | NT | LC |
| *Mellivora capensis* | Honey Badger | - | NT | LC |

#### 2.4.8.2 Avifauna

Eighty eight bird species have been recorded on the reserve of which twenty three are endemic to Southern Africa. Birds of prey include Verreaux's Eagle (*Aquila verreauxii)*, Martial Eagle (*Polemaetus bellicosus*), Jackal Buzzard (*Buteo rufofuscus*), Black Harrier (*Circus maurus*), Pale Chanting Goshawk (*Melierax canorus*), Cape Eagle-owl (*Bubo capensis*), Spotted Eagle-owl (*Bubo africanus*), Lanner Falcon (*Falco biarmicus*), Rock Kestrel (*Falco rupicolus)* and Greater Kestrel (*Falco rupicoloides*). Large terrestrial birds are represented by the Secretary Bird (*Sagittarius serpentarius*), Ludwig's Bustard (*Neotis ludwigii*), Kori Bustard (*Ardeotis kori*) and Karoo Korhaan (*Eupodotis vigorsii*). Sought-after species include Ground Woodpecker (*Geocolaptes olivaceus*), Cinnamon-breasted Warbler (*Euryptila subcinnamomea*), Black-headed Canary (*Serinus alario*) and Grey-winged Francolin (*Scleroptila africanus*). Namaqua Sandgrouse (*Pterocles namaqua*), Namaqua Dove (*Oena capensis*), Bokmakierie (*Telophorus zeylonus*), Southern Fiscal (*Lanius collaris*), Cape Robin-chat (*Cossypha caffra*), White-backed Mousebird (*Colius colius*), Cape Bulbul (*Pycnonotus capensis*) and Malachite Sunbird (*Nectarinia*

[5] The actual occurrence of some of these species will, however, need to be ground-truthed as part of KPA 1: Biodiversity and Heritage Conservation (Objective 1.5) and compared with the SKDR (Biodiversity Data 02, 06 & 07)

*famosa*) are frequently seen. The most significant vagrant species recorded during the last ten years were a group of seven Blue Cranes (*Anthropoides paradiseus)* during 2015.
The Avifauna species of conservation concern listed in Table 7 are known to occur at the GGNR.

**Table 7: Avifauna species of conservation concern**

| SCIENTIFIC NAME | COMMON NAME | TOPS 2015 STATUS | RED DATA STATUS | IUCN STATUS |
|---|---|---|---|---|
| *Neotis ludwigii* | Ludwig's Bustard | EN | EN | EN |
| *Polemaetus bellicosus* | Martial Eagle | EN | EN | VU |
| *Ardeotis kori* | Kori Bustard | PR | NT | NT |
| *Sagittarius serpentarius* | Secretary Bird | - | VU | VU |
| *Circus maurus* | Black Harrier | - | EN | VU |
| *Aquila verreauxii* | Verreaux's or Black Eagle | - | VU | LC |
| *Falco biarmicus* | Lanner Falcon | - | VU | LC |
| *Eupodotis vigorsii* | Karoo Korhaan | - | NT | LC |

#### 2.4.8.3 Reptiles

Reptiles include three tortoise species, nineteen lizard, agama and gecko species, fifteen snake species and three frog/toad species. The Angulate Tortoise (*Chersina angulata*) is the most common tortoise species on the reserve, while the Speckled Padloper (*Homopus signatus signatus*) and Tent Tortoise (*Psammobates tentorius trimeni)* are not frequently encountered. Lizard species that are encountered frequently include the Western Three-striped Skink (*Mabuya occidentalis*), Variegated Skink (*Mabuya variegata variegata*), Striped Sandveld Lizard (*Nucras tessellata*), Karoo Girdled Lizard (*Cordylus polyzonus*), Southern Rock Agama (*Agama atra atra*) and Bibron's Thick-toed Gecko (*Pachydactylus bibronii*). The most common snake species are the Black Spitting Cobra (*Naja nigricollis woodi*), Cape Cobra (*Naja nivea*), Puff Adder (*Bitis arietans*), Karoo Whip Snake (*Psammophis notostictus*) and Coral Snake (*Aspidelaps lubricus lubricus*).
The reptile species of conservation concern listed in Table 8 are known to occur at the GGNR.

**Table 8: Reptile species of conservation concern.**

| SCIENTIFIC NAME | COMMON NAME | TOPS 2015 STATUS | RED DATA STATUS | IUCN STATUS |
|---|---|---|---|---|
| *Homopus signatus signatus* | Speckled Padloper | VU | VU | NT |

#### 2.4.8.4 Fish

No Fish species are known to occur at the GGNR.

#### 2.4.8.5 Amphibians

Only three species of amphibians occur on GGNR. The Cape River Frog (*Amieta fuscilgula*) and Namaqua Caco (*Cacosternum namaquense*) are found near natural springs and the Karoo Toad (*Vandijkophrynus gariepensis gariepensis*) is found widely across the reserve.
No amphibian species of conservation concern occur on GGNR.

#### 2.4.8.6 Invertebrates

The terrestrial invertebrates of the GGNR have not been exclusively studied and additional research is required. To date there are approximately 48 families identified, representing 326 species.
No invertebrate species of conservation concern occur on GGNR.

### 2.4.9 Cultural/Heritage Resources

Only the Western Cape and Kwa-Zulu Natal have functioning Provincial Heritage Authorities, and consequently SAHRA administers heritage in the remaining provinces particularly where archaeology and paleontology are the dominant concerns. Heritage Northern Cape (Ngwao Boswa Kapa Bokoni) deals largely with built environment issues at this stage. Amongst other things the latter administers:

- World Heritage Sites
- Provincial Heritage Sites
- Heritage Areas
- Register Sites
- 60 year old structures
- Public monuments & memorials

Archaeology, including rock art, graves of victims of conflict and other graves not in formal cemeteries are administered by the national heritage authority, SAHRA.

No formal registered heritage sites are present within the GGNR, however a number of old structures (possibly in excess of 60 years) could potentially be classified as heritage resources in terms of Section 34 of the NHRA is present within the PA. The heritage value of these structures has, however, not been confirmed to date.

The archaeology, including rock art, graves of victims of conflict and other graves not in formal cemeteries of GGNR are however of interest and should be investigated as information on the pre-colonial archaeology of the reserve is limited.

The Bushmen or San had possibly been living in the area at least 300 years before the first European had landed at the Cape. The San people of the period were well adapted to their surroundings and migrated from the coast to the interior in search of prey they could hunt or plants to gather. The Khoekhoen or Nama arrived from the area that now encompasses northern Botswana. They introduced a so far unknown means of wealth and power: domestic livestock, mostly goats and cattle. Until now their descendants in the Richtersveld moved their livestock in seasonal patterns, always following the fresh growth. Historical records (1488-1650s) by European sailors to the Cape illustrate Khoekhoen people herding sheep and cattle and living in matjes huts. The first visits to the Cape by the Nama people were made in 1681.

Conflict with the San arose when the Nama livestock grazed the veld of the game the San depended on, and the people with their more sophisticated society comprising leaders, private property and individual wealth occupied prime spots that were also the choice of the hunter-gatherers. The San were also seen as livestock killers and from 1789 to 1824, the governor of the Cape, instituted a subscription system whereby farmers shared the cost of buying stock to give to the San people, thereby trying to stop the raiding. This system brought peace and by the 1770s trekboers had penetrated the interior, taking over the waterholes that were so jealously guarded by the San. During this period, the San people began to associate with the farmers, and more or less settled on the farms as workers. As the game was increasingly shot out by the farmers, and became scarcer, the San gradually ended up as dependents on the farms. By the end of the nineteenth century the San had disappeared from Namaqualand and had found their last refuge in the Kalahari.

By the early 19th century, various missionary groups began to exert their influence along the Orange River and the descendants of the Khoekhoen were limited to mission land in various parts of Namaqualand and the marginal lands of the Richtersveld. With the arrival of Dutch pastoralists, or trekboere, at the Cape of Good Hope in 1652 a new group of nomads invaded Namaqualand. With the help of weapons and the effect of foreign disease, the Nama populated areas were conquered by 1750. However, between 1770 and the beginning of the 19th century, the Nama as well as the San successfully reclaimed their respective lands and thus reversed the expansion of the Dutch colony. Only the British with their cruel and intimidating commando system that was introduced in 1806 made the indigenous people of Namaqualand surrender. San were hunted, enslaved or driven to marginal zones with little ecological value. The Nama were also enslaved or used as labourers by the trekboere, or were confined

to areas such as the Kamiesberg or Richtersveld. Nowadays these areas are known as communal land and 40% of Namaqualand's population lives there. From the mid-1800s mission stations were established there and people earned their living mainly through agriculture such as wheat production where rainfall allowed for it. Today most descendants from the Nama are employed by the diamond and copper mining companies. Yet their original way of life by migrating with their stock has been more or less destroyed, apart from Nama descendants in the Richtersveld, who are said to be the last nomads of Namaqualand. The end of the nomadic lifestyle of the trekboere came with the upcoming trend of private ownership of land. The Dutch East India Company introduced a loan farm system in 1708 throughout the Cape Colony which provided security of tenure as well as enabled the trekboere to graze their sheep on unoccupied plots of land. In 1878 under British rule, white farmers were allowed by a new legislation to buy their own land, and soon after no unclaimed land was left in Namaqualand. With the erection of fences around their properties, farmers could practice an internal migrating system, or rotational grazing. Nowadays farmers also own additional pasture in the summer-rainfall areas and "migrate" their stock in large trucks across the country. Times when people moved their stock in slow treks during starlit nights following the smell of rain in the hope to find fresh pasture are long since gone.

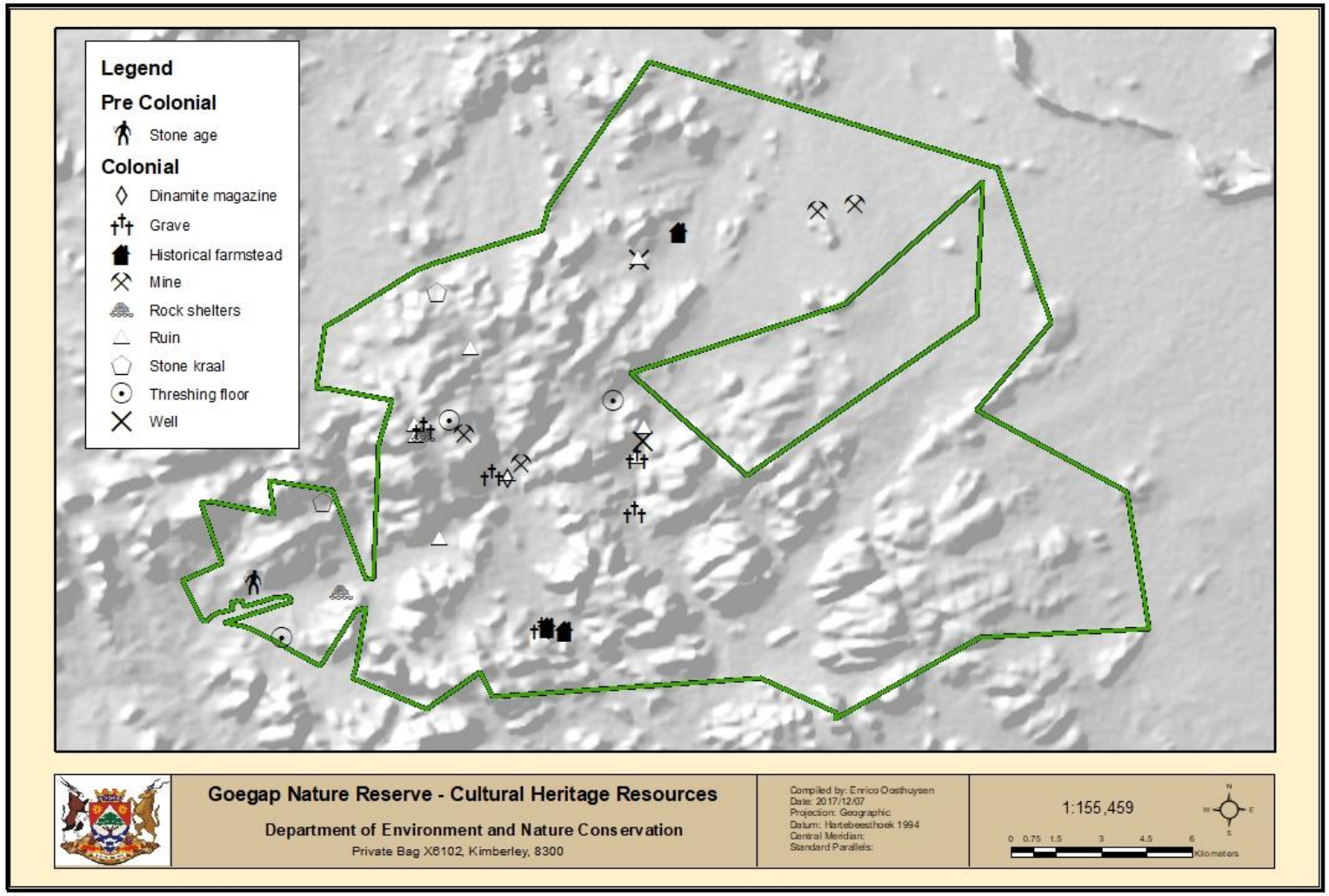



**Figure 12: GGNR Cultural/Heritage resource**

### 2.4.10 Bulk Services & Access

The administrative management section of the GGNR lies at the administrative office 5km from the main gate. This section consists of an office block, storerooms, laboratory, garages, workshop area, succulent display garden, lapa and ablution facilities. Directly opposite the administration office is the conference facility, capable of hosting 120 people.

The road network within the GGNR ranges in condition. The management roads (approximately 370km) are less maintained than the official tourism roads (approximately 73km). The tourism roads include 5km tarred road, 13km gravel road and 60 km 4x4 routes. Tourism access to the reserve is through the main entrance gate. Management access to the reserve is achieved through 20 management gates.

Signage within the PA is reasonably extensive as directional signage within the reserve has to cover the main tourism use area. Signage from the N14 and N7, as well as the R355 to the entrance of the PA can be improved.

Limited Staff accommodation (8 houses) is provided on the reserve for crucial management personnel.

23 000ha of the GGNR is game fenced to 1.8m with 4 800ha currently fenced with 1.4m stock proof fencing. 4 945ha is fenced with 1.6m stock proof fencing. 28 000ha has officially been declared as Protected Area, with 7 000ha in process.

The local authority supplies water and electricity to the administrative section of the PA, whilst electricity to the tourism facilities is supplied by means of solar systems. Water at the 4x4 trails camp is provided by a bore hole equipped with a solar pump. GGNR infrastructure and bulk services are illustrated in Figure 13.

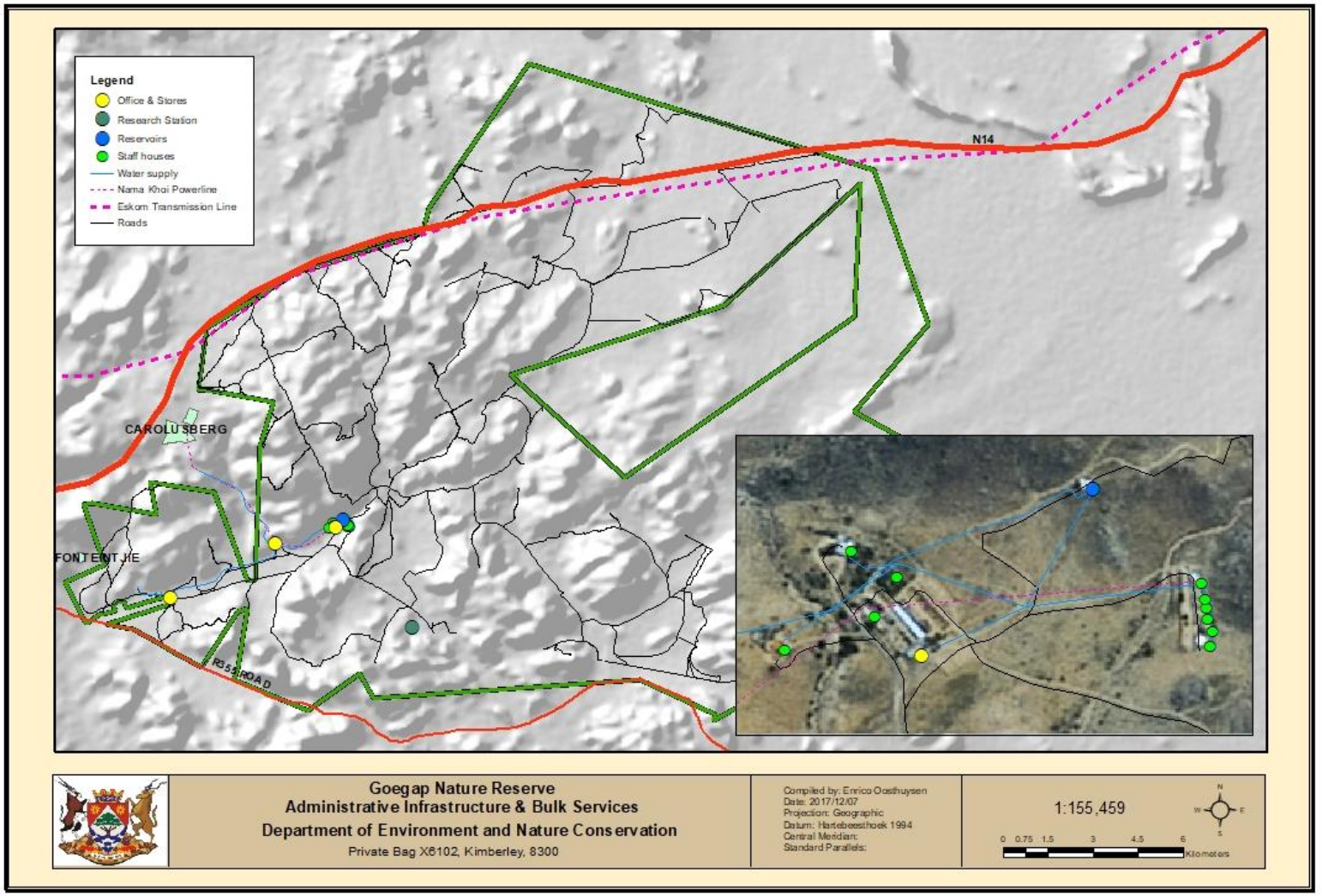



**Figure 13: GGNR Infrastructure and Bulk services**

### 2.4.11 Reserve Tourism

Any tourism activities will be according to the reserve CDF to establish a coherent spatial framework in and around the reserve to guide and co-ordinate conservation, tourism and visitor experience initiatives. The CDF will play an important role in minimizing conflicts between different users of the reserve by separating potentially conflicting activities such as hiking and day-visitor picnic areas whilst ensuring that activities which do not conflict with the reserve values and objectives (especially the wilderness value) can continue in appropriate areas.

The area an important destination for ecotourism and is ideal for nature-based recreation, extreme sporting events (staged trail running and mountain biking) and tourism opportunities. These opportunities consist of the combination of the eco-tourism product (fauna, flora, geology, scenery etc.) with the recreational & cultural-tourism product.

This opportunity consists of the combination of the eco-tourism product (fauna, flora, geology, scenery etc.) with the recreational & cultural-tourism product. The study had identified Tourism Opportunities and Constraints in terms of attractions, access, amenities and awareness. A site-specific study for the reserve should however be undertaken to identify tourism opportunities and constraints in terms of attractions, access, amenities and awareness

- **Attractions**

The whole range of unique attractions identified currently exist in the PA, but could be developed further. The area a unique and diverse environment consisting of:

- Unique flora – The area form part of the Gariep centre of endism and is a biodiversity hotspot with unique endemics.
- The arid environment and weathered geology provides a dramatic landscape with towering cliffs, varied valleys and extensive plains.
- Cultural history – The area has a rich cultural history, with examples dating from the early 1800's (old buildings & kraals as well as threshing floors from the early settlers and miners). There are also numerous shelters/structures dating from the Anglo-Boer War.

The constraints which need to be dealt with include:

- Restoration and rehabilitation projects on existing cultural heritage sites and historical land-use sites
- Infrastructure like power lines and green energy developments (Wind Farms) through and bordering the area may have a potential negative visual impact.
- Present and historical mining activities on the perimeter provide negative visual impact and area threat to fauna and flora.
- Corridors for critical game movement and migration patterns from winter to summer rainfall areas & varying habitats are extremely limited.

- **Access**

Current access is seen as an important factor contributing to the usage of the area.

- Road access is good via the N7 main road that is also marketed as the North - South Tourism Road as well as the N14 east and the R355 south.
- The reserve is situated approximately 10km south-east to the town of Springbok with a tar road access.
- There is an existing airstrip at the main gates of the PA. In addition, airstrips are to be found at Upington and Alexander Bay. There are currently very limited schedule flights to most of these destinations; however, the existence of these airstrips provides the infrastructure to deal with potential higher demand.

The constrains which need to be dealt with include:

- Existing airstrips have very limited scheduled flights.
- There is no international airport in the region with the nearest national airport at Upington.

- **Amenities**

Current amenities in the area are acceptable in performance and function, but could be developed further.

- Tourism facilities are limited to 16 picnic sites for day visitors,
- Campsite with 9 sites (54 people),
- Group camp with 16 beds,
- Bush huts 4 (16 beds total),
- Chalets 2 (12 people total),
- 4x4 Trails camp (8 beds) for overnight visitors.
- Conference facility (150 people) and related boardroom (18 people).
- Hiking trails, divided into seven circular day hikes, ranging from two to eight kilometers in length as well as a 3-day overnight hiking trail.
- There are no dedicated routes for mountain biking and horse riding and these activities are conducted on existing tourism roads.
- 13km circular route for sedan vehicles and busses.
- ±60km 4x4 routes divided into 3 circular routes with varying difficulty.
- Stabling area for visiting horses.

Constraints which need to be dealt with include:

- Limited access to communication networks – especially for the conference facility.
- Security within the main tourism accommodation area – due to the close proximity to the town as well as the surrounding local communities, theft, damage to infrastructure and poaching is becoming a problem.
- Limited opportunities for community driven tourism projects.

• **Awareness**

Awareness of the area is high due to the spectacular annual flower displays, particularly amongst the national and international markets.

- The destination is best known for its annual flower displays during a 2-3 months period.
- The destination is promoted both nationally and internationally as part of a travel package by tour operators as is done for many of the other destinations in South Africa and includes the North South tourism route that runs along the N7 highway.
- It is also a well-known extreme sport destination with trail running and mountain biking becoming more popular.
- Due to its close proximity to the communities and Springbok, the PA plays an important role in environmental education amongst the local schools.
- The Succulent Karoo Research Station based on the PA which is run by the University of Zurich in collaboration with the University of the Witwatersrand, is a fully functional small mammal research unit with visiting local and international students.

Constraints which need to be dealt with include:

- Overall project marketing is fragmented without a consolidated base.
- Individual product marketing is mostly of a low-level nature.

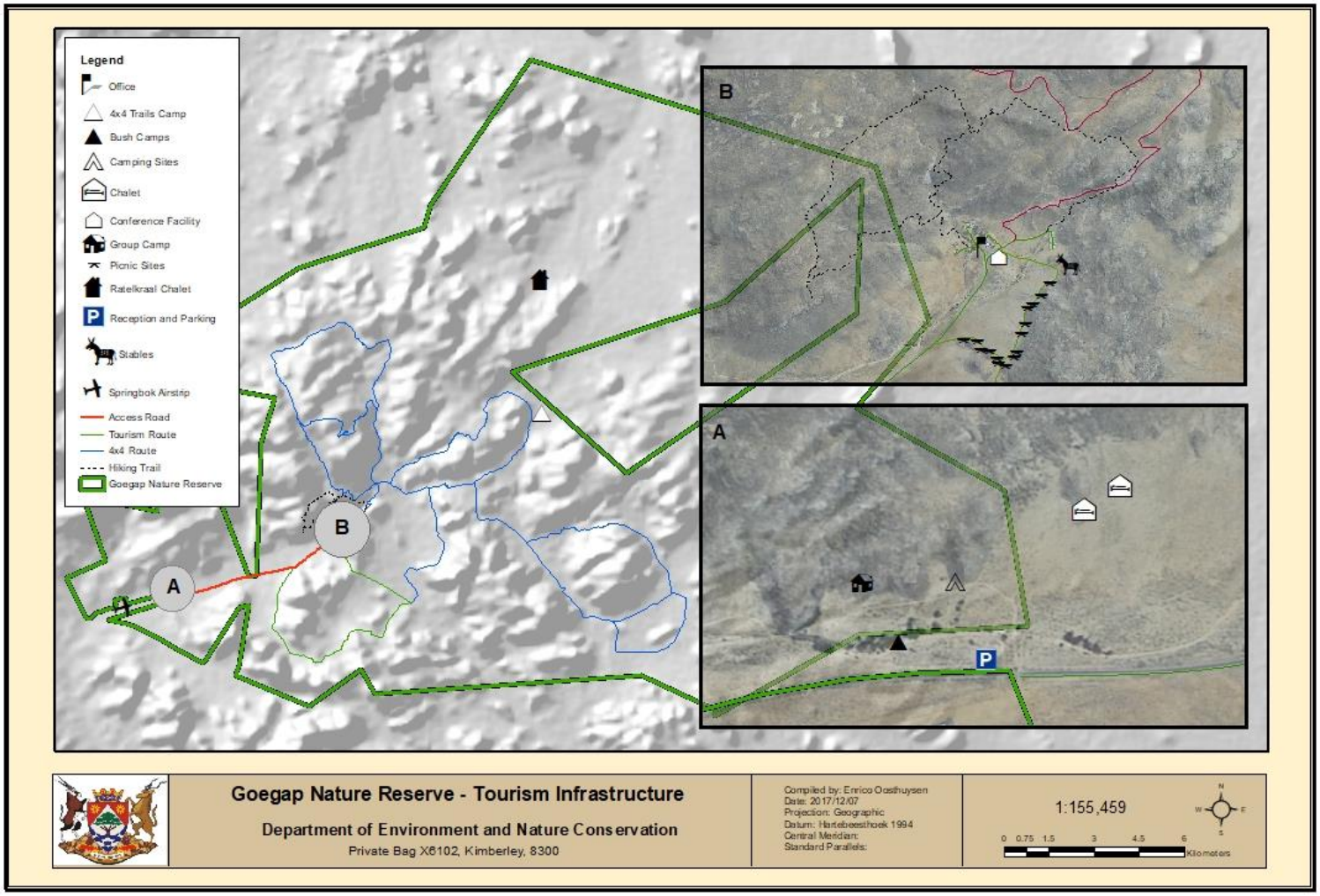



**Figure 14: GGNR Tourism Infrastructure**

### 2.4.12 Social Context

With regard to socio-economic context the Nama Khoi Local Municipality is considered the hub of the Namakwa District Municipality has the largest population of the Namakwa District, with around 54 644 people. It includes the larger towns of Springbok, Concordia and O'Kiep with Springbok the commercial, administrative, farming and industrial center. The area covers approximately 17 988 square kilometers.
The population density is approximately 3.6 persons per square kilometer. According to the Namakwa District Strategic Environmental Management Plan (SEMP, 2011), the Nama Khoi Local Municipality has the highest number of income earners, but has the highest percentage low income earners within the district. Hence poverty alleviation projects and programs to improve the economy of the area will yield the highest poverty alleviation benefits.
The Namakwa District Strategic Environmental Management Plan (SEMP, 2011) acknowledge that biodiversity underpins sustainable development as it provides many important ecosystem services such as forage production for livestock and water production that form the cornerstone of local economies and livelihoods.
The SEMP, (2011) also recognize the following primary agents of biodiversity loss within the Nama Khoi Local Municipality (Todd et. al., 2009),

- the spread of alien vegetation (e.g. *Prosopis spp.*);
- the unsustainable management of grazing land – resulting in the reduction of the veld carrying capacity;
- mining and crop growing;
- illegal plants and reptile collection;
- climate change;
- unsustainable water abstraction and
- human settlement expansion.

Demographic projections show a steady decline in the population in the region over the next 25 years. Economic activity is likely to remain dependent on mining and irrigation for the foreseeable future, with modest contributions from ecotourism. There is considerable seasonal migration of labour. Outside the small towns along the river there are negligible infrastructure or community services.
EPIP programs within the reserve to develop tourism infrastructure will also make a huge contribution to job creation, especially through the EPWP and People & Parks programs, focusing on infrastructure maintenance and development.

## 2.5 Local and Regional Planning

The GGNR is located within the Nama Khoi Local Municipality, which forms part of the Namakwa District Municipality of Northern Cape.
The Nama Khoi Local Municipality has no IDP in place. However, as part of the IDP of the Namakwa District Municipality, the Namakwa Environmental Management Framework (EMF) and Strategic Environmental Management Plan (SEMP) was developed in order to provide a high-level plan for sustainable development in the Namakwa District Municipality of the Northern Cape Province that also cover the Nama Khoi Local Municipality.
The EMF and SEMP provide an evaluation of the state of the environment, sets out an environmental vision and details the constraints, opportunities, management measures, monitoring indicators and desired state of the environment for the various environmental elements.
The management measures in the SEMP acknowledge the need for social and economic development and provide strategic issues which should be addressed to take advantage of the environmental goods and services in the district. On the other hand, the strategic issues in the SEMP provide strategic actions that should be taken to protect and conserve environmental resources including nature reserves.
The Environmental Management Framework (EMF), the spatial section of the study, is presented as a series of environmental management zones which present the sensitive aspects of the environment,

which land uses are suitable in each zone and which environmental studies should be conducted for proposed developments in each zone.
The EMF is presented as a map showing the Environmental Management Zones in the Namakwa District Municipality. There are six Environment Managements Zones and one additional zone for areas where insufficient information exists to make a determination. The seven zones are named from A to G and all protected areas are provided for in zone A and is described as areas that includes a number of environmentally sensitive features and development should be avoided. If the development is critical to the economic and social wellbeing of the local population, utmost care should be taken to avoid impacts and mitigate where possible (Namakwa District Municipality, 2012).

## 2.6 Reserve Expansion

The National Protected Area Expansion Strategy (NPAES, 2016) and Northern Cape Protected Area Expansion Strategy (NCPAES, 2017) aims to achieve cost-effective protected area expansion that will ensure ecological sustainability and increased resilience to climate change. The NPAES sets five- and twenty-year protected area expansion targets; identifies focus areas for protected area expansion; and makes recommendations on potential mechanisms through which protected area expansion could be achieved.

The GGNR is included in one of the focus areas identified for protected area expansion by the NPAES, namely the Kamiesberg, Bushmanland, Augrabies focus area (no 15), which also represents the largest remaining natural area for the expansion of the protected area network.

Conservation action in this area should be aimed at reducing further habitat loss and ecosystem functioning as well as identifying approaches to increase protection for the vegetation types that require it.

An expansion project has also been identified for the GGNR and involves the expansion of the reserve southward to create a conservation corridor between the Namaqua National Park and the reserve to include the Upland-Lowland link, incorporating altitudinal gradients and topographic range, creating movement corridors for species and maintain ecological processes. The protected area expansion strategy is provided as a subsidiary plan to this IMP.

## 2.7 Strengths, Weaknesses, Opportunities and Threats

Table 9 lists the key strengths, weaknesses, opportunities and threats that were identified for the GGNR.

**Table 9: SWOT analysis for the GGNR**

| KEY STRENGTHS |
|---|
| • The PA potential to demonstrate the efficacy and benefits of functional partnerships between the State and communal land owners in the collaborative administration and management of provincial nature reserves.<br>• The reserve is committed to management in accordance with best practice and rationally driven by current knowledge.<br>• The reserve is committed to good administration and the efficient use and good maintenance of resources.<br>• The reserve is committed to being a good employer and socially affirmative neighbour in the local communities.<br>• The PA forms an integral part of the Biosphere Region Biodiversity Corridor (Biosphere Region Biodiversity Corridor, Mega Reserve, TFCA).<br>• It also represents key ecological processes and biodiversity drivers, including riverine and sand movement corridors, quarts patches and edaphic interfaces, climatic and upland-lowland gradients.<br>• The PA has exceptional scenic and wilderness qualities. Its diverse topography includes sheer cliffs, deep valleys and mountain slopes interspersed with flat plains and river courses.<br>• The wealth of archaeological and historical artefacts and sites present within the reserve.<br>• The reserve contains areas classified as “important and necessary” in terms of Critical Biodiversity Values (CBA’s).<br>• The area known as the Namaqualand Rocky Hills is also a recognized important center of endemism. Approximately 40% of the worlds’ 10 000 succulent species are found in this region. Succulent plants are predominant within the biome, with a large number of endemic species occurring within the area.<br>• A number of endangered and protected bird, reptile and mammal species are found on the reserve. Protected invertebrates, as well as biome specific species occur within the reserve. |

- The reserve is easily accessible by tourists and offers a self-drive option for normal sedan vehicles as well as 4x4 trails for the enthusiasts.
- Good quality accommodation is available at the reserve.
- The reserve is situated in a biodiversity hotspot with a high tourism potential.
- The PA offers some of the best bird watching opportunities in southern Africa and hosts the breeding grounds of a variety of bird species.
- The reserve is regarded as playing an important social support role in local and surrounding communities
- The reserve is regarded as having a high income generating potential through tourism.
- Exceptional scenic and wilderness qualities.
- Peaceful and pristine environment.

**KEY WEAKNESSES (ISSUES & CHALLENGES)**

- The reserve has to compete against other, well-known private and para-statal resorts and parks in the area.
- Overall project marketing is fragmented without a consolidated base.
- Individual product marketing is mostly of a low-level nature.
- Inadequate community linked information transfer (environmental education) re environmental issues.
- A focused tourism development plan is required to grow tourism activities associated with the PA.
- There is a need to ensure that tourism-related benefits accrue to local target communities.
- There is a need to review and refine the draft zonation plan to manage activities within the PA.
- Formal protection of some sections is required to better secure management of the area.
- The boundary of the PA is inconsistent, and is poorly aligned with existing ecological boundaries.
- Corridors for critical game movement and migration patterns from winter to summer rainfall areas & varying habitats are extremely limited.
- Nutritional value of the veld type limiting game densities.
- Research and monitoring is required to improve baseline data and assess changes in the ecosystems responses to management activities.
- Appropriate restrictions are required to prevent unnecessary disturbance of biota as a result of aircraft activities.
- Actions are required to enhance habitat for focal bird and fauna species and address threats to existing populations.
- Windblown sediments from old mining operations and seepage of saline water from slimes dams needs to be addressed to facilitate maintenance of the surrounding natural vegetation and soils.
- Lack of reserve staff's capacity to ensure law enforcement;
- Ageing staff complement with a low morale.
- Appropriate institutional arrangements are required to facilitate active involvement of local stakeholders in decision making.
- There is a potential for management objectives to be undermined if not clearly communicated to and supported by institutions responsible for management of the PA and conservation domain.
- There is a need to assess and address the threat of water quality deterioration due to the seepage from old mining tunnels into the groundwater.
- There is a need to review and improve/ expedite the formalization of management contracts with landowners where new land has been purchased for conservation purposes.

- There are insufficient resources and capacity to coordinate and implement effective management of the PA site.
- Centralized budget, and de-capacitated reserve management.
- Lack of supported budget to operate the reserve properly.
- Poor quality equipment and infrastructure.
- Appropriate institutional arrangements are required to facilitate active involvement of local stakeholders in decision making.

**OPPORTUNITIES**

- Possibility to physically link the PA to the Biodiversity Corridor protected areas or Mega-Reserve (Biosphere Region, Biodiversity Corridor, Mega-Reserve).
- The Kamiesberg Bushmanland Augrabies focus area (#26) in the Northern Cape represents the largest remaining natural area for the expansion of the protected area network and forms part of the planned Lower Orange River TFCA. It provides an opportunity to protect 22 desert and succulent karoo vegetation types, mostly completely unprotected, several river types that are still intact but not protected, and important ecological gradients and centers of endemism.
- One of the goals of the NPAES&AP is also to create a network of areas to conserve a representative sample of biodiversity and to maintain key ecological processes across the land- and seascapes. With this in mind the possibility of expanding the GGNR to the southwest, to incorporate and link a watershed to coast protected environment in conjunction with the LHSKT and SANParks will be given due consideration.
- Potential for greater collaboration with other conservation initiatives to support management objectives.
- Potential for research and monitoring by tertiary institutions.
- Potential to improve tourism facilities, including the road network, in order to allow better access throughout the reserve.
- Potential to promote day visitors' facilities throughout the year.
- Potential for job creation.
- Potential for tourism-related benefits accrue to local target communities.

**THREATS**

- Poaching of wildlife by neighbouring communities.
- Present and previous mining activities cause a negative visual impacts and are a threat to fauna and flora.
- There is a risk of future land use planning activities around the site undermining the ecological and aesthetic character of the area.
- The small size of the area could result in edge effects and fragmentation of biological communities. This in turn might lead to a lack of migration, lack of species diversity (especially the terrestrial fauna and flora) and loss of genetic diversity.
- Biological, Ecological and Archaeological resources collected from the reserve for the overseas market.
- Ecologically sensitive area and parts are ecologically degraded.
- Ageing staff.
- Potential conflict between conservation and community land use objectives could undermine the proposed expansion of the PA.
- A potential security risk for overnight visitors as a result of the lack of security and law enforcement.

# 3. STRATEGIC PLANNING FRAMEWORK

## 3.1 Purpose

The GGNR was initially proclaimed to conserve biodiversity in all its natural facets and fluxes (i.e. changes) and to provide human benefits in such a manner that detracts as little as possible from the natural qualities (i.e. the wilderness milieu) of the reserve.
In present times, four of the most important contributions of protected areas are:

- biodiversity conservation and ecological sustainability,
- adaptation to climate change,
- land reform and rural livelihoods, and
- socio-economic development, including ecosystem services.

Some of them were only partially realized through the initial goals of the GGNR that included the following:

- To conserve the biodiversity and life-support mechanisms of GGNR and the surrounding area.
- To implement an integrated environmental management strategy (CDF).
- To preserve and promote the cultural and historical heritage as well as the aesthetic and spiritual value of GGNR and the surrounding area.
- To ensure local community involvement by securing access to and sharing benefits from natural and cultural resources.

In present times, the value of the GGNR as a conservation area can also be attributed to the following:

- It is of biodiversity significance because it one of 10 global hotspots, viz, the Succulent Karoo (SK);
- It includes areas identified as irreplaceable and vulnerable through the SKEP biome-wide conservation planning project;
- It form part of a focus areas for land based protected area expansion in terms of the National Protected Area Expansion Strategy (NPAES, 2008);
- It contains areas classified as “important and necessary” in terms of Critical Biodiversity Values (CBA,s);
- It is situated within areas classified as a Herpetofauna, Insect, plant and archeological hotspot and centre of endism.

## 3.2 Reserve Values

The following key values of the GGNR were identified by the RPT:

**Table 10: Key values associated with the GGNR**

| KEY RESERVE VALUES |
| --- |
| • The GGNR is of biodiversity significance and falls within a global biodiversity hotspot namely the Succulent Karoo (SK).<br>• The GGNR falls within the SK which was selected by WWF as a Global 200 terrestrial ecoregion and is an area most crucial to conservation of global biodiversity.<br>• The GGNR includes areas, which have been identified as irreplaceable, and vulnerable through the SKEP biome-wide conservation planning projects.<br>• The GGNR form part of the Kamiesberg, Bushmanland, Augrabies focus areas for land based protected area expansion in terms of the National Protected Area Expansion Strategy (NPAES, 2008).<br>• The reserve contains areas classified as CBA 2: Important Areas as well as Ecological Support Areas in terms of Critical Biodiversity Values (CBA’s) Map of the Nama Khoi Municipality. |

## 3.3 The Reserve Vision

The vision of the reserve describes the overall long-term goal for the operation, protection and development of the GGNR. The vision of the GGNR is a collaborative partnership between the management authority and the surrounding communities in the conservation and sustainable use of the

unique desert ecosystem of the area. From this partnership, it is envisaged that the following will be secured:

- Restoration and management of the ecological character and integrity of habitats with their associated biota that occurs naturally on GGNR;
- Management and conservation of GGNR and its resources in an ecologically accepted manner and to contribute to the understanding of the ecosystem services through research and monitoring within the estate;
- Preservation and promotion of the cultural / historical heritage as well as the aesthetic qualities of GGNR;
- Promotion of eco-tourism and conservation awareness amongst all people and;
- Equitable access to and responsible use of the reserve and its natural resources.

## 3.4 Key Performance Areas and Objectives

The RPT identified 24 Objectives for the GGNR. Collectively these objectives are anticipated to contribute to realizing the Vision for the reserve.
These objectives have, in turn, been grouped into six Key Performance Areas (KPAs) as follows:

**Table 11: Key Performance Areas and Objectives of the GGNR**

| KEY PERFORMANCE AREAS (KPA) | OBJECTIVES |
|---|---|
| **KPA 1: Biodiversity and Heritage Conservation** | 1.1: Obtain Biodiversity and Cultural Heritage knowledge<br>1.2: Restoration of degraded areas<br>1.3: Maintenance of ecological processes in the GGNR<br>1.4: Maintenance of critical ecosystem services<br>1.5: Land use planning and management outside of the protected area<br>1.6: Water use planning and management operations influencing the PA<br>1.7: Audit achievement of biodiversity targets<br>1.8: Manage and mitigate the environmental impacts of conservation management, tourism, recreation and natural resource use in the GGNR<br>1.9: Protect the heritage resources of the GGNR |
| **KPA 2: Recreation, Marketing, Education, Awareness and Interpretation** | 2.1 Develop, deliver and maintain a diverse range of tourism and recreational services for visitors to the PA in accordance with CDF<br>2.2 Develop and implement a focused and cost-effective marketing program for the GGNR<br>2.3 Develop and implement a focused and cost-effective awareness-raising and educational program for the GGNR |
| **KPA 3: Enforcement, Security and Access Control** | 3.1 Secure the legal tenure of, and management authority for the GGNR<br>3.2 Secure boundaries of, and maintain controlled access to the GGNR<br>3.3 Sustain an effective law enforcement and compliance capacity in the GGNR |
| **KPA 4: Infrastructure and Equipment** | 4.1 Acquire and maintain operational equipment and vehicles for the GGNR<br>4.2 Construct, maintain and upgrade the administration infrastructure and bulk services infrastructure in the GGNR<br>4.3 Construct, upgrade and maintain day and overnight visitor buildings and infrastructure in the GGNR |

| | |
|---|---|
| **KPA 5: Stakeholder Involvement** | 5.1 Ensure the ongoing involvement of a representative and functional Goegap Protected Area Advisory Committee (GPAAC) in the planning, development and management of the GGNR.<br>5.2 Actively participate in local and regional conservation and socio-economic development initiatives that may affect or benefit the GGNR.<br>5.3 Identify and enable access to empowerment and capacity building opportunities for the local community |
| **KPA 6: Administration and Planning** | 6.1 Institute and maintain an effective management planning capability in the GGNR<br>6.2 Maintain an adequately equipped, resourced and trained staff complement for the GGNR<br>6.3 Institute and maintain an effective financial, administration and planning capability in the GGNR |

## 3.5 Conservation Development Framework (CDF)

The CDF is a strategic spatial plan for the reserve and its surrounds that indicates a range of visitor use zones, areas requiring special management intervention, the placement of visitor facilities, the nature and size of these facilities, entry points and movement routes through the reserve. It also provides guidelines for potential future development, rehabilitation and the management of land-use along the reserve borders. The CDF is underpinned by a thorough analysis of the biodiversity, cultural-heritage and landscape limits to development, as well as the tourism opportunities. Sensitivity-value analysis is a decision support tool for spatial planning that is designed to integrate best available biodiversity information into a format that allows for defensible and transparent decisions to be made. The CDF for the reserve is not yet fully developed as the reserve is in a transition between having a zonation plan and a fully developed CDF (which will include the Use Zone Map). One of the elements underlying the CDF not yet fully developed is a full tourism market analysis and detailed analysis of all development nodes. Other element of the CDF still to be considered further in future are resource use potential and better interfacing with municipal Integrated Development Plans and Environmental Management Frameworks. The development of the initial CDF for the reserve followed the generic planning process and basic planning principles for all reserves.

### 3.5.1 Use Zone map and development sites

#### 3.5.1.1 Determine use zones

- This step of the CDF process is a requirement for all reserves in terms of the NEMPAA. A draft was exposed to all stakeholders and amended as required by the NEMPAA that is now submitted to the Executive Management for ratification and approval by the MEC as part of this IMP.
- This process was informed largely by the sensitivity map and reserve policies and planning principles.
- The generic set of visitors use zones for all reserves was used as a guideline.

#### 3.5.1.2 Determine locations for future development of specific facilities

- Informed by the use zones, regional influences, visitor requirements, market needs and other informants, sites for potential visitor facilities and alternatives were identified.
- At the same time potential transport routes and alternatives are identified and the standards for all roads, footpaths and cycle routes will be set.
- Using the principle of SEA the alternative sites will be critically examined and the most suitable location decided on.
- The scale of development and the numbers of visitors need to be informed by an assessment of cumulative impacts for the whole reserve.

Based on available information, and in consultation with the RPT, the Conservation Development Framework (CDF) (Annexure 1) is presented as a strategic spatial planning framework for the GGNR and its surrounds. Annexure 1 describes the objectives, characteristics, uses, management guidelines and broad conservation and tourism infrastructural requirements designated for each of the use zones shown in Figure 15. Each of these zones has criteria for the type of activities, interaction with other users the type and size of facilities, the sophistication of facilities and the standard of roads.

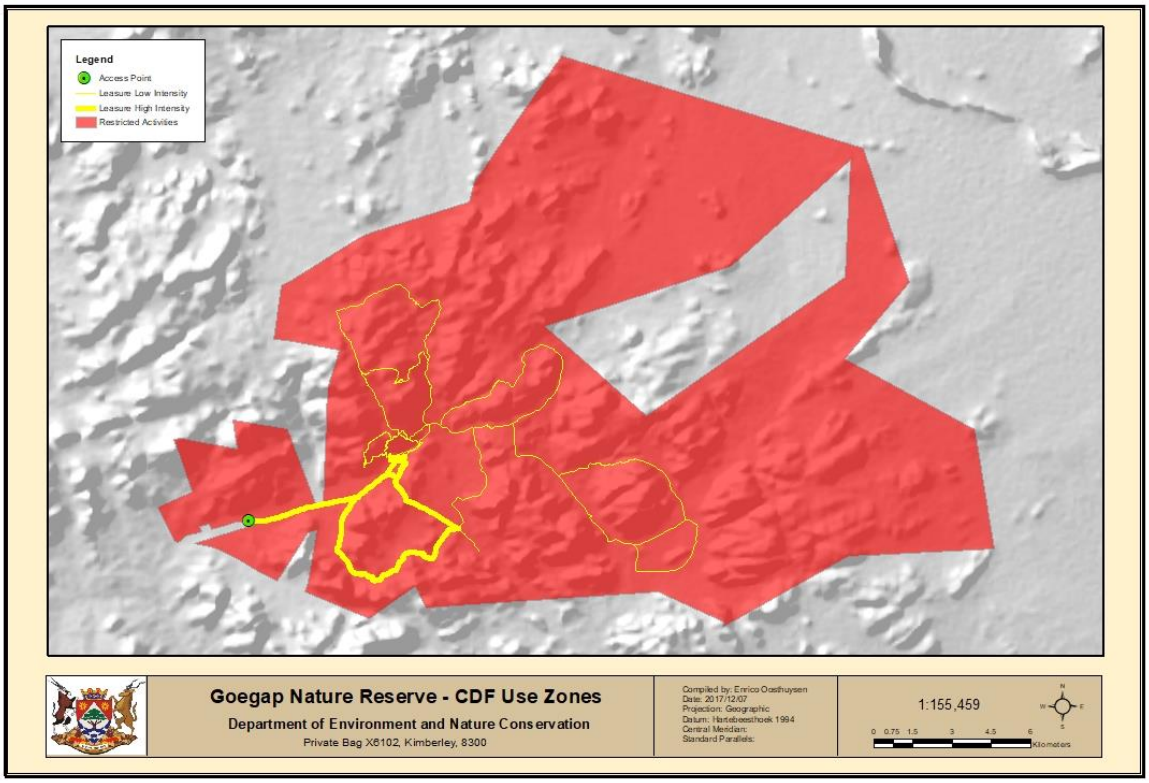



**Figure 15: Use-Zone Map GGNR**

# 4. OPERATIONAL MANAGEMENT FRAMEWORK

The Operational Management Framework translates each KPA and its set of related objectives into:

- Guiding management principles to guide decision-making and operations including:
  - International Conventions, Commissions and Treaties
  - National Acts and Regulations
  - Provincial legislation and municipal bylaws
  - Policies to guide decision-making and operations and strategies relating to implementation
  - Standard Operating Procedures (SOP's) on how to implement policy and strategy including:
    - Frameworks;
    - Norms and Standards; and
    - Protocols
- Management actions and targets that should be implemented to achieve the PA objectives and the resources required to implement it.

Guiding management principles are provided for in the Annual OMF with copies of the relevant documents as part of the SKDR.

Management actions according to priority, management targets and performance indicators are also provided for in the Annual OMF together with Time Frames, Responsibilities and Cost estimate provided as subsidiary plan to this document.

## 4.1 KPA 1: Biodiversity and heritage Conservation

### 4.1.1 Objective 1.1: Biodiversity and Cultural Heritage knowledge

#### 4.1.1.1 Norms and standards[6]

- Ensure proper planning in the establishment or expansion of the protected area
  - A biodiversity resource inventory for the protected area is maintained and monitored.
    - Priority species, habitats or ecosystems have been identified;
    - Information on these species, habitats and ecosystems is sufficient to support planning and decision making and little additional information is required to manage the protected area's biodiversity;
    - A monitoring program for these species habitats and ecosystems is in place.
  - A cultural heritage resource inventory for the protected area is maintained.
    - There is a comprehensive inventory of cultural heritage resources.
- Ensure that each protected area has an approved program identifying research needs and a monitoring plan according to the management plan of a protected area.
  - A research program for the protected area is being implemented.
    - Research provides for management application (where possible and allowed for by budget);
    - Scientific decision support is available and or facilitated;
    - Management orientated research projects form a substantial part of the program;
    - Results of research projects are fed back to protected area management;
    - The results are used to adapt management of the protected area where relevant;
    - There is an approved research plan with all research requirements;
    - There is a number of approved projects in place;
    - There is a platform in place to give feedback of research results;
    - There are research records in place;
    - Distinction between research for management purposes and that done by outsiders which may not have direct applications and managing the external researchers;
    - Researchers to comply with ethical research procedures.
  - A monitoring program for the protected area is being implemented.
    - The protected area has developed an applicable monitoring program supporting management objectives, and provide for review of the program;
    - Indicators for monitoring have been established;
    - The results of the program are used to adapt management of the protected area where relevant.

#### 4.1.1.2 Principles[7]

- The Research and Monitoring Program (RMP) should be developed, where relevant, to align with and complement national and international monitoring systems (Teder et al. 2007).
- The RMP recognises that monitoring is required at multiple levels and scales and that monitoring objectives are often hierarchical. In this way, standard approaches facilitate

[6] The norms, standards and indicators is according to the "Norms and standards for the management of protected areas in South Africa" published in terms of NEM:PAA Act (57/2003) under General Notice 528.

[7] The policy (principles) guiding the development of Biodiversity Monitoring System (BMS) and the Biodiversity Monitoring Programs (BMPs) in this section were developed by SANParks.

aggregation of information across ecosystems and into organisational, national and global measures (Teder et al. 2007).

- Clear, rigorous and relevant sets of objectives, hypotheses and methods must be established for each monitoring program (Nichols & Williams 2006), with feedbacks between scoping, design, testing and implementation phases (Reyers & McGeoch 2007).
- Monitoring programs should be designed using best scientific practice and current understanding, and be supported by integrated, long-term and question- driven research (Pringle & Collins 2004; The Royal Society 2003; Nielsen et al. 2009).
- Where possible and appropriate design monitoring programs using well-established, widely applied techniques and methods, that capitalise on technological developments (e.g., remote sensing, Margules et al. 2003; Soberon & Peterson 2009).
- Minimum monitoring requirements should initially be established independently of current capacity and resource constraints, where after cost-effectiveness assessments, prioritisation and staged implementation options should be evaluated (Gardner et al. 2008).
- Few, well-implemented monitoring programs (including the indicators and thresholds of concern that underpin them) are preferable to many under-developed programs, or programs that cannot be sustained because of capacity limitations (Biggs & Rogers 2003; Timko & Innes 2009).
- Planning for analysis, reporting, data management, archiving and program integration must be incorporated as essential elements during the design of the RMP (Spellerberg 2005; Field et al. 2007; Flenry et al. 2008). This includes planning for the translation of results and outcomes into actions and advice relevant to management and/or policy development, that is, to complete the adaptive management cycle.
- Monitoring program proposals should be peer-reviewed prior to implementation, and thereafter should have regular review cycles.
- The RMP will not necessarily exclude other monitoring activities (current or future), and additional monitoring with highly localised and perhaps shorter-term objectives may be necessary. Where such activities and projects exist or are implemented, they will add value to and are likely to complement the RMP and should be integrated into the RMP.

### 4.1.2 Objective 1.2: Restoration of degraded areas

#### 4.1.2.1 Norms and standards

- ❖ Ensure that the protected area has visitor facilities that contribute positively to the experience without negatively affecting the environment and biodiversity.
  - ➢ Visitor facilities are established in line with the protected area objectives, and in response to tourism market demands, and contribute positively to the visitor experience
    - There are active programs for restoration of degraded areas in the protected area and/or associated buffer zone, resulted (resulting) from visitor use;
    - Areas in the protected area suffering from degradation or damage as a result of visitor use are subject to a rehabilitation plan;
- ❖ Ensure Biodiversity resources are managed to meet the protected area objectives as set out in the management plan.
  - ➢ The protected area is implementing an effective invasive species control and eradication (program), as required in terms section 76 of the National Environmental Management: Biodiversity Act, 2004

#### 4.1.2.2 Principles[11]

- PA management shall strive to remove all alien species where possible, control, maintain and where necessary, restore previously invaded or planted areas, in order that these sites resemble or form part of the functioning landscape and ecosystem.

- DAERL recognises that invasive alien species are one of the greatest threats to the biodiversity of the reserve estate.
- Under the guiding international conventions, national legislation, and by means of its own objectives, invasive alien species impact on and harm the core conservation business of Provincial Reserves.
- DAERL as the leading conservation organisation in the Northern Cape, has a responsibility to lead by example, provide awareness and educate the broader community about invasive alien species in the interests of the province ecological and economic environment.
- Implement rules applicable to use and control of ornamental plants within Nature Reserves including rules under which camps and personnel villages will be surveyed and cleared, as well as rules for replacement and use of plants for landscaping and ornamentation. These principles must also be captured in the Code of Conduct which guides staff residing in the reserve, as well as plants used for ornamental purposes at tourism facilities.
- Identify associated research and monitoring needs; and
- Highlight potential risks or threats.
    - Map the parcels of land under the control of the Protected Area Management Authority, in management unit compartments
    - Compiling the List of Invasive Species for each management unit compartment
    - Describing the prioritization of the land parcels in the management unit compartments
    - Assessing the extent of infestations
    - Reporting on the efficacy of previous control or eradication measures
    - The current measures to monitor, control or eradicate Listed Invasive Species
    - The measurable indicators of progress and success, and indications of when the Control Plan is to be completed
- Identify redundant structures and impacted sites within the PA which require removal and/or rehabilitation in order to restore wilderness qualities and 'sense of place' and also to improve ecosystem functioning;
- Prioritise rehabilitation goals with highest priority given to wilderness zones and areas bordering on those zones;
- Determine the rehabilitation needs for the next five years with associated timeframes and projected funding requirements;

### 4.1.3 Objective 1.3: Maintenance of ecological processes in the GGNR

#### 4.1.3.1 Norms and standards

- ❖ Ensure proper planning in the establishment or expansion of the protected area
    - ➢ The management of a protected area contributes to the maintenance of ecological processes.
        - The management of a protected area includes the operational management framework to ensure monitoring of ecological processes;
        - The management of a protected area effectively maintains the environment for ecological processes critical for the achievement of biodiversity targets;
        - Ecological processes are being effectively maintained with the result that ecological integrity and biodiversity are not being compromised;
        - The management of a protected area has a monitoring system in place;
        - The management of a protected area has a system to mitigate ecosystem threats in place.
- ❖ Ensure the approved management plan is implemented accordingly to meet the objectives set in the management plan.

- Biodiversity resources are managed to meet the protected area objectives as set out in the management plan.
  - An effective fire management program for the protected area is implemented - where relevant;
  - The protected area is adequately managed for sustainable use of resources, where applicable;
  - The protected area has management guidelines for the sustainable use of biological resources;
  - The biodiversity assets and values are being managed consistent to objectives;
  - The impact of legal and illegal extractive use of biological resources is being monitored - where applicable;
  - Species management plans as required in terms of NEM: Biodiversity Act, 2004 (Act No. 10 of 2004) are approved.

❖ Existing DAERL strategies relating to management of ecological processes:
- Wildlife management strategy for Provincial nature reserves in Northern Cape.
  - game census on provincial nature reserves;
  - national norms and standards on hunting on PA's;
  - procedures for game registers on provincial nature reserves;
  - procedures for the introduction of mammals into provincial nature reserves including provincial and national translocation policy;
  - Procedures on the donation of game;
  - Provincial directive on the control and management of damage-causing wild animals in Northern Cape Province; and
  - Removal of game from (provincial) nature reserves;
- Vegetation monitoring strategy for Provincial nature reserves in Northern Cape.

❖ The reserve shall conform to the legal requirements of the NVFFA if applicable.
- Unplanned wildfires that occur in areas where it could have undesirable ecological effects, threaten reserve infrastructure or threaten neighbouring properties shall be suppressed or controlled wherever possible.
- Unplanned wildfires that occur in reserve areas where it will do no ecological harm and/or threaten properties may be allowed to burn, provided that safety concerns are not compromised.
- Fire protection measures and resources (equipment, trained personnel, firebreaks, etc.) must be maintained and effective in the reserve at all times.
- The reserve management shall, wherever possible, establish partnerships with neighbours and other role-players through agreements and membership of FPAs.
- Controlled block burns can only be implemented after an ecological assessment of the dry matter/fuel load has been completed.

#### 4.1.3.2 Principles [8]

- Respect the complexity, as well as the richness and diversity of the socio-ecological systems making up the PA and the wider landscape and context.
- Respect the inter-dependency of the fundamental drivers of landscape diversity, the associated biotic and landscape diversity, and the aesthetic, cultural, educational and spiritual attributes.
- Strive to maintain natural processes in ecosystems, along with the uniqueness, authenticity and worth of cultural heritage, so that these systems and their elements can be resilient and hence persist.

[8] The principles in this section were developed by SANParks's as part of fulfilling their mandate for biodiversity custodianship.

- Manage with humility the systems under our custodianship, recognising and influencing the wider socio-ecological context in which we are embedded.
- Strive to maintain a healthy flow of ecosystem and cultural goods and services (specifically preserving cultural artefacts), and to make these available, also through access to reserves, thereby promoting enjoyment, appreciation and other benefits for people.
- When necessary, intervene in a responsible and sustainable manner, complementing natural processes as far as possible, using only the level of interference needed to achieve our mandate.
- Do all the above in such a way as to preserve all options for future generations, while also recognizing that systems change over time.
- Acknowledge that conversion of some natural and cultural capital has to take place for the purpose of sustaining our mandate, but that this should never erode the core values above.
- Biodiversity forms an important basis of the ecosystem services that sustain the benefits that humans derive from conservation.
- People are seen as part of ecosystems, though the ways in which they interact with ecosystems may vary widely in different PA's and circumstances.
- We measure our performance in all that we are mandated to do.
- We are responsive to the impact of other value systems on biodiversity such as cultural and tourism values.
- We are concerned, and responsible, for the implications of our conservation management decisions/actions.
- Co-operative governance is seen as a central guiding principle, and collaborative methodologies are thus seen as fundamental.
- We treat all biodiversity elements (all species, ecosystems, processes, structural components, etc.) with equity.
- We strive to maintain a balance between the management of biodiversity and cultural heritage.
- Wildlife management in the reserve must be focused primarily on protecting the ecological functioning of the reserve.
- Wildlife stocking densities should be maintained within the ecological capacity of the supporting habitats of the reserve.
- A regular program for monitoring the veld condition, the animal numbers and the physical condition of animals must be in place to ensure that the ecological capacity of the reserve is not exceeded.
- Population management of wildlife species shall be required to ensure that such species are not causing the ecological degradation of the reserve.
- Wherever feasible, non-lethal and environmentally-friendly measures should be implemented to limit, or mitigate, the impacts of any indigenous damage causing animal in, or escaping from, the reserve.

### 4.1.4 Objective 1.4: Maintenance of critical ecosystem services

#### 4.1.4.1 Norms and standards

- ❖ Ensure proper planning in the establishment or expansion of the protected area
  - ➢ A protected area contributes to the socio-economic benefits of the surrounding communities.
    - The protected area management has identified the ecosystem services that the protected area and neighbouring land-users are reliant upon;
    - The ecosystem services are being effectively maintained with the result that the protected area and neighbouring land users are deriving most benefit from these services.

#### 4.1.4.2 Principles[9]

- Precautionary approach - The „precautionary approach‟ must apply. This is interpreted as:
  - leaving an appropriate „margin of error‟ where information is inadequate;
  - prohibiting or preventing use of resources in instances where the consequences of erring could be severely negative for species, heritage resources, cultural landscapes and/or ecosystems;
  - Terminating resource use activities if doubt arises as to the sustainability or impacts on the PA.
- Maintenance of system integrity - The ecological, aesthetic, socio-cultural, archaeological and spiritual integrity of protected areas must not be jeopardised in the long-term in order to satisfy short-term needs/demands.
- Cost-benefit analysis - The benefit-cost ratio to DAERL must be positive.
- Determination and evaluation of potential influence of utilising resources
- The thresholds of potential concern for use on affected species, heritage resources, cultural landscapes and ecosystems must be determined and evaluated using methodology that is appropriate for this purpose. This must take into account the effects of resource use on population dynamics, ecosystem functioning and social and cultural values. This must be achieved in an integrated manner, incorporating all relevant scientific, formal and informal information and knowledge (including traditional knowledge).
- Cost recovery - Costs must be recoverable from resource users who are able to pay, and it should be possible to leverage „contributions in kind‟ from users who are unable to pay. Cost recovery also includes the costs of monitoring programs that are required to manage resources in a sound manner.
- Adequate capacity - Appropriate human and financial resources must be available to manage, monitor and regulate resource use.
- Adaptive management - Resource use must be managed adaptively, accompanied by constant learning based on monitoring, information gathering and research.
- Incentives - Incentives for sustainable resource use and disincentives for unsustainable or wasteful use must be put in place.
- Ethics - Accepted ethical norms and standards must be adhered to.
- Redress - Past inequalities must be addressed through benefiting the poor, but without undermining the diversity of people's livelihood strategies.
- Respect for rights - Intellectual property rights and historical claims to resources must be respected.
- Co-management – Decision-making must be consultative and transparent. All stakeholders involved in resource use should accept responsibility for sustainable use.
- Enforcement - Illegal resource use must be prevented through law enforcement.
- Rights and responsibilities: While DAERL acknowledges the responsibilities outlined above, it also has the right to choose which resources it will make available and how much, as well as the right to withdraw if necessary (i.e. the use of a resource does not automatically constitute the source as being permanent).
- The reserve regards any action that utilises or impacts on the scenery, sense of place, soil, water, air and nutrient cycles, habitats, heritage resources, flora and fauna, and the interrelatedness between these, as a resource use.

[9] The principles in this section were developed by SANParks's as part of fulfilling their mandate for biodiversity custodianship.

- The reserve recognises that it has a responsibility to ensure that natural and cultural resources which are not harvested from within the PA boundaries, but are used in the PA, are collected and harvested in an ethical way that conforms to DAERL policies.
- Strive to maintain a healthy flow of ecosystem and cultural goods and services (specifically preserving cultural artefacts), and to make these available, also through access to reserves, thereby promoting enjoyment, appreciation and other benefits for people.
- Biodiversity forms an important basis of the ecosystem services that sustain the benefits that humans derive from conservation.
- Our understanding and management must reflect the social imperatives (e.g. transformation, equity, efficiency, empowerment, growth) of an emerging African democracy.
- Whenever feasible and justifiable, we strive to implement the option which best serves local community needs.

### 4.1.5 Objective 1.5: Land use planning and management outside of the protected area

#### 4.1.5.1 Norms and standards

- Promote and or ensure the positive involvement of the protected area management in planning outside the protected area which may affect its integrity.
  - An appropriate buffer zone for the protected area has been established.
    - The protected area has identified a buffer zone in its management plan;
    - The protected area has mechanisms to facilitate the implementation of the buffer zone;
    - The protected area management has proactively sought to encourage neighbours to introduce conservation-friendly land uses to enhance buffering of the protected area;
    - A policy for controlling activities in the buffer zone has been developed and is implemented.
  - A protected area is integrated into land-use planning outside of the protected area
    - Management authorities play an active role in land use planning affecting the protected area.
    - The land-use planning takes cognisance of the protected area and the achievement of protected area management objectives.
  - Promote compliance with NEMA, 1998 (Act No 107 of 1998) Environmental Impact Assessment Regulations, 2014 Listing Notice 3 of 2014 under sections 24(2), 24(5), 24D and 44, read with section 47A (1) (b) of the National Environmental Management Act, 1998 (Act No. 107 of 1998), in Gazette No. 38282 dated 04 December 2014 – Northern Cape Province
- Contribute to a good relationship between the protected area staff and neighbouring communities.
  - Neighbour relations contribute positively to the success of the protected area.
    - A zone of influence has been identified;
    - A program to encourage the development and maintenance of good relations with neighbours in the zone of influence is in place;
    - There is a formalized program of regular interaction between protected area management and neighbouring land users;
  - The protected area staff regularly collaborate with partners, local communities and other organizations;

#### 4.1.5.2 Principles[10]

[10] The principles in this section were modified from the goals of the Biodiversity Policy and Strategy for South Africa: Strategy on buffer zones for National Parks Government Gazette No 35020. 2012.

- Develop and introduce appropriate strategies, mechanisms and incentives to integrate the reserve within the broader ecological and social landscape, and encourage conservation in adjacent private and communal areas.
- Support and promote activities adjacent to protected areas that are compatible with and which complement the objectives of the protected area.
- Discourage development in areas in which biodiversity and ecological function would be adversely affected.
- Conserve and make sustainable use of biological resources in the buffer zone and avoid o minimize adverse impacts on the biodiversity of such areas.
- Support the development of community-based biodiversity management initiatives as part of a broader set of approaches to land-use planning and developing local sustainable development strategies.
- Promote the development of partnerships between the management authority, other conservation authorities, community organisations, non-governmental organization (NGOs), and private entrepreneurs for purposes of planning and managing the use of resources within the PA zone of influence, and optimising benefits for local people
- Enhance the capacity of communities residing in or adjacent to protected areas to participate in protected area management through providing appropriate training and education, and through recognising local expertise and traditional institutions.
- Take steps to avoid or minimize damage caused to people and property by wildlife.
- Improve benefit flows to people in and around protected areas.

### 4.1.6 Objective 1.6: Water use planning and management operations influencing the PA

#### 4.1.6.1 Norms and standards

- ❖ Promote and or ensure the positive involvement of the protected area management in Water use planning and management operations influencing the PA.
  - ➢ Water-use planning outside takes into account the objectives of the protected area.
    - Management authorities play an active role in water use planning affecting the protected area.
    - The water-use planning takes cognisance of the protected area and the achievement of protected area management objectives.

#### 4.1.6.2 Principles:

- PA management is a key stakeholder and role player in the management of water resources in all the catchments within which it is situated (water quantity and quality issues are very important from both biodiversity management and tourism perspectives).
- The National Water Act details the involvement of stakeholders in the management of water resources and the PA has taken an active role in the initiation and management of Catchment Forums
- Increased interaction with neighbouring and upstream land-use planning and catchment management activities as the interdependence of these systems is more fully appreciated.

### 4.1.7 Objective 1.7: Audit achievement of biodiversity targets

#### 4.1.7.1 Norms and standards

- ❖ Verify the importance of the protected area to the South African system of protected areas.
  - ➢ A protected area contributes to the achievement of national biodiversity targets
    - The protected area is an ecological viable area;
    - It protects a representative sample of South African biodiversity;
    - It protects a representative sample or iconic feature of South Africa's land/seascapes.
  - ➢ A protected area is important for the conservation of biodiversity
    - Contribution to protection of endemic, threatened, or endangered species;

- Contribution to conservation of threatened ecosystems;
- Contribution to biodiversity conservation targets;
- Protection of a representative range of plant and animal diversity for the eco-region [in terms of biodiversity targets];
- Viability and extinction risk of populations of key species;
- Contribution to the representative examples of biomes, vegetation types and ecosystems;
- Extent to which natural and disturbance processes necessary for ecosystem functioning are maintained;
- The state of landscape linkages and connectivity that allow the protected area to function as part of larger surrounding ecosystems;
- Provision of ecosystem services that the protected area and neighboring land-users are reliant upon;
- The protected area provides a critical landscape function;
- The protected area includes ecosystems whose historic range has been greatly diminished.

#### 4.1.7.2 Principles:

- Criteria must be scientifically credible, practical and simple;
- Different thresholds may be required for different environments;
- The most appropriate scale for mapping ecosystems depends on a range of factors including the nature of the ecosystems and the available data.
- The approach must be explicit and repeatable;
- The approach must be target-driven and systematic, especially for threatened ecosystems;
- The approach must follow the same logic as the IUCN approach to listing threatened species, whereby a number of criteria are developed and an ecosystem is listed based on its highest ranking criterion;
- The identification of ecosystems to be listed must be based on scientifically credible, practical and simple criteria, which must translate into spatially explicit identification of ecosystems.

### 4.1.8 Objective 1.8: Manage and mitigate the environmental impacts of conservation management, tourism, recreation and natural resource use in the GGNR

#### 4.1.8.1 Norms and standards

- ❖ Ensure the approved management plan is implemented accordingly to meet the objectives set in the management plan.
  - ➢ All development projects that require environmental scoping are assessed through either internal or external EIA processes and are authorized at the relevant level.
    - There are records of decisions/authorizations in place.
    - There is a process to monitor and effect compliance with conditions of records of decisions.

#### 4.1.8.2 Principles

- The reserve shall strive to continually improve its environmental management systems, through reducing or mitigating the environmental impacts of inter alia: administrative and visitor infrastructure and activities; solid waste disposal; water supply and distribution systems; energy supply and distribution networks; sewage systems; and herbicide and fuel supplies.
- The reserve shall strive to continually improve its environmental management systems, through restoration and/or rehabilitation efforts.

### 4.1.9 Objective 1.9: Protect the heritage resources of the GGNR

#### 4.1.9.1 Norms and standards

- ❖ Proper planning in the establishment or expansion of the protected area.
  - ➢ A cultural heritage resource inventory for the protected area is maintained.
    - Cultural heritage values have been identified;
    - Information on these resources and values is sufficient to support planning and decision making and little additional information is required to manage the cultural heritage of the protected area;
    - There is a comprehensive inventory of cultural heritage resources.
- ❖ Ensure the approved management plan is implemented accordingly to meet the objectives set in the management plan.
  - ➢ Cultural Heritage Resources are managed to meet the protected area objectives as per the management plan and in terms of the South African Heritage Resources Agency requirements.
    - The heritage resources are managed;
    - The heritage monuments are managed and maintained;
    - The cultural sites are adequately managed;
    - Cultural heritage resources adequately managed;
    - Heritage assets and values managed consistently to objectives;
    - The management of heritage assets and values (are being managed) is consistent (to) with protected area objectives;
    - Critical cultural heritage assets are predominantly intact according to the objectives of the protected area.

#### 4.1.9.2 Principles:

- The reserve shall conform to the legal requirements of the NHRA.

**Table 12: Management actions and targets relating to Biodiversity and Heritage Conservation KPA 1**

| CATEGORY | PRIORITIES |
|---|---|
| **HIGH PRIORITY -** Once off activity | Critical to the effective management of the reserve. Funding and resources should be secured to implement these actions. As reflected in the Management Effectiveness Tracking Tool (METT) |
| **HIGH PRIORITY -** Routine activity | |
| **MEDIUM PRIORITY** | Important to the effective management of the reserve, but its implementation may be delayed because of limited funds or resources. |
| **LOW PRIORITY -** Activity on hold | Constitutes good management practice, but not necessarily critical or important to reserve management effectiveness. Implementation may be dependent on availability of external funding or support. |
| **COMPLETED** | Activities Completed for the 5 year cycle to be assessed during the following 5-year planning cycle |

| KPA 1: Biodiversity and Heritage Conservation | | | | | | | | R631 821,85 | R1 338 769,35 | R2 453 076,30 | R2 340 293,04 | R1 969 131,38 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Objective 1.1 Obtain Biodiversity knowledge about the PA** | | | | | | | | R347 474,13 | R511 007,91 | R725 366,37 | R837 486,40 | R842 006,16 |
| # | Management action | Management targets | Key performance indicators Mett-Sa Vers 3 | Activity planned & Priority | | | | | Cost Estimates | | | | | |
| | | | | 2019 | 2020 | 2021 | 2022 | 2023 | 2019/2020 | 2020/2021 | 2021/2022 | 2022/2023 | 2023/2024 |
| 1 | Identify, and prioritise the biodiversity management requirements of the PA for baseline information and monitoring. | Research needs have been identified and projects relevant to all management needs are being undertaken, enabling the monitoring of results of management actions against set objectives. | 3.1 Management Research Programme | | | | | | R 33 822,85 | R 86 665,66 | R 26 264,69 | R 27 577,93 | R 37 089,17 |
| 2 | Develop and maintain a targeted research and monitoring program relevant to management needs to guide biodiversity management. | There is an established Monitoring & Evaluation program which is fully implemented with PA management participation and is used to guide adaptive management. | 3.1.1 Monitoring and Evaluation Programme | | | | | | R 39 690,88 | R 41 675,43 | R 43 759,20 | R 45 947,16 | R 57 913,65 |
| a | *Compile archive of all research completed on the site.* | | | | | | | | | | | | |
| 3 | Facilitate access for and assist external research institutions to implement the priority research and monitoring requirements of the reserve. | | | | | | | | R 6 355,53 | R 11 684,85 | R 7 016,15 | R 9 199,07 | R 9 659,02 |
| a | *Facilitate controlled access for external institutions undertaking relevant research and monitoring programs within the reserve.* | There is an established working relationship with researchers and regular liaison leads to research results feeding into management decisions. | 3.1.2 Relationship with researchers | | | | | | | | | | |
| b | *Create DB with potential institutions to assist with outsourced research projects.* | | | | | | | | | | | | |
| 4 | Collect and update key baseline information - Monitoring & Research in PA Estate | | | | | | | | R267 604,86 | R 370 981,97 | R648 326,32 | R754 762,24 | R737 344,32 |
| a | *01 BMP 1 Biodiversity mechanisms* | Information and the understanding thereof concerning key species, habitats, ecosystems of the PA supports the achievement of all biodiversity objectives. | 1.4. Biodiversity knowledge and understanding | | | | | | | | | | |
| b | *02 BMP 2 SSC* | | | | | | | | | | | | |
| c | *03 BMP 3 Freshwater and Wetlands* | | | | | | | | | | | | |
| d | *04 BMP 4 IAS* | | | | | | | | | | | | |
| e | *05 BMP 5 Resource Use Tourism* | | | | | | | | | | | | |
| f | *07 BMP 7 Degradation Rehabilitation* | | | | | | | | | | | | |
| g | *08 BMP 8 Cultural Heritage* | | | | | | | | | | | | |
| h | *09 BMP 9 Climate and Climate Change* | | | | | | | | | | | | |
| **Objective 1.2: Restoration and mitigation of degradation** | | | | | | | | | R121 240,61 | R476 120,66 | R1 264 140,09 | R651 854,99 | R360 446,32 |
| # | Management action | Management targets | Key performance indicators Mett-Sa Vers 3 | Activity planned & Priority | | | | | Cost Estimates | | | | |
| | | | | 2019 | 2020 | 2021 | 2022 | 2023 | 2019/2020 | 2020/2021 | 2021/2022 | 2022/2023 | 2023/2024 |
| 1 | Compile an invasive species control and eradication plan in terms sec. 76 of the NEM: Biodiversity Act, 2004 | | | | | | | | | | | | |
| a | *Eradication plan for damage-causing and problem animals in PA.* | There is a plan for addressing control and eradication of invasive species within the PA. | 2.6 Restoration of degraded areas | | | | | | R - | R - | R - | R - | R - |
| b | *Eradication plan for invasive alien plant infestations in PA.* | No spread or densification of excotic encroachment. Extent, by density, of invasive alien plants known. | | | | | | | | | | | |
| 2 | Impliment an invasive species control and eradication plan in terms sec. 76 of the NEM: Biodiversity Act, 2004 | | | | | | | | | | | | |
| a | *Implement, environmentally friendly measures to reduce the impacts of any damage-causing and problem animals (notably Donkeys, Cattle, Dogs).* | No spread or densification of excotic encroachment. | 2.6 Restoration of degraded areas | | | | | | R - | R 37 630,30 | R 72 954,50 | R 72 911,68 | R 94 518,62 |
| b | *Eradicate, on an ongoing basis, all known invasive alien plant infestations occurring in the reserve.* | | | | | | | | | | | | |
| 3 | Compile Rehabilitation Programme BMP 7 | There is a plan for addressing degraded areas within the PA. | 2.6 Restoration of degraded areas | | | | | | R 7 938,18 | R - | R - | R - | R 9 648,90 |
| 4 | Rehabilitation or mitigation of degradation in PA | | | | | | | | R 113 302,43 | R 438 490,36 | R 1 191 185,60 | R 578 943,30 | R 256 278,80 |
| a | *Identify and map all degradation as part of BMP 4 and BMP 7* | There is a plan for addressing degraded areas within the PA. | 2.6 Restoration of degraded areas | | | | | | | | | | |
| b | *Rehabilitation, Restoration or mitigation of all un-natural and/or highly erodible areas in the PA estate and maintain mitigation measures.* | | | | | | | | | | | | |
| c | *Rehabilitation, Restoration or mitigation of visitor impact wrt. special natural features and heritage resources in the PA estate.* | | | | | | | | | | | | |
| d | *Close and rehabilitate solid waste dump sites in the reserve, and remove all solid waste to the nearest municipal dump sites.* | | | | | | | | | | | | |
| e | *Close/remove/demolish and rehabilitate all extraneous and redundent mining related buildings, foundations, waste dumps, equipment, excavations and fencing.* | | | | | | | | | | | | |
| f | *Close and rehabilitate all unused, extraneous and/or highly erodible tracks and roads in the reserve and maintain road closures.* | | | | | | | | | | | | |

| Objective 1.3: Maintenance of ecological processes in the PA | | | | | | | | | R23 822,85 | R84 824,48 | R78 042,93 | R118 467,71 | R126 059,53 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| # | Management action | Management targets | Key performance indicators Mett-Sa Vers 3 | Activity planned & Priority | | | | | Cost Estimates | | | | |
| | | | | 2019 | 2020 | 2021 | 2022 | 2023 | 2019/2020 | 2020/2021 | 2021/2022 | 2022/2023 | 2023/2024 |
| 1 | ID the ecological processes critical for the achievement of biodiversity targets. | A scientifically based assessment has shown that ecological processes are being effectively maintained /augmented with the result that ecological integrity and biodiversity are not being compromised. | 6.3 Ecological processes | | | | | | R 23 822,85 | R 25 013,99 | R 3 508,08 | R 11 031,17 | R 11 582,73 |
| 2 | Re-establish, manage and maintain viable populations of locally indigenous fauna and flora | | | | | | | | | | | | |
| a | *Determine historical distribution of game animals* | A scientifically based assessment has shown that ecological processes are being effectively maintained /augmented with the result that ecological integrity and biodiversity are not being compromised. | 6.3 Ecological processes | | | | | | R - | R - | R - | R 26 335,44 | R 27 053,35 |
| b | *Compile reintroduction program* | | | | | | | | | | | | |
| 3 | Develop and maintain a vegetation monitoring program, including an annual veldt condition assessment. | | | | | | | | R - | R 56 469,46 | R 71 026,77 | R 60 890,13 | R 68 135,77 |
| 4 | Prepare and/or update a simple, functional Fire Management Programme for the reserve. | | | | | | | | R - | R - | R - | R 18 369,23 | R 19 287,69 |
| 5 | Manage watering points for game | | | | | | | | | | | | |
| a | *Determine provision of artificial watering points* | A scientifically based assessment has shown that ecological processes are being effectively maintained /augmented with the result that ecological integrity and biodiversity are not being compromised. | 6.3 Ecological processes | | | | | | R - | R 3 341,02 | R 3 508,08 | R 1 841,74 | R - |
| **Objective 1.4: Maintenance of critical ecosystem services** | | | | | | | | | **R0,00** | **R20 028,67** | **R21 030,11** | **R97 390,63** | **R125 405,39** |
| # | Management action | Management targets | Key performance indicators Mett-Sa Vers 3 | Activity planned & Priority | | | | | Cost Estimates | | | | |
| | | | | 2019 | 2020 | 2021 | 2022 | 2023 | 2019/2020 | 2020/2021 | 2021/2022 | 2022/2023 | 2023/2024 |
| 1 | ID critical ecological services that deliver services to surrounding communities | | | | | | | | | | | | |
| a | *Description and monitoring change wrt biodiversity importance of PA.* | PA Expansion Plan in line with expansion strategy for the organisation and the size and shape of the PA is adequate to achieve the conservation mandate. | 2.1 PA design<br>2.1.1 PA expansion plan | | | | | | R - | R 20 028,67 | R 21 030,11 | R 11 031,17 | R 69 445,80 |
| b | *Description and monitor change wrt conservation interphase* | | | | | | | | | | | | |
| 2 | ID ecological services & Develop a structured and scientific measurement system for effective maintenance of ecological services. | A structured and scientific measurement and monitoring system has shown that ecosystem services are being effectively maintained with the result that the PA and neighbouring land users are deriving benefit from these services. | 6.4 Ecosystem services | | | | | | R - | R - | R - | R 45 947,16 | R 48 244,52 |
| 3 | Monitoring benefit of ecological services to PA and neighbouring land users. | | | | | | | | R - | R - | R - | R 3 673,85 | R 3 857,54 |
| 4 | Compile an Wilderness Management Programme. | A scientifically based programme wherebt ecological processes are being maintained/ augmented with the result that ecological integrity and biodiversity are not being compromised. | 6.4 Ecosystem services | | | | | | R - | R - | R - | R 36 738,46 | R 3 857,54 |

| Objective 1.5: Land use planning and management outside of the protected area | | | | | | | | R0,00 | R20 028,67 | R21 030,11 | R31 996,81 | R33 596,65 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| # | Management action | Management targets | Key performance indicators Mett-Sa Vers 3 | Activity planned & Priority | | | | | Cost Estimates | | | | |
| | | | | 2019 | 2020 | 2021 | 2022 | 2023 | 2019/2020 | 2020/2021 | 2021/2022 | 2022/2023 | 2023/2024 |
| 1 | Provide and define a zone of influence and applicable buffering mechanisms (interphases) with guidelines for suitable land uses. | A zone of influence (interphases) with guidelines for suitable land uses for input into the municipal IDP: catchment and river plans. | 2.1.2 Delineation of a zone of influence | | | | | | | | | | |
| a | *Complete sensitivity analysys and demarcate ZOI and Domain* | | | | | | | | | | | | |
| b | *Determine applicable buffering mechanisms* | | | | | | | | R - | R 20 028,67 | R 21 030,11 | R 12 872,91 | R 13 516,56 |
| c | *Develop guidelines for suitable land uses.* | | | | | | | | | | | | |
| d | *Demarcate corridors and include in ZOI or Domain* | | | | | | | | | | | | |
| 2 | Collect baseline information and control illegal harvesting of natural resources and grazing in reserve interface and domain. | A zone of influence (interphases) with guidelines for suitable land uses for input into the municipal IDP: catchment and river plans. There is a bilateral relationship between any relevant Biodiversity Plan and/or the applicable aspects of the IDP of the local municipality and the planning and management of the PA. There is formal agreement with industries within the zone of influence. | 2.1.2 Delineation of a zone of influence<br>2.1.3 Corridor management<br>6.5 Land use planning and management outside of the protected area | | | | | | R - | R - | R - | R 19 123,90 | R 20 080,10 |
| a | *01 BMP 1 Biodiversity mechanisms* | | | | | | | | | | | | |
| b | *02 BMP 2 SSC* | | | | | | | | | | | | |
| c | *03 BMP 3 Freshwater and Wetlands* | | | | | | | | | | | | |
| d | *04 BMP 4 IAS* | | | | | | | | | | | | |
| e | *05 BMP 5 Resource Use Tourism* | | | | | | | | | | | | |
| f | *07 BMP 7 Degradation Rehabilitation* | | | | | | | | | | | | |
| g | *08 BMP 8 Cultural Heritage* | | | | | | | | | | | | |
| h | *Establish working relationship (MOU) with landowners and residents in domain and interface.* | | | | | | | | | | | | |

| Objective 1.6: Water use planning and management operations influencing the protected area | | | | | | | | R0,00 | R16 328,51 | R19 539,71 | R22 501,66 | R23 626,74 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| # | Management action | Management targets | Key performance indicators Mett-Sa Vers 3 | Activity planned & Priority | | | | | Cost Estimates | | | | |
| | | | | 2019 | 2020 | 2021 | 2022 | 2023 | 2019/2020 | 2020/2021 | 2021/2022 | 2022/2023 | 2023/2024 |
| 1 | Collect and update key baseline information concerning land use practices of the reserve catchment interface and control illegal harvesting of | Catchment and river plans and water management fully take the water needs of the PA into account and the water quality meets required standards as set out by the relevant authority. | 6.6 Water use planning and management operations influencing the protected area | | | | | | | | | | |
| a | *01 BMP 1 Biodiversity mechanisms* | | | | | | | | | | | | |
| b | *02 BMP 2 SSC* | | | | | | | | | | | | |
| c | *03 BMP 3 Freshwater and Wetlands* | | | | | | | | | | | | |
| d | *04 BMP 4 IAS* | | | | | | | | | | | | |
| e | *05 BMP 5 Resource Use Tourism* | | | | | | | | R - | R - | R - | R 7 500,55 | R 7 875,58 |
| f | *07 BMP 7 Degradation Rehabilitation* | | | | | | | | | | | | |
| g | *08 BMP 8 Cultural Heritage* | | | | | | | | | | | | |
| h | *Establish working relationship (MOU) with landowners and* | | | | | | | | | | | | |
| i | *Map and monitor cross boundary movement hotspots.* | | | | | | | | | | | | |
| 2 | Assist other enforcement agencies in cross border and other operations. | | | | | | | | R - | R 16 328,51 | R 19 539,71 | R 15 001,11 | R 15 751,16 |
| 3 | Participation in Catchment Management and other forums to ensure that the quality and quantity of water meets the needs for maintaining habitats, species and ecosystems | Catchment and river plans and water management fully take the water needs of the PA into account and the water quality meets required standards as set out by the relevant authority. | 6.6 Water use planning and management operations influencing the protected area | | | | | | R - | R - | R - | R - | R - |
| 4 | Compile Esturine Man Plans and Ramsar Man Plans | Catchment and river plans and water management fully take the water needs of the PA into account and the water quality meets required standards as set out by the relevant authority. | 6.6 Water use planning and management operations influencing the protected area | | | | | | R - | R - | R - | R - | R - |

| Objective 1.7: Audit achievement of biodiversity targets | | | | | | | | | R0,00 | R0,00 | R0,00 | R0,00 | R0,00 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| # | Management action | Management targets | Key performance indicators Mett-Sa Vers 3 | Activity planned & Priority | | | | | Cost Estimates | | | | |
| | | | | 2019 | 2020 | 2021 | 2022 | 2023 | 2019/2020 | 2020/2021 | 2021/2022 | 2022/2023 | 2023/2024 |
| 1 | Monitoring results of management actions against set objectives. State of biodiversity report. | A structured and scientific biodiversity condition assessment has shown that the management of biodiversity is meeting the set targets. Management techniques are constantly being adapted to changing environments and new knowledge. | 6.2 Achievement of biodiversity targets | | | | | | R - | R - | R - | R - | R - |
| **Objective 1.8: Manage and mitigate the environmental impacts of conservation management, tourism, recreation and natural resource use in the PA** | | | | | | | | | **R129 755,12** | **R199 446,39** | **R307 604,20** | **R391 544,22** | **R395 136,33** |
| # | Management action | Management targets | Key performance indicators Mett-Sa Vers 3 | Activity planned & Priority | | | | | Cost Estimates | | | | |
| | | | | 2019 | 2020 | 2021 | 2022 | 2023 | 2019/2020 | 2020/2021 | 2021/2022 | 2022/2023 | 2023/2024 |
| 1 | Develop management guidelines for the sustainable extractive use of biotic and abiotic resources . | Management guidelines for the sustainable extractive use of biotic and abiotic resources that apply to both the organisation and outside parties are in place. | 4.12 Sustainable Extractive Use | | | | | | R - | R 58 319,38 | R 61 235,35 | R 31 232,51 | R 42 443,03 |
| 2 | Introduce more environmentally-friendly technologies (recycling, water and energy saving, sourcing of biodegradable materials, dry and wet waste disposal, sustainable benefits to local communities, sourcing supplies locally and using certified sources of building materials). | The PA has been accredited with a recognised green standard. Examples are Green Globe. Green Leaf and Travelife. This does not only relate to tourism infrastructure. | 4.16 Environmentally Responsible practice | | | | | | R 15 868,03 | R 1 670,51 | R 1 754,04 | R 27 331,91 | R 30 000,00 |
| 3 | Mitigate Visitors Impact | Visitor impacts which could result from current and anticipated levels of visitation are fully mitigated by the design of the tourism infrastructure | 5.1 Tourism Infrastructure (mitigating impacts) | | | | | | R 113 887,08 | R 139 456,50 | R 244 614,81 | R 332 979,80 | R 322 693,29 |
| a | *Maintain information about the reserve visitors* | | | | | | | | | | | | |
| b | *Compile occupancy Schedules (carrying capasity) for any Tourism operations* | | | | | | | | | | | | |
| c | *Develop and impliment a visitors compliments and complains register and adress issues* | | | | | | | | | | | | |
| 4 | Waste Management | A formal legally compliant programme with functional infrastructure for the management of hazardous substances (flammable and non-flammable) is in place. | 4.13 Management of Hazardous Substances | | | | | | R - | R - | R - | R - | R - |
| a | *Develop a formal legally compliant programme for the management of domestic waste* | | | | | | | | | | | | |
| b | *Develop a formal legally compliant programme for the management of hazardous waste* | | | | | | | | | | | | |
| c | *Develop a formal legally compliant programme for the management and use of pesticides & insectisides* | | | | | | | | | | | | |
| 5 | Develop functional infrastructure for the management of waste | A formal legally compliant programme with functional infrastructure for the management of hazardous substances (flammable and non-flammable) is in place. | 4.13 Management of Hazardous Substances | | | | | | R - | R - | R - | R - | R - |

| Objective 1.9 Obtain Cultural Heritage knowledge about the GNR | | | | | | | | | R9 529,14 | R10 984,06 | R16 322,79 | R189 050,63 | R62 854,25 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| # | Management action | Management targets | Key performance indicators Mett-Sa Vers 3 | Activity planned & Priority | | | | | Cost Estimates | | | | |
| | | | | 2019 | 2020 | 2021 | 2022 | 2023 | 2019/2020 | 2020/2021 | 2021/2022 | 2022/2023 | 2023/2024 |
| 1 | In collaboration with academic institutions, research, document and inventorize the cultural heritage resources of the reserve an determine significance | A formal cultural heritage survey by an accredited heritage practitioner has identified heritage resources and values and has been verified by SAHRA and is included in the IMP. | 1.5 Cultural Heritage knowledge | | | | | | R - | R - | R - | R 135 871,99 | R 54 818,17 |
| 2 | In collaboration with academic institutions develop management plans for significant Cultural Heritage assets | | | | | | | | | | | | |
| a | *Palaeontological resources* | Formal Site Management Plans for all significant cultural heritage sites have been drawn up by an accredited heritage practitioner and approved if applicable by SAHRA . | 2.4 Management plans for significant Cultural Heritage assets | | | | | | R - | R - | R - | R 49 208,70 | R 3 867,65 |
| b | *Archaeological resources* | | | | | | | | | | | | |
| c | *Cultural-Heritage resources* | | | | | | | | | | | | |
| 3 | Develop guidelines for finding and recording of heritage artifacts as part of Subsidary Plan for Management of significant heritage resources according to NEMPAA guidelines | The Collections Management Plan has been developed and is fully implemented. | 2.7 Collections management/curatorship of heritage artefacts | | | | | | R - | R - | R - | R - | R - |
| 4 | Monitor and regular condition assessment of Cultural Heritage Resources | A structured assessment conducted by an accredited heritage practitioner, has shown that the management of cultural heritage assets and values are meeting the set management objectives. | 6.7 Cultural Heritage condition assessment | | | | | | R 9 529,14 | R 10 984,06 | R 16 322,79 | R 3 969,93 | R 4 168,43 |

## 4.2 KPA 2: Recreation, Marketing, Education, Awareness & Interpretation

### 4.2.1 Objective 2.1: Develop, deliver and maintain a diverse range of tourism and recreational services for visitors to the PA in accordance with CDF

#### 4.2.1.1 Norms and standards

- ❖ Ensure the approved management plan is implemented accordingly to meet the objectives set in the management plan.
  - ➢ Commercial tourism, where applicable, contributes to the protected area objectives.
    - The commercial tour operators interact with protected area management;
    - There is an excellent co-operation between protected area management and tourism operators to enhance visitor experiences maintain protected area conservation values and resolve conflicts;
    - The commercial tour operators contribute to protected area management;
    - Permits, licenses and concessions are granted in terms of management plan objectives;
    - Tourism standards are developed for nature based tourism;
    - Protected areas serving as triggers for tourism, economic development (where applicable/ subject to management plan).

#### 4.2.1.2 Principles:

- In developing and maintaining tourism and recreational infrastructure, the reserve shall obtain the necessary authorisation in terms of all relevant legislation.
- Tourism and recreational infrastructure developed within the reserve must be appropriate to the purpose for which the reserve has been proclaimed, and must not threaten its biodiversity or ecological function.
- Environmental resources, together with the maintenance of essential ecological processes and conservation of natural heritage and biodiversity, constitute a key element in tourism planning and development;
- Ensure that tourism development is appropriate in scale, requiring the lowest possible consumption of non-renewable resources; and
- Ensure that additional funds for conservation are generated from the tourism business
- Tourism activities and experiences must optimise the PAs' unique attributes and special features as the preferred focus to ensure sustainability and a unique product compatible with the overall desired state whilst applying the principles of Responsible Tourism

### 4.2.2 Objective 2.2: Develop and implement a focused and cost-effective marketing program for the PA

#### 4.2.2.1 Norms and standards

- ❖ Ensure the approved management plan is implemented accordingly to meet the objectives set in the management plan.
  - ➢ Commercial tourism, where applicable, contributes to the protected area objectives.
    - The commercial tour operators interact with protected area management;
    - There is an excellent co-operation between protected area management and tourism operators to enhance visitor experiences maintain protected area conservation values and resolve conflicts;
    - The commercial tour operators contribute to protected area management;
    - Permits, licenses and concessions are granted in terms of management plan objectives;
    - Tourism standards are developed for nature based tourism;
    - Protected areas serving as triggers for tourism, economic development (where applicable/ subject to management plan).

#### 4.2.2.2 Principles:

- Tourism and recreational infrastructure shall be developed in response to tourism market demands and opportunities within the reserve, and should be carefully assessed to determine its viability.

- Using tourism as a conservation strategy by optimally deploying and appropriately utilizing environmental resources.
- Ensure viable, long-term economic operations, providing socio-economic benefits to all stakeholders that are fairly distributed, including stable employment and income-earning opportunities and social services to host communities and contributing to poverty alleviation,
- The reserve shall collaborate and cooperate with key local, regional and institutional partners to strengthen the marketing of the reserve's tourism and recreational infrastructure and services; improve the awareness of the reserve, and its prospective uses, in local communities; and promote the use of the reserve as a local educational resource.
- Visitor management must take heed of a recent demand analysis and develop creative alternatives e.g. „park and drive" vs. „self-drive", converting day visitors to overnight visitors, interpretive centres at gates for when gate quotas are reached.
- Infrastructure upgrading must be aimed at the state of grading of 70% (by the Grading Council of SA).
- Revenue sharing with applicable communities according to relevant clauses in the Co-Management Agreement.
- Pricing strategy must ensure that pricing is competitive, affords access to all South Africans and that it correlates with star grading and tourism will need to focus on the flexibility of packages, in line with the rest of the ecotourism industry.

### 4.2.3 Objective 2.3: Develop and implement a focused and cost-effective awareness-raising and educational program for the PA

#### 4.2.3.1 Norms and standards

- ❖ Ensure that the protected area has an education and awareness program in place.
  - ➢ Education and awareness program developed.
    - There is a planned education and awareness program;
    - There is an education and awareness plan linked to the objectives of the protected area;
    - There is a fully implemented and highly effective education and awareness the objectives of the protected area.

#### 4.2.3.2 Principles:

- The popularity of wilderness related activities and the fact that income is generated with very little impact on the environment, emphasized the importance to zone land for this purpose and to develop activities in this regard.
- Day programs can be developed to afford schools the opportunity to experience the PA for a day and to enjoy a carefully planned environmental education program run by qualified education and interpretative staff.
- Bush Camps can be provided to offer a unique opportunity for learners to experience their natural environment in the rustic comfort of a secluded campsite.
- Learners to enjoy the PA on foot or by open vehicle under the guidance of a qualified officer who gives insights into all aspects of the environment.
- Teacher development by contributing to Outcomes Based Education enhancement program, linking curriculum with environmental conservation and resources are developed in the process.
- Programs on rediscovering and using traditional knowledge and methodologies of learning used in the past to relate to their environment. Experiential learning through inter-generational communication is the key to this project. In their home language, "wise men" and women facilitate the interaction of small groups of young people with nature through interpretive trails and cultural activities in the camp.

- Outreach programs to promote the use of the PA as an „outdoor laboratory" and Centre for social science research and projects through the development of specialized educational programs aimed at tertiary institutions and researchers at the local and national levels, and active participation in the bioregional plan for the PA.
- The use of interpretive materials such as information boards, signs and plaques pertaining to special features of the PA. Reliance on donor funding is seen as an important risk

## Table 13: Management actions and targets relating to Marketing, Education Awareness & Interpretation KPA 2

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **KPA 2: Recreation, Marketing, Education, Awareness and Interpretation** | | | | | | | | **R33 345,76** | **R193 577,66** | **R203 722,19** | **R262 503,57** | **R258 289,08** |
| **Objective 2.1: Develop, deliver and maintain a diverse range of tourism and recreational services for visitors to the PA in accordance with CDF** | | | | | | | | **R33 345,76** | **R50 047,66** | **R98 552,16** | **R75 602,69** | **R75 020,06** |
| # | Management action | Management targets | Key performance indicators Mett-Sa Vers 3 | Activity planned & Priority | | | | | Cost Estimates | | | | |
| | | | | 2019 | 2020 | 2021 | 2022 | 2023 | 2019/2020 | 2020/2021 | 2021/2022 | 2022/2023 | 2023/2024 |
| 1 | Develop Subsidiary Plan - Commercial Tourism with guidelines that apply to both the organisation and outside parties concession holders. | Tourism infrastructure is optimal to manage the current and anticipated future volume of visitors. | 3.8 Adequacy of Tourism infrastructure | | | | | | R - | R - | R - | R - | |
| 2 | Facilitate controlled access to the reserve for other complementary recreational activities, link up with adventure events (Namaqua Quest, Goegap Challenge). | Tourism infrastructure is optimal to manage the current and anticipated future volume of visitors. | 3.8 Adequacy of Tourism infrastructure | | | | | | R 17 841,50 | R 18 733,57 | R 35 741,89 | R 35 740,80 | R 31 895,08 |
| 3 | Support entrepreneurial opportunities for local communities to participate in the provision and management of tourist and recreational products. | | | | | | | | R 15 504,26 | R 31 314,09 | R 62 810,27 | R 39 861,89 | R 43 124,98 |
| **Objective 2.2: Develop and implement a focused and cost-effective marketing programme for the PA** | | | | | | | | | R - | R 104 085,79 | R 63 753,62 | R 154 688,11 | R 159 592,64 |
| # | Management action | Management targets | Key performance indicators Mett-Sa Vers 3 | Activity planned & Priority | | | | | Cost Estimates | | | | |
| | | | | 2019 | 2020 | 2021 | 2022 | 2023 | 2019/2020 | 2020/2021 | 2021/2022 | 2022/2023 | 2023/2024 |
| 1 | Develop a tourism management plan for the Reserve. | There is an approved and updated Marketing Programme and it is fully integrated into the management plan of the PA. Level of conformance (%) with South African National Standard (SANS) 1197:2012. | 2.3 Education, awareness and interpretation programme | | | | | | R - | R 14 608,96 | R 15 339,41 | R 3 221,28 | R 3 382,34 |
| 2 | Design, publish and distribute reserve-specific brochures and pamphlets for visitors and users. | | | | | | | | R - | R 57 337,11 | R 14 667,51 | R 23 454,07 | R 20 769,24 |
| 3 | Continually provide updated information in the ongoing development of corporate, regional and provincial tourism marketing products and materials.development of corporate, regional and provincial tourism marketing products and materials. | | | | | | | | R - | R 32 139,72 | R 33 746,70 | R 128 012,76 | R 135 441,06 |
| 4 | Accreditation of activities and facilities with a recognised tourism grading standard. | | | | | | | | R - | R - | R - | R - | R - |
| **Objective 2.3: Develop and implement a focused and cost-effective awareness-raising and educational programme** | | | | | | | | | **0** | **39444,19983** | **41416,40982** | **32212,76319** | **23676,38095** |
| # | Management action | Management targets | Key performance indicators Mett-Sa Vers 3 | Activity planned & Priority | | | | | | | | | |
| | | | | 2019 | 2020 | 2021 | 2022 | 2023 | 2019/2020 | 2020/2021 | 2021/2022 | 2022/2023 | 2023/2024 |
| 1 | Develop site specific Education, awareness and interpretation programme. | The education, awareness and interpretation programme is fully linked to the objectives and needs of the PA and is being fully implemented. | 4.9 Implementation of Education, awareness and interpretation programme. | | | | | | R - | R 18 991,65 | R 19 941,23 | R 16 106,38 | R 16 911,70 |
| 2 | Establish links with local educational institutions and networks in order to promote subsidised access to, and use of, the reserve as an educational resource. | | | | | | | | R - | R 20 452,55 | R 21 475,18 | R 16 106,38 | R 6 764,68 |
| a | *Assist with ad hoc awareness-raising and educational programs* | | | | | | | | | | | | |
| b | *Make facilities including environment available for educational programmes* | | | | | | | | | | | | |

## 4.3 KPA 3: Enforcement, Security & Access Control

### 4.3.1 Objective 3.1: Secure the legal tenure of, and management authority for, the GGNR

#### 4.1.1.1 Norms and standards

- ❖ Ensure that correct legal processes have been followed in securing the protected area.
  - ➢ A protected area is declared in terms of the Act.
    - The protected area is declared in the Government Gazette;
    - The Registrar of Deeds has been informed in writing of the declaration and has recorded such declaration in the relevant registers and documents;
    - The protected area is listed in the Register of Protected Areas as required by section 10 of the Act;
    - The protected area has an assigned management authority.
  - ➢ There are applicable legal mechanisms in place to control inappropriate activities.
    - There are appropriate regulations;
    - The protected area has a formal set of internal rules.
  - ➢ There are adequate legal controls to ensure the integrity of the protected area.
    - The Act is applied / enforced;
    - The National Environmental Management Act, 1998, the NEM: Biodiversity Act, 2004 are applied and or enforced;
    - The relevant regulations are applied and or enforced;
    - Internal rules are in effect.
- ❖ Ensure that the boundaries of the protected area are well demarcated, secured and publically known.
  - ➢ Boundaries of the protected area are demarcated, secured and publically known.
    - The extent of the protected area is included in a description and Surveyor General diagramme;
    - The boundaries are appropriately demarcated;
    - The boundaries are known by both the management authority of a protected area and the neighbouring community;
    - Any deviations from the declared area are agreed upon and documented in the management plan and include a signed, legally binding MoU;
    - Conflicts with the local community are resolved fairly and effectively.

#### 4.3.1.2 Principles:

- The reserve shall conform to the legal requirements of the NEM:PAA.

### 4.3.2 Objective 3.2: Secure the boundaries of, and maintain controlled access to, the GGNR

#### 4.3.2.1 Norms and standards

- ❖ Ensure that the relevant legislation is effectively enforced in a protected area.
  - ➢ Protection systems are in place.
    - Management mechanisms effectively control and manage access;
    - The available management mechanisms are working to control both illegal and legitimate access;
    - Effective control measures are in place to control the use of the protected area; Standard operating procedures for controlling activities have been developed and are being effectively implemented/ contingency plans;
    - Annual risk assessments completed and mitigating interventions applied where appropriate;
    - Critical cultural heritage assets have been identified and secured in terms of a heritage management plan.

#### 4.3.2.2 Principles

- Fencing specifications shall conform to the legal requirements of the NCNCA;
- The boundaries of the reserve shall, at all times, be clearly demarcated and be regularly maintained.
- All entry and exit points shall be properly managed to ensure that access to, and through, the reserve is effectively controlled at all times.

### 4.3.3 Objective 3.3: Sustain an effective law enforcement and compliance capacity in the GGNR

#### 4.3.3.1 Norms and standards

❖ Ensure that the relevant legislation is effectively enforced in a protected area.

➢ The NEMPAA, 2003 (Act No. 57 of 2003), the NEMA Act,1998 (Act No. 107 of 1998), the NEM: BA Act,2004 (Act No. 10 of 2004 their Regulations and internal rules are in effect.

- The protected area has sufficient capacity to enforce the Acts, regulations and internal rules;
- The protected area's staff is adequately capacitated to enforce legislation within the organization's mandate and does so effectively;
- Staff resources are adequate to conduct critical law enforcement activities;
- The staff has relevant law enforcement and compliance training;
- The law enforcement officers are appropriately trained;
- The staff has been formally designated to enforce the relevant legislation;
- Appropriate staff have been designated environmental management inspectors;
- The staff has the necessary equipment to enable them to do law enforcement effectively;
- The protected area has allocated sufficient funds for effective law enforcement;
- The protected area receives adequate support from other sections of the organization to effectively manage ensure effective management;
- Assessment of state on illegal activities in the protected area;
- The protected area management has a database to register illegal activities;
- The database of illegal activities assessed.

#### 4.3.3.2 Principles:

- The reserve shall conform to the legal requirements of all relevant legislation.

## Table 14: Management actions and targets relating to Enforcement, Security & Access Control KPA 3

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **KPA 3: Enforcement, Security and Access Control** | | | | | | | | | | **R120 703,08** | **R290 065,19** | **R264 028,92** | **R1 303 269,66** | **R2 418 509,58** |
| **Objective 3.1: Secure the legal tenure of, and management authority for, the PA** | | | | | | | | | | **R0,00** | **R87 981,16** | **R62 989,01** | **R54 738,46** | **R7 715,08** |
| # | Management action | Management targets | Key performance indicators Mett-Sa Vers 3 | Activity planned & Priority | | | | | | Cost Estimates | | | | |
| | | | | 2019 | 2020 | 2021 | 2022 | 2023 | | 2019/2020 | 2020/2021 | 2021/2022 | 2022/2023 | 2023/2024 |
| 1 | Ensure declaration of all properties within the estate to obtain legal status in terms of NEMPAA and registered on the SAPAD. | | | | | | | | | | | | | |
| a | *Compile and submit notice of intend to be approved and gazetted* | All properties managed as part of the PA have been declared and listed in the NPA Register and the registrar of Deeds has recorded the declaration against the relevant register and documents. | 1.1 Legal Status | | | | | | | R - | R 87 981,16 | R62 989,01 | R 54 738,46 | R 7 715,08 |
| b | *Record the declaration against the SAPAD* | | | | | | | | | | | | | |
| c | *Record the declaration against the relevant Title Deed.* | | | | | | | | | | | | | |
| d | *Consolidation of properties* | | | | | | | | | | | | | |
| e | *Apply for MPRDA sec 53 permission for all properties in PA domain* | | | | | | | | | | | | | |
| f | *Formal management agreements regarding properties in domain* | | | | | | | | | | | | | |
| **Objective 3.2: Secure the boundaries of, and maintain controlled access to, the PA** | | | | | | | | | | **R117 529,47** | **R142 032,97** | **R164 269,34** | **R1 244 857,35** | **R2 379 913,97** |
| # | Management action | Management targets | Key performance indicators Mett-Sa Vers 3 | Activity planned & Priority | | | | | | Cost Estimates | | | | |
| | | | | 2019 | 2020 | 2021 | 2022 | 2023 | | 2019/2020 | 2020/2021 | 2021/2022 | 2022/2023 | 2023/2024 |
| 1 | Impliment the protection systems or mechanisms for controlling current and anticipated levels of legitimate and illegitimate access or activities in the PA | | | | | | | | | | | | | |
| a | *Regular boundary patrols and access hotspots* | Protection systems or mechanisms for controlling current and anticipated levels of legitimate and illegitimate access or activities in the PA are fully implemented. The success has been verified by a relevant PA integrity audit (eg. SOAM or PAME). | 5.2 Functioning of Law Enforcement and Compliance systems | | | | | | | R 35 304,64 | R 47 457,75 | R74 679,15 | R 70 166,81 | R 73 675,15 |
| b | *Implement, mechanisms for subsidised entry for local community user and interest groups.* | | | | | | | | | | | | | |
| c | *Provide, on request, controlled access to recognised cultural/religious sites and non-destructive or consumptive cultural/religious practices.* | | | | | | | | | | | | | |
| 2 | Complete the construction of the perimeter demarcation/fencing to meet all requirements of the DENC Technical Guidelines and Principles | | | | | | | | | | | | | |
| a | *Verify position of estate beacons agains title deeds* | The reserve assets are secure. The reserve visitors and users have equitable access to the reserve, and are safe from harm. | 1.3 Protected Area boundary demarcation | | | | | | | R 82 224,83 | R 94 575,22 | R89 590,20 | R 1 174 690,54 | R2 306 238,82 |
| b | *Maintain beacons in correct position* | | | | | | | | | | | | | |
| c | *Construction of the perimeter signage* | | | | | | | | | | | | | |
| d | *Demarcation of boundary by fencing, bollards, beacons, sign posts.* | | | | | | | | | | | | | |
| e | *Ensure regular maintenance of the perimeter demarcation/fencing in the reserve.* | | | | | | | | | | | | | |

| Objective 3.3: Sustain an effective law enforcement and compliance capacity in the PA | | | | | | | | | R3 173,61 | R60 051,06 | R36 770,57 | R3 673,85 | R30 880,54 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| # | Management action | Management targets | Key performance indicators Mett-Sa Vers 3 | Activity planned & Priority | | | | | Cost Estimates | | | | |
| | | | | 2019 | 2020 | 2021 | 2022 | 2023 | 2019/2020 | 2020/2021 | 2021/2022 | 2022/2023 | 2023/2024 |
| 1 | Integrated Compliance Plan | | | | | | | | | | | | |
| a | *Draw up an Integrated Compliance Plan* | The PA has an Integrated Compliance Plan addressing all aspects of law enforcement that incorporates inter alia raising awareness, improving community relationships, training and cooperation with legal agencies. | 5.2.1 Integrated Compliance Plan | | | | | | R - | R 31 696,04 | R10 505,88 | R - | R 23 155,34 |
| b | *Impliment Integrated Compliance Plan* | | | | | | | | | | | | |
| 2 | Ensure capacity/resources/support to impliment the Integrated Compliance Plan | | | | | | | | | | | | |
| a | *Determine capasity RB Martin or IUCN and develop list of critical skills required with training cources available for field rangers.* | Ensure capacity/resources/support to enforce (arrest and prosecute) PA internal rules/regulations. | 3.6. Law Enforcement Capacity & Capability | | | | | | R 3 173,61 | R 28 355,02 | R26 264,69 | R 3 673,85 | R 7 725,19 |
| b | *Ensure the provision of enforcement and compliance training for all reserve field staff.* | | | | | | | | | | | | |
| c | *Ensure that the field ranger staff complement is adequately resourced and equipped to fulfil an effective enforcement and compliance function.* | | | | | | | | | | | | |

## 4.4 KPA 4: Infrastructure & Equipment

### 4.4.1 Objective 4.1: Acquire and maintain operational equipment and vehicles for the GGNR

#### 4.4.1.1 Norms and standards

- ❖ Ensure that each protected area has the necessary operational equipment and infrastructure in place, with an effective maintenance program.
  - ➢ Necessary operational equipment and infrastructure is in place.
    - The infrastructure necessary to manage the protected area effectively is in place;
    - Staff facilities are adequate to perform critical management activities;
    - There is (an) adequate operational equipment as required for operational management purposes.
  - ➢ Equipment and infrastructure are effectively maintained.
    - A regular program of infrastructure maintenance is adhered to.
    - Equipment is maintained in good working condition.

#### 4.4.1.2 Principles

- The reserve shall acquire and/or replace the equipment and vehicles necessary to implement the activities identified in this IMP.
- All reserve equipment and vehicles shall be regularly maintained in accordance with the manufacturers' specifications.

### 4.4.2 Objective 4.2: Construct, maintain and upgrade the administration infrastructure and bulk services infrastructure in the GGNR

#### 4.4.2.1 Norms and standards

- ❖ Follow Technical management guideline and procedures for the development, maintenance and upgrading of roads in provincial nature reserves.
- ❖ Promote and or ensure the positive involvement of the protected area management in Water use planning and management operations influencing the PA.
  - ➢ Water-use planning outside takes into account the objectives of the protected area.
    - Management authorities play an active role in water use planning affecting the protected area.
    - The water-use planning takes cognisance of the protected area and the achievement of protected area management objectives.

#### 4.4.2.2 Principles:

- Administrative and operations infrastructure and services must be limited, and appropriately scaled, to the necessary administrative and operational requirements of the reserve, and must not threaten its biodiversity or ecological function.
- In developing and maintaining administrative and operations infrastructure, the reserve shall obtain the necessary authorisation in terms of the relevant legislation.
- The reserve shall strive to phase out bulk services that have a detrimental impact on the environment. It will, in turn, seek to introduce more sustainable technologies, wherever practicable and cost-effective.
- The reserve shall rationalise the network of roads, tracks and footpaths to reduce the maintenance costs and limit the environmental impacts, while ensuring adequate access for tourism and operational management requirements.

### 4.4.3 Objective 4.3: Construct, upgrade and maintain day and overnight visitor buildings and infrastructure in the GGNR

#### 4.4.3.1 Norms and standards

- ❖ Ensure that the protected area has visitor facilities that contribute to their visitor's experience.
  - ➢ Visitor facilities, where appropriate (are established in line) with the protected area objectives are established in response to tourism market demands, and contribute positively to the visitor experience.

- The visitor/tourism facilities are adequate and sufficient to prevent damage to protected areas;
- Tourism infrastructure is effectively servicing the current volume of visitors to the protected area according to the protected areas carrying capacity;
- The visitor facilities are appropriate to the level of visitor use.

#### 4.4.3.2 Principles:

- Continuously minimize the potential negative impacts caused by existing tourism use, particularly to sensitive sites.
- Direct new tourism developments (if possible) to less sensitive areas.

## Table 15: Management actions and targets relating to Infrastructure & Equipment KPA 4

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **KPA 4: Infrastructure and Equipment** | | | | | | | | | | **R895 762,09** | **R1 128 623,34** | **R1 657 372,49** | **R1 634 711,35** | **R2 071 621,42** |
| **Objective 4.1: Acquire and maintain operational equipment and vehicles for the PA** | | | | | | | | | | **R599 465,47** | **R654 499,35** | **R693 449,10** | **R964 009,84** | **R1 356 360,22** |
| # | Management action | Management targets | Key performance indicators Mett-Sa Vers 3 | Activity planned & Priority | | | | | | Cost Estimates | | | | |
| | | | | 2019 | 2020 | 2021 | 2022 | 2023 | | 2019/2020 | 2020/2021 | 2021/2022 | 2022/2023 | 2023/2024 |
| 1 | Acquire and maintain stores and equipment | | | | | | | | | | | | | |
| a | *General submissions for procurement* | Operational equipment is adequate and suitable for current and future anticipated operational needs.There is a maintenance schedule and all operational equipment is being correctly maintained and meeting the set standards. | 3.7 Adequacy of Operational equipment 4.6 Maintenance of operational equipment | | | | | | | R 57 600,73 | R 151 995,38 | R 135 191,85 | R 217 872,73 | R 111 398,60 |
| b | *Establish an electronic network (i.e. internet and e-mail) for, and connect services and applications to, the reserve.* | | | | | | | | | | | | | |
| c | *Procure, install and maintain a reliable internal communications network for the reserve, including repeaters, base station, hand-held radios and car radios.* | | | | | | | | | | | | | |
| d | *Maintain and/or replace all reserve equipment according to the manufacturers' specifications and/or corporate replacement cycles.* | | | | | | | | | | | | | |
| 2 | Adequacy of transport fleet | The transport fleet is totally appropriate and sufficient for all management needs with adequate numbers and range of vehicles (including boats, aircraft etc.) to meet management needs? There is a maintenance schedule and the entire transport fleet is being maintained and meeting the set standards. | 3.9 Adequacy of transport fleet 4.6.2Maintenance of Transport fleet | | | | | | | R 541 864,74 | R 502 503,97 | R 558 257,24 | R 746 137,11 | R1 244 961,62 |
| a | *Do needs analyses regarding transport fleet for all management needs with adequate numbers and range of vehicles (including boats, aircraft etc.)* | | | | | | | | | | | | | |
| b | *Maintain and/or replace all reserve vehicles and equipment according to the manufacturers' specifications and/or corporate replacement cycles.* | | | | | | | | | | | | | |

| Objective 4.2: Construct, maintain and upgrade the administration infrastructure and bulk services infrastructure in the PA | | | | | | | | | | R150 991,76 | R250 734,18 | R523 544,08 | R215 983,23 | R294 174,35 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| # | Management action | Management targets | Key performance indicators Mett-Sa Vers 3 | Activity planned & Priority | | | | | | Cost Estimates | | | | |
| | | | | 2019 | 2020 | 2021 | 2022 | 2023 | | 2019/2020 | 2020/2021 | 2021/2022 | 2022/2023 | 2023/2024 |
| 1 | Construct and upgrade the administration and bulk services infrastructure in the reserve and constantly update the infrastructure | | | | | | | | | | | | | |
| a | *Construct a permanent administration building, and associated facilities, within the reserve* | Infrastructure required for operational management purposes buildings, roads, bulk services including jetties, storage facilities and staff housing is optimal for current and future anticipated management needs.. State (using a grading system) of reserve buildings and infrastructure. Records of instances of overloading of the bulk service supplies. | 3.7.1 Adequacy of Operational infrastructure. Level of conformance (%) with South African National Standard (SANS) 1197:2012. | | | | | | | R 68 193,32 | R 78 183,25 | R 321 128,47 | R 73 950,71 | R 117 390,90 |
| b | *Construct the entrance/control gate infrastructure and associated ablution facilities to accommodate disabled visitors.* | | | | | | | | | | | | | |
| c | *Facilitate the provision of ESKOM power to Lodges, critical staff accommodation and all administrative facilities.* | | | | | | | | | | | | | |
| d | *Install and maintain generator and/or solar power systems for the functioning of remote reserve operational equipment (e.g. water pumps) and the smaller tourism and recreational facilities.* | | | | | | | | | | | | | |
| e | *Develop a water supply, storage and treatment capacity for the reserve.* | | | | | | | | | | | | | |
| f | *Develop waste treatment facilities and waste removal systems for the reserve water supply, storage and treatment capacity for the reserve.* | | | | | | | | | | | | | |
| g | *Develop the road, track and footpath network in the GGNR* | | | | | | | | | | | | | |
| h | *Standardise, install and maintain directional and informational signage within, and en route to, the reserve.* | | | | | | | | | | | | | |
| 2 | Develop Infrastructure Maintenance Programme: | | | | | | | | | | | | | |
| a | *Develop Site Plans.* | Infrastructure required for operational management purposes on uniform standards as required | 3.7.1 Adequacy of Operational infra-structure. Level of conformance (%) with SANS 1197:2012. | | | | | | | R 82 798,44 | R 172 550,93 | R 202 415,61 | R 142 032,51 | R 176 783,45 |
| b | *Maintenance standards & prosedures* | | | | | | | | | | | | | |
| c | *Maintenance of all reserve administrative, staff and operational buildings and infrastructure.* | | | | | | | | | | | | | |
| d | *Schedule and implement the maintenance of the network of roads in the reserve, with a strong focus on maintaining and mitigating highly erodible areas.* | | | | | | | | | | | | | |
| e | *Link up with EPIP projects as well as external projects with available funds* | | | | | | | | | | | | | |

| Objective 4.3: Construct, upgrade and maintain day and overnight visitor buildings and infrastructure in the PA | | | | | | | | | R145 304,86 | R223 389,81 | R440 379,31 | R454 718,28 | R421 086,85 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| # | Management action | Management targets | Key performance indicators Mett-Sa Vers 3 | Activity planned & Priority | | | | | Cost Estimates | | | | |
| | | | | 2019 | 2020 | 2021 | 2022 | 2023 | 2019/2020 | 2020/2021 | 2021/2022 | 2022/2023 | 2023/2024 |
| 1 | Assess the feasibility of developing additional overnight accommodation and camping/caravanning sites and day visitor facilities with reference to the CDF and update CDF if required. | Tourism infrastructure is optimal to manage the current and anticipated future volume of visitors. | 3.8 Adequacy of Tourism infrastructure | | | | | | R - | R - | R - | R - | R - |
| 2 | Assess the cost-effectiveness of different management options for the operating of Lodges, Camps and select the preferred/optimal management option/s. | | | | | | | | | | | | |
| a | *Plan and Develop the overnight visitor buildings, facilities, equipment and linked infrastructure, in accordance with the CDF to meet DENC standards for the provision of nature-based tourism products.* | Tourism infrastructure is optimal to manage the current and anticipated future volume of visitors. | 3.8 Adequacy of Tourism infrastructure | | | | | | R - | R - | R - | R - | R - |
| b | *Implement, and formalise (as required), the selected management option for the Lodges, Camps (e.g. concessioning, leasing, service agreement, community-managed, etc.).* | | | | | | | | | | | | |
| 3 | DevelopTourism Infrastructure Maintenance Programme | | | | | | | | | | | | |
| a | *Develop Site Plans* | Tourism infrastructure is optimal to manage the current and anticipated future volume of visitors. | 3.8 Adequacy of Tourism infrastructure | | | | | | R 145 304,86 | R 223 389,81 | R 440 379,31 | R 454 718,28 | R 421 086,85 |
| b | *Maintenance standards & prosedures* | | | | | | | | | | | | |
| c | *Maintenance of all tourism buildings and infrastructure.* | | | | | | | | | | | | |

## 4.5 KPA 5: Stakeholder Involvement

### 4.5.1 Objective 5.1: Interaction with stakeholders and communities in the planning, development and management of the GGNR

#### 4.5.1.1 Norms and standards

- ❖ Good relationship between the protected area staff and neighboring communities.
  - ➢ Neighbor relations contribute positively to the success of the protected
    - The neighboring communities have relevant input, where relevant, into decisions relating to protected area management;
    - An advisory committee or park forum has been established.
- ❖ Ensure that the protected area plays an important role in socio-economic activities within their sphere of influence.
  - ➢ A process to evaluate the stakeholder's feedback is in place for all protected areas.
    - The protected area receives high level support as a result of co-management consultation and high quality visitor experiences emanating from effective protected area management;
    - The protected area has a large degree of support from neighbours, district and public stakeholders;
    - The protected area has a functional protected area advisory committee;
    - The protected area advisory committee is representative of all stakeholders of the protected area.

#### 4.5.1.2 Principles:

- The reserve shall establish and maintain an effective Reserve Advisory Committee based on the Regulations for the Proper Administration of Nature Reserves, promulgated in terms of Section 86 (1) of NEMPAA.

### 4.5.2 Objective 5.2: Actively participate in local and regional conservation and socio-economic development initiatives that may affect or benefit the GGNR

#### 5.5.2.1 Norms and standards

- ❖ Ensure that the protected area plays an important role in socio-economic activities within their sphere of influence.
  - ➢ A protected area provides substantive socio-economic benefits to the local area, where appropriate (refer to section 41 of the Act).
    - The protected area provides socio-economic benefits to local communities;
    - Programs to enhance local community welfare whilst conserving protected area resources are being implemented;
    - There is effective communication with local communities;
    - The protected area is a source of employment for local communities;
    - The protected area provides community development opportunities through sustainable resource use;
    - The protected area provides access to spiritual or religious sites;
    - An active education and interpretation program is implemented, focusing primarily on local children in the region around the protected area;
    - The protected area receives inside and outside contributions;
    - The protected area has co-management framework for benefit flows.
- ❖ Good relationship between the protected area staff and neighboring communities.
  - ➢ Neighbor relations contribute positively to the success of the protected
    - The protected area has trans frontier and bilateral agreements - where applicable;

#### 5.5.2.2 Principles:

- The reserve management shall actively collaborate with national, provincial and local tourism and conservation initiatives that could contribute to meeting the objectives of this IMP.
- The reserve shall strive to work with the relevant government institutions in order to integrate all local and regional planning and socio-economic development activities affecting the reserve.
- The reserve shall participate in, and support, any Co-Management Committee as an important governance mechanism to achieve the aims and objectives of the Co-Management Agreement.
- The reserve shall strive to meet to the socio-economic development commitments made in any Co-Management Agreement.

### 4.5.3 Objective 5.3 Identify and enable access to empowerment and capacity building opportunities for the local community

#### 4.5.3.1 Norms and standards

- ❖ Good relationship between the protected area staff and neighbouring communities.
  - ➢ Neighbour relations contribute positively to the success of the protected
    - The neighbouring communities have relevant input, where relevant, into decisions relating to protected area management;
    - The protected area has entered into a co-management agreement with neighboring communities and partners - where relevant;
    - The protected area has transfrontier and bilateral agreements - where applicable;
    - An advisory committee or park forum has been established.
- ❖ Ensure that the protected area plays an important role in socio-economic activities within their sphere of influence.
  - ➢ A protected area provides measurable economic benefits to the direct beneficiaries.
    - The protected area develops and implements a program that provides economic benefits to local communities / beneficiaries where appropriate.
    - The protected area delivers considerable quantifiable long-term economic benefits that make a real difference to the livelihoods of local communities.

#### 4.5.3.2 Principles:

- Stakeholder communications shall be focused on strengthening a sense of ownership and empowerment in local community, through an improved understanding of the contribution of the reserve to socio-economic development and heritage/biodiversity conservation.
- Stakeholder communications shall seek to develop a common understanding in surrounding communities of the issues affecting the integrity of the reserve, and collaborative approaches to resolve these.

## Table 16: Management actions and targets relating to Stakeholder Involvement KPA 5

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **KPA 5: Stakeholder Involvement** | | | | | | | | | | **R61 912,97** | **R298 738,32** | **R254 347,83** | **R334 179,48** | **R463 998,78** |
| **Objective 5.1: Interaction with stakeholders and communities in the planning, development and management of the PA** | | | | | | | | | | **R15 868,03** | **R36 271,39** | **R20 590,46** | **R35 892,28** | **R30 922,21** |
| # | Management action | Management targets | Key performance indicators Mett-Sa Vers 3 | Activity planned & Priority | | | | | | Cost Estimates | | | | |
| | | | | 2019 | 2020 | 2021 | 2022 | 2023 | | 2019/2020 | 2020/2021 | 2021/2022 | 2022/2023 | 2023/2024 |
| 1 | Under the guidance of the Regulations for the proper administration of Nature Reserves, as promulgated in terms of Section 86 (1) of NEMPAA, establish a Reserve Advisory Committee and meet on a regular, agreed to basis. | A well represented functioning and formalised Community Liaison Structure contributes significantly to the management/development of the PA. | 4.11 Community Liaison Structure | | | | | | | R - | R 13 766,38 | R 14 454,70 | R 15 659,48 | R 16 442,45 |
| 2 | Develop and impliment an active Public Relations (PR) and Communication Programme | | | | | | | | | | | | | |
| a | *Ensure positive press coverage is obtained and timeously and effectively respond to items in public media which may negatively impact on the organisation.* | There is a wide ranging multi media public relations and communication programme keeping the general public and internal role players informed of important aspects of the PA. | 4.10 Public Relations (PR) and Communication Programme | | | | | | | R - | R 5 843,59 | R 6 135,76 | R 6 442,55 | R 6 764,68 |
| b | *Initiate and sustain ongoing communications with the communal and/or private landowners to discuss opportunities for ongoing cooperation and collaboration.* | | | | | | | | | | | | | |
| 3 | Ensure members of the community are involved in supporting the PA through volunteering, projects and fundraising by establishing formal groups such as Friends groups, Volunteers or Honorary rangers. | There are a wide range of projects supported by volunteers including fund raising and assistance with management that contribute significantly to increased PA management effectiveness. | 5.5 Community Support | | | | | | | R 15 868,03 | R 16 661,43 | R - | R 13 790,24 | R 7 715,08 |

| Objective 5.2: Actively participate in local and regional conservation and socio-economic development initiatives that may affect or benefit th | | | | | | | | | R15 791,33 | R232 054,64 | R233 757,37 | R240 113,36 | R374 219,03 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| # | Management action | Management targets | Key performance indicators Mett-Sa Vers 3 | Activity planned & Priority | | | | | Cost Estimates | | | | |
| | | | | 2019 | 2020 | 2021 | 2022 | 2023 | 2019/2020 | 2020/2021 | 2021/2022 | 2022/2023 | 2023/2024 |
| 1 | Participate in local municipal IDP planning processes, with a specific focus on the provision of municipal infrastructure and services to the reserve and supporting local economic development initiatives in the community. | | | | | | | | | | | | |
| a | *Identify, and make application for, EPWP-related funding for relevant tourism and conservation initiatives in the reserve.* | A formal published review/audit has shown that the PA delivers quantifiable long term stimuli to the regional (and possibly the national) economy and delivers a broad range of long term quantifiable community benefits that improve the livelihood strategies and resilience in the lives of communities. | 6.1 Economic and Social benefit assessment Direct and measurable benefitsaccrue to local community from the reserve. | | | | | | R - | R - | R - | R 13 790,24 | R 14 479,76 |
| 2 | Participate in the planning and development of other conservation initiatives with a specific focus on strengthening linkages | | | | | | | | | | | | |
| a | Assist other DENC PA's with specific projects | The PA is influencing the local or regional economy and providing measurable social benefits to communities? Social benefits to direct benefits such as jobs, training and health care. Stimulus of the economy through businesses benefiting from tourism and meeting the needs of the protected area. | 6.1 Economic and Social benefit assessment Direct and measurable benefitsaccrue to local community from the reserve. | | | | | | R - | R - | R - | R 11 958,14 | R 12 556,05 |
| b | *Establish linkages with ARTFCA, with a specific focus on strengthening tourism products and on improving access to technical and professional support/resources from TFCA partners.* | | | | | | | | | | | | |
| 3 | Investigate and select mechanisms for optimising employment, empowerment and capacity building opportunities for the local community. | | | | | | | | | | | | |
| a | *Develop opportunities for selected individuals from the local community to be trained and directly employed in appropriate conservation and tourism related work.* | Direct and measurable benefits accrue to local community from the reserve. Extent (number of beneficiaries) and nature (employment – permanent/ temporary; business opportunity; training; capacity-building) of community benefits. | 4.15 Commercial Tourism | | | | | | R 15 791,33 | R232 054,64 | R 233 757,37 | R214 364,98 | R 347 183,23 |
| b | *Develop opportunities to facilitate an empowerment component for selected individuals from the local community in any outsourcing/concessioning of the tourism and recreational products.* | | | | | | | | | | | | |
| c | *Identify, and if feasible develop, opportunities for the establishment of community-based entrepreneurial opportunities within, or linked to, the reserve, including: game drives; sale of curios and crafts; guided heritage trails; village tourism; conservation enterprise; horse trails; event management and commercial hunting packages.* | | | | | | | | | | | | |

| Objective 5.3: Develop, implement and maintain effective mechanisms for ongoing communications with co-management partners | | | | | | | | | | R30 253,61 | R30 412,29 | R0,00 | R58 173,85 | R58 857,54 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| # | Management action | Management targets | Key performance indicators Mett-Sa Vers 3 | Activity planned & Priority | | | | | | Cost Estimates | | | | |
| | | | | 2019 | 2020 | 2021 | 2022 | 2023 | | 2019/2020 | 2020/2021 | 2021/2022 | 2022/2023 | 2023/2024 |
| 1 | Continually review, and amend (as required), the structure, representation and TOR of the Co-Management Committee to ensure that it contributes to realising the intent of the Co-Management Agreement. | There is a formal representative structure for community partners to participate in decision making according to a legally binding co-management agreement. | 4.14 Community partners | | | | | | | R 30 253,61 | R 30 412,29 | R - | R 58 173,85 | R 58 857,54 |
| 2 | Provide ongoing support (e.g. logistical, administrative, technical, professional and leadership) to, and actively participate in, an effectively functioning Co-Management Committee. | | | | | | | | | | | | | |
| a | *Hold quarterly (more regular if required) meetings with the Co-Management Committee to ensure that co-management decisions are made timeously and effectively.* | There is a formal representative structure for community partners to participate in decision making according to a legally binding co-management agreement. | 4.14 Community partners | | | | | | | R - | R - | R - | R - | R - |
| b | *Support the ongoing capacity building of the local community representatives on the Co-Management Committee.* | | | | | | | | | | | | | |
| c | *Allocate office space in the administrative complex for office bearers of the Co-Management Committee.* | | | | | | | | | | | | | |
| d | *Host a regular quaterly meeting, each in a different neighbouring village, to present and discuss issues of mutual concern.* | | | | | | | | | | | | | |

## 4.6 KPA 6: Administration & Planning

### 4.6.1 Objective 6.1: Institute and maintain an effective administration and planning capability in the GGNR

#### 4.6.1.1 Norms and standards

- Ensure proper planning in the establishment or expansion of the protected area.
  - A protected area is designed and planned to meet its objectives.
    - The size of the protected area is sufficient to achieve its conservation objectives;
    - The protected area forms a critical part of a greater, integrated system forming a trans frontier protected area;
    - The shape of the protected area is adequate sufficient to achieve its conservation objectives;
    - The design of the protected area is adequately to allow large-scale ecological processes to take place;
    - The objectives are consistent with the protected area location;
    - The layout and configuration of the protected area optimizes the conservation of biodiversity.
- Ensure the approved management plan is implemented accordingly to meet the objectives set in the management plan.
  - A management plan has been developed for the protected area in accordance with section 39 of the Act, and the Guidelines for the development of a management plan for a protected area in terms of the Act.
    - The purpose of the protected area is reflected in the management plan;
    - The management plan contains explicit biodiversity targets for all priority biodiversity elements;
    - The management plan addresses the management of specific priority species and habitats;
    - There is an analysis and strategy for addressing protected area threats and pressures;
    - The results of monitoring, research and evaluation are routinely incorporated into planning and decision making;
    - An expansion plan to meet the conservation objectives has been developed - where relevant;
    - A zoning plan indicating what activities may take place in different sections of the area, and the conservation objectives of these sections is included in the management plan;
    - An infrastructure development plan (concept development plan), subject to the zoning plan, is included in the management plan - where development is to be considered;
    - There is a program for the implementation of the management plan linked to annual work plans and staff performance agreements;
    - The management plan is being fully implemented;
    - Relevant components of the municipal IDP have been considered in the management plan; Municipal IDPs have (taken the relevant aspects of the management plan into account) considered the ecological sensitivity of the protected area, its buffer zones and any priorities areas for protected area expansion;
    - The planning process allows adequate consultation with key stakeholders in the compilation of the management plan;
    - There is an established schedule and process for periodic review and updating of the management plan;
    - There is a program for the implementation of the management plan and its costing; Where appropriate, the implementation of community-based natural resource management is planned for;

- The terms and conditions of any relevant Biodiversity plan and/or the applicable aspects of the IDP of the local municipality have been taken into account as required by the Act.

➢ The management plan for the protected area has been approved.
- An up to date management plan has been adopted by the Board and or the HOD and approved by the Minister or the MEC.

➢ The management plan as approved is implemented successfully.
- Annual work plan of operations, implementing the management plan is in place.
- There is a detailed work plan identifying specific targets for achieving management objectives linked to the management plan.

#### 4.6.1.2 Principles:

- The reserve shall conform to the legal requirements of the NEM:PAA.

### 4.6.2 Objective 6.2: Maintain an adequately equipped, resourced and trained staff complement for the GGNR

#### 4.6.2.1 Norms and standards

❖ Ensure that all protected areas have effective systems in place to manage human resources.

➢ Human resource capacity is adequate to manage the protected area effectively.
- The skills development audit is completed and results are implemented;
- The protected area staff execute their duties to a high standard and require minimal supervision;
- The protected area employment conditions are adequate sufficient to retain high- quality staff;
- The protected area has a staff performance evaluation system in place;
- The protected area has a succession program in place.

➢ Human resource management contributes to effective management of the protected
- There is an effective staff management program in place;
- The protected areas fully implements the Occupational Health and Safety Act, 1993 (Act No. 85 of 1993);
- The protected area has a staff health and safety program in place;
- The protected area staff have good living conditions;
- The protected area has disaster management plans in place.

#### 4.6.2.2 Principles:

- The reserve shall identify opportunities for the training and capacity building of reserve staff.

### 4.6.3 Objective 6.3: Institute and maintain an effective financial and administration capability in the GGNR

#### 4.6.3.1 Norms and standards

❖ Ensure that each protected area has an effective performance evaluation system in place.

➢ A performance evaluation system for the management of the protected area is in place.
- There is a functioning evaluation system in place to measure performance against set objectives for the protected area.

❖ Ensure that each protected area has its own administrative system in place for its management.

➢ The protected area has a supportive administration system for effective management.
- Ensuring that Public Finance Management Act is implemented; Ensure that assets are well managed;
- The reporting system is well managed;
- The system for information management is managed properly.

❖ Ensure that the protected area's finances are well managed and there is a system for their management.

➢ Financial management effectively contributes to the management of the protected

- An operational budget is allocated to fund the critical management need of the protected area;
- The long-term financial outlook for the protected areas is stable;
- The allocation of expenditures is appropriate according to the protected areas priorities and objectives;
- Financial management practice enables efficient and effective protected area management;
- Funding to conduct critical management activities is adequate for the next 5 years to conduct critical management activities;
- The costing of management plans and shortfalls are addressed;
- There is a procurement plan supporting local communities (socio-economic).

➢ Alternative resources used for the management of a protected area are well managed.
- The management authority encouraged to solicit external funding or services for the management of a protected area.
- Environmental programs to assist management of the protected area.

➢ Mechanisms to enable volunteers to work in protected areas and managed where relevant are in place.
- There is a system for the appointment and management of volunteers in place.
- There is a system for the application of external sources to be used to contribute to management of protected area.

#### 4.6.3.2 Principles:

- All information that is used to support the operational planning and decision-making in the reserve shall be collected, collated, updated, maintained and presented in a cost-effective format that is readily accessible for use by management.
- The reserve shall conform to all relevant provincial/departmental financial and administrative reporting requirements.

## Table17: Management actions and targets relating to Administration & Planning KPA 6

| # | Management action | Management targets | Key performance indicators Mett-Sa Vers 3 | Activity planned & Priority 2019 | 2020 | 2021 | 2022 | 2023 | Cost Estimates 2019/2020 | 2020/2021 | 2021/2022 | 2022/2023 | 2023/2024 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **KPA 6: Administration and Planning** | | | | | | | | | **R841 283,46** | **R1 250 307,19** | **R996 085,90** | **R914 128,21** | **R1 039 598,51** |
| **Objective 6.1: Institute and maintain an effective management planning capability in the PA** | | | | | | | | | **R142 937,11** | **R388 737,84** | **R250 705,85** | **R156 381,90** | **R353 311,41** |
| 1 | Compile fully Integrated MP covering all aspects of PA management with measureable objectives | | | | | | | | | | | | |
| a | *Review and approval of IMP on 5 year cycle* | The IMP is fully integrated covering all aspects of PA management with measureable objectives and is approved by the MEC | 2.2 Management Plan | | | | | | R 39 690,88 | R 83 350,85 | R - | R 45 947,16 | R 54 046,00 |
| b | *Follow PPP and Obtain approval from MEC* | | | | | | | | | | | | |
| c | *Update a CDF (zoning system) based on a sensitivity analysis indicating visitor use zones, and positioning and nature of operational & visitor infrastructure* | All relevant standard operating procedures pertaining to all management activities are in place and are regularly updated to ensure best practice. | | | | | | | | | | | |
| 2 | Administer the administrative systems supportive of effective management and proper functioning of the PA | | | | | | | | | | | | |
| a | *Do annual Mett assesment* | Information and the understanding thereof concerning key species, habitats, ecosystems of the PA supports the achievement of all biodiversity objectives. | 1.5.1 Format of data | | | | | | R 20 649,25 | R 38 343,14 | R 10 505,88 | R 11 031,17 | R 48 244,52 |
| 3 | Update APO and OMF identifying all the activities, tasks and outcomes (operational & nanagement) in accordance with predetermined time frames and approved management plans to be completed in a financial year with costing. | | | | | | | | | | | | |
| a | *Review APO according to planning cycle* | An approved APO exists and actions are linked to the PA's management plan targets and to the Key Performance Areas of the PA manager | 4.1 Annual Plan of Operation (APO) 5.4 Linking of management Plan to Key Performance Areas | | | | | | R 20 649,25 | R 85 472,57 | R 89 746,20 | R 38 670,62 | R 77 265,93 |
| b | *Link APO to operational budget* | | | | | | | | | | | | |
| c | *Annual review of APO Workplans & OMF* | | | | | | | | | | | | |
| d | *Link OMF to the Key Performance Areas of the PA manager and key personnel.* | | | | | | | | | | | | |
| 4 | Update State of Knowledge Data Repository - General & Logistical Data | | | | | | | | | | | | |
| a | *01 Update declaration summary* | All properties managed as part of the PA have been declared and listed in the NPA Register and the registrar of Deeds has recorded the declaration against the relevant register and documents. | 1.1 Legal Status | | | | | | R 20 649,25 | R 104 885,00 | R 110 129,25 | R 38 670,62 | R 77 265,93 |
| | *02 Fences Beacons* | | | | | | | | | | | | |
| b | *Property descriptions and history according to deeds with records* | | | | | | | | | | | | |
| | *Record all boundary deviations in a legally binding document.* | | | | | | | | | | | | |
| | *Compile a register of all servitudes and the conditions relating thereto.* | | | | | | | | | | | | |
| | *Description of beacons* | | | | | | | | | | | | |
| c | *03 S.H.E.Contingency plans for Disaster Management* | All threats identified and listes in accordance with OHSA and Deparmental Risk Registers | 5.2.1 Integrated Compliance Plan | | | | | | | | | | |
| | *Undertake a Threat Analysis to determine all potential threats to the safety and security of the reserve.* | | | | | | | | | | | | |
| | *Update Risk assesment* | | | | | | | | | | | | |
| | *Compile a Disaster Management Plan for the reserve* | | | | | | | | | | | | |
| d | *04 Protected area expenditure including historical data* | All inventories are updated and linked to Key Performance Areas | *5.4 Linking of management Plan to Key Performance Areas* | | | | | | | | | | |
| f | *06 Economic valuation* | | | | | | | | | | | | |
| g | *06a Assets and stock inventory registers* | | | | | | | | | | | | |
| h | *07 Vehicle Fleet with utilisation* | | | | | | | | | | | | |
| i | *08 Maintenance schedules* | | | | | | | | | | | | |
| j | *14 Literature Inventory & Web Links.docx* | | | | | | | | | | | | |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5 | Update State of Knowledge Data Repository - Guiding management principles | | | | | | | | | | | |
| a | *Complete list of 01 International Conventions, Commisions and* | Management Guidelines in place and Principles adhered to as listed in relevant legislation | 4.16 Environmentally Responsible practice | | | | | R 20 649,25 | R 38 343,14 | R 14 023,13 | R 11 031,17 | R 48 244,52 |
| b | *Complete list of 02 National Legislation with Regulations with* | | | | | | | | | | | |
| c | *Complete list of Provincial Legislation and Municipal Bylaws with* | | | | | | | | | | | |
| d | *Complete list of 04 Policies to guide decision-making and* | | | | | | | | | | | |
| e | *Develop Protected Area internal rules ito section 52 of NEM:PAA* | | | | | | | | | | | |
| f | *Compile standard operating procedures pertaining to all* | | | | | | | | | | | |
| g | *Draw up a protection systems for controlling anticipated levels of* | | | | | | | | | | | |
| h | *Verified success by a relevant PA integrity audit (eg. SOAM or* | | | | | | | | | | | |
| 6 | Update State of Knowledge Data Repository - Guiding management principles | | | | | | | | | | | |
| a | *IMP Maps* | Relevant information captured in digital map format Management Guidelines in place and Principles adhered to according to Managemnt Principles | 4.16 Environmentally Responsible practice | | | | | R 20 649,25 | R 38 343,14 | R 26 301,40 | R 11 031,17 | R 48 244,52 |
| | *Map 1:Reserve Interface* | | | | | | | | | | | |
| | *Map 2: Reserve Interface comparison* | | | | | | | | | | | |
| | *Map 3: Reserve Estate* | | | | | | | | | | | |
| | *Map 4: Climate (Climatic regions within the NDM)* | | | | | | | | | | | |
| | *Map 5: Digital Terrain Model Map* | | | | | | | | | | | |
| | *Map 6: Geological Map* | | | | | | | | | | | |
| | *Map 7: Land types and soil Map* | | | | | | | | | | | |
| | *Map 8: Drainage and Hydrology* | | | | | | | | | | | |
| | *Map 9: Biomes, Bioregions and Vegetation units* | | | | | | | | | | | |
| | *Map 10: Plant communities and Management units* | | | | | | | | | | | |
| | *Map 11: Special habitats - Hotspots* | | | | | | | | | | | |
| | *Map 12: Archaeological and Cultural, Heritage resources* | | | | | | | | | | | |
| | *Map 13: Infrastructure and Bulk services* | | | | | | | | | | | |
| | *Map 14: Use Zone Map* | | | | | | | | | | | |
| b | *General & Logistical Maps Link to SMP for Estate and Domain* | | | | | | | | | | | |
| | *Map 1: Protected area Expansion* | | | | | | | | | | | |
| | *Map 2: Historical land uses - Polygon Only data From colonial* | | | | | | | | | | | |
| | *Map 3: Conflicting land uses - Polygon Current and known future* | | | | | | | | | | | |
| | *Map 4: Anthropogenic incidence (HIRA) - Polygon Incidence of* | | | | | | | | | | | |
| | *Map 5: Site plans - update with CDF/GIAMA* | | | | | | | | | | | |
| | *Map 5-1: Development Plans - According to CDF* | | | | | | | | | | | |
| | *Map 6: Roads - Historic and current update with CDF* | | | | | | | | | | | |
| | *Map 7: Fences - Historic and current update with CDF* | | | | | | | | | | | |
| | *Map 8: Water supply systems - Historic and current update with* | | | | | | | | | | | |
| | *Map 9: Watering points - Historic and current manmade update* | | | | | | | | | | | |
| | *Map 10: Electrical installations - Historic and current update with* | | | | | | | | | | | |
| | *Map 11: Mining operations and Burrow pits - Historic and current* | | | | | | | | | | | |
| | *Map 12: Erosion areas - Polygon - Rehabilitated and current areas* | | | | | | | | | | | |
| c | *Biodiversity Maps Link to BMS for Estate and Domain not ZOI* | | | | | | | | | | | |
| | *Map 1: Fauna* | | | | | | | | | | | |
| | *Map 1-1 Exotic Fauna - One map all species different coulours per* | | | | | | | | | | | |
| | *Map 1-3a Fauna Distribution of Species of Special Concern -* | | | | | | | | | | | |
| | *Map 1-4 Fauna Distribution Large Predators - One map all species* | | | | | | | | | | | |
| | *Map 1-5 Fauna Distribution Key Raptor Nests - One map all* | | | | | | | | | | | |
| | *Map 1-6 Fauna Monitoring sites - One map all projects different* | | | | | | | | | | | |
| | *Map 2: Flora* | | | | | | | | | | | |
| | *Map 2-1: Flora Exotic - One map all species different coulours per* | | | | | | | | | | | |
| | *Map 2-3 Flora Distribution of species of Special Interest - One* | | | | | | | | | | | |
| | *Map 2-4 Flora Fire insidence - One map all burns different* | | | | | | | | | | | |
| | *Map 2-5 Flora Monitoring sites One map all projects different* | | | | | | | | | | | |

| Objective 6.3:Institute and maintain an effective financial and administartive planning capability in the PA | | | | | | | | | R147 071,76 | R199 671,29 | R270 280,75 | R198 153,90 | R222 967,35 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| # | Management action | Management targets | Key performance indicators Mett-Sa Vers 3 | Activity planned & Priority | | | | | Cost Estimates | | | | |
| | | | | 2019 | 2020 | 2021 | 2022 | 2023 | 2019/2020 | 2020/2021 | 2021/2022 | 2022/2023 | 2023/2024 |
| 1 | Information Technology systems | | | | | | | | | | | | |
| a | *Ensure electronic data are backed up on a routine basis and* | Information Technology systems are excellent and fully support management effectiveness. | 4.5 Information Technology systems | | | | | | R 113 467,82 | R 144 408,85 | R 227 648,32 | R177 928,20 | R 203 099,07 |
| b | *Institute and maintain an electronic and/or hard copy filing system* | | | | | | | | | | | | |
| c | *Inventory of all literature* | | | | | | | | | | | | |
| 2 | Ensure financial management is excellent and all management goals are met | | | | | | | | | | | | |
| a | *Prepare annual budget according to the APO and identify needs* | The available budget is sufficient and meets the full management needs of the PA. There are skills and capacity in the organisation to raise external sources of funding for specific projects. An operational budget, specific to the PA, is secure and is guaranteed on a 3-5 year cycle. Updated guidelines, policies and procedures available at the reserve. | 3.3 Adequacy of Operational budget<br>3.4 Security of Operational budget<br>3.4.1 Capital budget<br>3.4.2 Budget Management<br>4.8 Insurance | | | | | | R 33 603,94 | R 55 262,44 | R 42 632,43 | R 20 225,70 | R 19 868,28 |
| b | *Compile database of external sources of funding for specific projects* | | | | | | | | | | | | |
| c | *Link OMF to operational budget and obtain dedicated budget* | | | | | | | | | | | | |
| d | *Maintain a reserve-based record of all purchases made, accounts paid and services procured in support of reserve operations over each financial year..* | | | | | | | | | | | | |
| e | *Keep record and manage own revenue according to PFMA and supply inputs when required* | | | | | | | | | | | | |

| Objective 6.2: Maintain an adequately equipped, resourced and trained staff complement for the PA | | | | | | | | | R551 274,58 | R661 898,06 | R475 099,30 | R559 592,40 | R463 319,75 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| # | Management action | Management targets | Key performance indicators Mett-Sa Vers 3 | Activity planned & Priority | | | | | Cost Estimates | | | | |
| | | | | 2019 | 2020 | 2021 | 2022 | 2023 | 2019/2020 | 2020/2021 | 2021/2022 | 2022/2023 | 2023/2024 |
| 1 | Ensure that all vacant posts in the reserve's approved organogram are filled and determine actual needs for achieving management objectives as part of work plans. | The approved organogram reflects the actual needs for effectively achieving all management objectives and the HR capacity meets the approved levels. | 3.2 Human Resource capacity | | | | | | R 16 663,51 | R 21 672,97 | R - | R 23 894,45 | R 25 089,17 |
| 2 | Implement the institutional staff performance appraisal system and link WP and PA to APO . | HR management and staff development systems are excellent and fully support management effectiveness. | 4.3 HR Management systems 4.4 Administrative support systems | | | | | | R 330 904,37 | R 358 088,12 | R 244 012,52 | R257 025,92 | R 152 964,94 |
| a | *Have clear job descriptions and Performance Agreements on record. Link KPA's to APO and Mett* | | | | | | | | | | | | |
| b | *Identify training needs, and facilitate access to training programs for reserve staff, with a priority focus on field ranger, first aid, hospitality and IT skills training.* | | | | | | | | | | | | |
| c | *Maintain Leave and CWW register part of Monthley planner* | | | | | | | | | | | | |
| 3 | Maintain all staff information for the reserve (leave records, attendance registers, overtime, etc.).HR related documentation and policies (Legislation posters) | HR management and staff development systems are excellent and fully support management effectiveness. | 4.3 HR Management systems | | | | | | R 88 813,56 | R 77 062,83 | R 27 270,63 | R 80 888,61 | R 84 933,04 |
| 4 | Implement the institutional Occupational Health and Safety policies and procedures in the reserve. | An external audit has certified that PA management complies with and implements the Occupational Health and Safety Act. | 3.10 Health and safety | | | | | | R 106 938,32 | R 181 730,66 | R 203 816,15 | R197 783,42 | R 200 332,60 |
| 6 | Develop a policy and standards for staff housing and ensure all staff housed accordingly. | HR management and staff development systems are excellent and fully support management effectiveness. | 4.3 HR Management systems | | | | | | R 7 954,82 | R 23 343,48 | R - | R - | R - |
| **Objective 6.3:Institute and maintain an effective financial and administartive planning capability in the PA** | | | | | | | | | **R147 071,76** | **R199 671,29** | **R270 280,75** | **R198 153,90** | **R222 967,35** |
| # | Management action | Management targets | Key performance indicators Mett-Sa Vers 3 | Activity planned & Priority | | | | | Cost Estimates | | | | |
| | | | | 2019 | 2020 | 2021 | 2022 | 2023 | 2019/2020 | 2020/2021 | 2021/2022 | 2022/2023 | 2023/2024 |
| 1 | Information Technology systems | | | | | | | | | | | | |
| a | *Ensure electronic data are backed up on a routine basis and* | Information Technology systems are excellent and fully support management effectiveness. | 4.5 Information Technology systems | | | | | | R 113 467,82 | R 144 408,85 | R 227 648,32 | R177 928,20 | R 203 099,07 |
| b | *Institute and maintain an electronic and/or hard copy filing system* | | | | | | | | | | | | |
| c | *Inventory of all literature* | | | | | | | | | | | | |
| 2 | Ensure financial management is excellent and all management goals are met | | | | | | | | | | | | |
| a | *Prepare annual budget according to the APO and identify needs* | The available budget is sufficient and meets the full management needs of the PA. There are skills and capacity in the organisation to raise external sources of funding for specific projects. An operational budget, specific to the PA, is secure and is guaranteed on a 3-5 year cycle. Updated guidelines, policies and procedures available at the reserve. | 3.3 Adequacy of Operational budget 3.4 Security of Operational budget 3.4.1 Capital budget 3.4.2 Budget Management 4.8 Insurance | | | | | | R 33 603,94 | R 55 262,44 | R 42 632,43 | R 20 225,70 | R 19 868,28 |
| b | *Compile database of external sources of funding for specific projects* | | | | | | | | | | | | |
| c | *Link OMF to operational budget and obtain dedicated budget* | | | | | | | | | | | | |
| d | *Maintain a reserve-based record of all purchases made, accounts paid and services procured in support of reserve operations over each financial year.* | | | | | | | | | | | | |
| e | *Keep record and manage own revenue according to PFMA and supply inputs when required* | | | | | | | | | | | | |

# 5. RESOURCING AND GOVERNANCE FRAMEWORK

This section provides brief recommendations on the minimum staffing complement and funding that would be required to implement the RMP (i.e. the IMP and APO). This section also briefly describes the key responsibilities of the reserve management team in the development, implementation, monitoring and review of the RMP.

## 5.1 Staffing Requirements

It is proposed that the following minimum staffing complement[11] would be required to implement this IMP[12]:

| POST DESIGNATION | NUMBER |
|---|---|
| RESERVE MANAGER | 1 |
| ASST. RESERVE MANAGER | 1 |
| SENIOR FIELD RANGER | 1 |
| FIELD RANGER | 5 |
| GENERAL FOREMAN | 1 |
| GENERAL ASSISTANT | 5 |
| ADMINISTRATION CLERK | 1 |
| ADMIN CLEANER | 1 |
| FACILITY MANAGER | 1 |
| HANDYMAN/DRIVER | 1 |
| GATE GUARD | 3 |
| FACILITY CLEANER | 2 |

[11] This minimum staff complement assumes that the planned overnight tourism facilities will be completed and the services are not outsourced to an operator or concessionaire and that the reserve management is directly responsible for the management of these facilities and services.

[12] The staffing requirements reflected are premised on two elements: (i) a critical assessment of the efficacy of the current approved (not actual) organogram for the reserve in respect of current reserve management responsibilities; and (ii) a facilitated discussion with the RPT on any (mostly minor) adjustments/changes that may be required to this approved organogram in order to more effectively implement the SP for the next five years.

## 5.2 Funding Requirements

It is proposed that the following operational[13] and capital[14] budget in Table 21 would be required to implement this IMP:

**Table18: Budget requirement per KPA**

KPA 1: Biodiversity and Heritage Conservation

| ECONOMIC CLASSIFICATION - SCOA | | 2020-2021 | 2021-2022 | 2022-2023 | 2023-2024 |
|---|---|---|---|---|---|
| | | Budget | Budget | Budget | Budget |
| PERSONEEL | | R908 062,94 | R817 156,05 | R993 618,89 | R1 082 279,92 |
| GOODS AND SERVICES | | R8 250,00 | R997 800,00 | R445 750,00 | R153 450,00 |
| CAPITAL ASSETS >R5000 | | R0,00 | R30 800,00 | R0,00 | R0,00 |
| TOTAAL: | | R916 312,94 | R1 845 756,05 | R1 439 368,89 | R1 235 729,92 |

KPA 2: Recreation, Marketing, Education, Awareness and Interpretation

| ECONOMIC CLASSIFICATION - SCOA | | 2020-2021 | 2021-2022 | 2022-2023 | 2023-2024 |
|---|---|---|---|---|---|
| | | Budget | Budget | Budget | Budget |
| PERSONEEL | | 244645,66 | 171268,88 | 189296,51 | 169801,83 |
| GOODS AND SERVICES | | 0,00 | 0,00 | 0,00 | 0,00 |
| CAPITAL ASSETS >R5000 | | 0,00 | 0,00 | 0,00 | 0,00 |
| TOTAAL: | | 244645,66 | 171268,88 | 189296,51 | 169801,83 |

KPA 3: Enforcement, Security and Access Control

| ECONOMIC CLASSIFICATION - SCOA | | 2020-2021 | 2021-2022 | 2022-2023 | 2023-2024 |
|---|---|---|---|---|---|
| | | Budget | Budget | Budget | Budget |
| PERSONEEL | | 244691,54 | 199254,59 | 105695,82 | 107143,30 |
| GOODS AND SERVICES | | 27000,00 | 1045385,00 | 1171086,00 | 1429082,00 |
| CAPITAL ASSETS >R5000 | | 0,00 | 70000,00 | 0,00 | 40000,00 |
| TOTAAL: | | 271691,54 | 1314639,59 | 1276781,82 | 1576225,30 |

KPA 4: Infrastructure and Equipment

| ECONOMIC CLASSIFICATION - SCOA | | 2020-2021 | 2021-2022 | 2022-2023 | 2023-2024 |
|---|---|---|---|---|---|
| | | Budget | Budget | Budget | Budget |
| PERSONEEL | | 340221,60 | 338129,37 | 349504,85 | 376649,23 |
| GOODS AND SERVICES | | 351440,00 | 798412,00 | 678252,60 | 1255750,23 |
| CAPITAL ASSETS >R5000 | | 0,00 | 101000,00 | 144500,00 | 33000,00 |
| TOTAAL: | | 691661,60 | 1237541,37 | 1172257,45 | 1665399,46 |

KPA 5: Stakeholder Involvement

| ECONOMIC CLASSIFICATION - SCOA | | 2020-2021 | 2021-2022 | 2022-2023 | 2023-2024 |
|---|---|---|---|---|---|
| | | Budget | Budget | Budget | Budget |
| PERSONEEL | | 42547,07 | 41175,52 | 51265,66 | 47064,27 |
| GOODS AND SERVICES | | 198000,00 | 198000,00 | 198000,00 | 330000,00 |
| CAPITAL ASSETS >R5000 | | 0,00 | 0,00 | 0,00 | 0,00 |
| TOTAAL: | | 240547,07 | 239175,52 | 249265,66 | 377064,27 |

[13] Operational costs are roughly based on an area-complexity factor (i.e., different cost ranges per ha, based on the level (high, medium or low) of management complexity). This was then moderated against documented expenditure for operational costs in Northern Cape's provincial reserves, wherever available. This was then again moderated against equivalent reserves in Kwa-Zulu Natal and the Western Cape, as well as reserves of SANParks and ECParks, where operating costs have stabilised and are well documented over a period of three to five years.

[14] Capital budget requirements are roughly based on known costs for similar capital investments, either in terms of replacement costs (e.g. vehicles), infrastructure development costs (e.g. cost/ha or cost/km for fencing or roads), bulk services (e.g. costs/m for pipelines, etc.), or building costs (e.g. cost/m2 for staff accommodation or chalets), etc.

KPA 6: Administration and Planning

| ECONOMIC CLASSIFICATION - SCOA | | 2020-2021 | 2021-2022 | 2022-2023 | 2023-2024 |
|---|---|---|---|---|---|
| | | Budget | Budget | Budget | Budget |
| PERSONEEL | | 757783,93 | 651867,91 | 400786,78 | 602201,22 |
| GOODS AND SERVICES | | 390463,88 | 446263,88 | 408263,88 | 363063,88 |
| CAPITAL ASSETS >R5000 | | 0,00 | 61000,00 | 0,00 | 0,00 |
| TOTAAL: | | 1148247,81 | 1159131,79 | 809050,66 | 965265,10 |

**Table 19: Total Budget Requirements**

| KEY PERFORMANCE AREA | 2020-2021 | | 2021-2022 | | | 2022-2023 | | | 2023-2024 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | OPEX | CAPEX | PERSAL | OPEX | CAPEX | PERSAL | OPEX | CAPEX | PERSAL | OPEX | CAPEX |
| KPA 1: Biodiversity and Heritage Conservation | R 8 250,00 | R - | R 817 156,05 | R 997 800,00 | R 30 800,00 | R 993 618,89 | R 445 750,00 | R - | R 1 082 279,92 | R 153 450,00 | R - |
| KPA 2: Recreation, Marketing, Education, Awareness and Interpretation | R - | R - | R 171 268,88 | R - | R - | R 189 296,51 | R - | R - | R 169 801,83 | R - | R - |
| KPA 3: Enforcement, Security and Access Control | R 27 000,00 | R - | R 199 254,59 | R 1 045 385,00 | R 70 000,00 | R 105 695,82 | R 1 171 086,00 | R - | R 107 143,30 | R 1 429 082,00 | R 40 000,00 |
| KPA 4: Infrastructure and Equipment | R 351 440,00 | R - | R 338 129,37 | R 798 412,00 | R 101 000,00 | R 349 504,85 | R 678 252,60 | R 144 500,00 | R 376 649,23 | R 1 255 750,23 | R 33 000,00 |
| KPA 5: Stakeholder Involvement | R 198 000,00 | R - | R 41 175,52 | R 198 000,00 | R - | R 51 265,66 | R 198 000,00 | R - | R 47 064,27 | R 330 000,00 | R - |
| KPA 6: Administration and Planning | R 390 463,88 | R - | R 651 867,91 | R 446 263,88 | R 61 000,00 | R 400 786,78 | R 408 263,88 | R - | R 602 201,22 | R 363 063,88 | R - |
| **Total per economic classification** | **R 975 153,88** | **R -** | **R 2 218 852,33** | **R 3 485 860,88** | **R 262 800,00** | **R 2 090 168,52** | **R 2 901 352,48** | **R 144 500,00** | **R 2 385 139,76** | **R 3 531 346,11** | **R 73 000,00** |
| Total budget | R3 513 106,63 | | R5 967 513,21 | | | R5 136 021,00 | | | R5 989 485,87 | | |

## 5.3 Roles and Responsibilities

### 5.3.1 Reserve Management

The key responsibilities of reserve management in the development, implementation, monitoring and review of the IMP are summarised as follows:

**Table 20: Management responsibilities**

| | |
|---|---|
| Management Authority (HOD) conservation agencies and services | The Management Authority through the conservation agencies and services program will have direct responsibility for:<br>• Ensuring the alignment of the PA IMP with and DAERL Strategic Plan and APP as well as Provincial policies and guidelines;<br>• Ensuring the coordination and alignment of the IMP with other departmental activities and initiatives;<br>• Providing financial, professional and technical support to the Program Manager and PA Manager in the implementation of the IMP and OMF. |
| Program Manager | The Program Manager will have overall responsibility for:<br>• Providing oversight of the implementation of the IMP and OMF;<br>• Reporting on the performance of the GGNR in the implementation of the IMP and OMF to Management Authority;<br>• Instituting corrective actions to ensure that the IMP and linked OMF is implemented, reviewed and updated; and<br>• Approval of the OMF. |
| Reserve Manager | The Reserve Manager will have direct responsibility for:<br>• Annually drafting an OMF to operationalise the priority activities identified in the APO and IMP;<br>• Implementation of the OMF;<br>• Monitoring of performance against the OMF (and the IMP);<br>• Reporting of performance against the OMF (and the IMP) to the Program Manager;<br>• Management of reserve staff, resources and finances in the implementation of the OMF; and<br>• Communicating with the Program Manager about obstacles in the implementation of the OMF. |

### 5.3.2 Reserve Planning Team

The RPT may include any of the following persons:

- Regional Manager;
- Northern Cape PA Managers
- The Reserve Manager;
- Key reserve management staff;
- Biodiversity planner;
- Regional scientist/s;
- Landowner/s (in the case of stewardship agreements);
- Representative/s of any reserve co-management committee (in cases where one has been established); and
- Co-opted technical experts/consultants.

The RPT is specifically responsible for the following:

- Overseeing all planning initiatives and activities in the reserve;
- Providing strategic direction to the IMP;
- Providing technical and scientific inputs into the IMP;
- Approving the first draft of the reserve's IMP for public consultation;
- Identifying the need for subsidiary plans in the reserve, and guiding its formulation;

The RPT should meet under the guidance of the Program Manager, who should also act as chairman at all meetings.

### 5.3.3 Protected Area Advisory Committee

Regulation 9 of the Regulations for the Proper Administration of Nature Reserves made in terms of Section 86 (1) of NEMPAA states that the Management Authority may establish one or more advisory committees in respect of a nature reserve according to the procedure stipulated in Regulation 10 of the aforementioned Regulations. Upon following this procedure, the Management Authority may appoint an advisory committee, provided that at least one employee of the Management Authority, nominated by the Management Authority itself, serve as an ex officio member of the committee. Each member of the advisory committee is appointed by the Management Authority for a period determined by the Management Authority, which may not exceed three years. The mandate of any advisory committee must be defined by the Management Authority itself in specific terms in writing. These specific terms must include the terms of reference; the method of communicating advice; the acceptance and rejection of advice offered; the appointment and removal of committee members; and the support to be provided, together with any remuneration payable and its terms.

### 5.3.4 Reserve Co-Management Committee

Key responsibilities of GGNRCMC in the development, implementation, monitoring and review of the RMP are summarised as follows:

**Table 21: Co-management Committee responsibilities**

| **GGNR Co-Management Committee** |
|---|
| The GGNR CMC shall have overall responsibility for:<br>• Representing the interests of the different reserve stakeholder groups and institutions during the preparation of the IMP and OMF;<br>• Providing strategic inputs into the drafting of the IMP, and technical inputs into the annual drafting of the OMF;<br>• Making recommendations to the Regional Manager on the adoption of the IMP and annual OMF;<br>• Reviewing the quarterly and annual performance of the GGNR against the OMF (and IMP); and<br>• Providing inputs into ad hoc and emergency reserve decision-making not adequately addressed in the IMP/OMF. |

# 6. BIBLIOGRAPHY


Barnes, K N (ed.) (1998). The important bird areas of southern Africa. Birdlife South Africa, Johannesburg.

Birdlife South Africa. 2012. [online] Available at: http://www.birdlife.org.za/conservation/iba/ibadirectory [Accessed May 2015].

Bomhard B. and Midgley (2005). Securing Protected Areas in the face of Global Change.

Cape Nature, (2005). Biodiversity Spatial Plan Technical Report; Prepared for the Project Management Unit of the GCBC

Cowan, G.I. & Mpongoma, N. 2011. Guidelines for the development of a management plan for a protected area in terms of the National Environmental Management: Protected Areas Act, 2003. Unpublished document.

Cowling, R.M. 1986. A description of the Karoo Biome Project. South African National Scientific Programs Report No. 122.

DEA, 2012. Working Group 1 Action Plan for Implementing the Convention on Biological Diversity's - Program of Work on Protected Areas. Department of Environmental Affairs and Tourism. 2006. South Africa Environment Outlook. A report on the state of the environment. Department of Environmental Affairs and Tourism, Pretoria.

DEA (2008) National Protected Area Expansion Strategy for South Africa 2008. Department of Environmental Affairs, Pretoria

Desmet, P.G., and R.M. Cowling. 1999. The climate of the Karoo – A functional approach. Pages 3-16 in W.R.J. Dean and S.J. Milton. The Karoo. Ecological patterns and processes. Cambridge University Press, Cambridge.

Driver, A., Desmet, P., Rouget, M., Cowling, R.M. & Maze, K. 2003. Succulent Karoo Ecosystem Plan: biodiversity component. Technical Report CCU 1/03, Cape Conservation Unit, Botanical Society of South Africa, Kirstenbosch.

DWAF. 2012. [online] Avialable at: http://www.dwaf.gov.za/iwqs/gis_data/river/rivs500k.html [Accessed June 2015].

Hoffmann, M. T., Skowno, A., Bell, W., and Mashele, S. 2018. Long-term changes in land use, land cover and vegetation in the Karoo drylands of South Africa: implications for degradation monitoring, African Journal of Range & Forage Science, 35:3-4, 209-221

Griffin, M. 1998. The species diversity, distribution and conservation of Namibian mammals. Biodiversity and Conservation 7: 483-494.

IUCN. 2012. [online] Available at: <http://www.iucnredlist.org/> [Accessed May 2015].

Keith, M. (Technical Editor). 2010. [online] Available at: http://sites.google.com/site/samammals/ [Accessed January 2013].

Martin R.B. (1996). Costs of Conserving State Protected Areas in Southern Africa. Fact Sheet No.6, Africa Resources Trust, P.O. Box A860, Avondale, Harare, Zimbabwe.

Mucina, L. & Rutherford, M.C. (eds.). 2006. The vegetation of South Africa, Lesotho and Swaziland. Strelitzia 19. South African National Biodiversity Institute, Pretoria.

Namakwa District Municipality. 2011. Environmental Framework and Strategic Environmental Management Plan

Namakwa District Municipality. 2012. Biodiversity Sector Plan

Namakwa District Municipality. 2012. IDP/Budget: 2012/2016. District Municipal Integrated Development Plan.

Palmer, A.R., and M.T. Hoffman. 1997. Nama Karoo. Pages 167-186 in R.M. Cowling. D.M. Richardson, and S.M. Pierce, editors. Vegetation of Southern Africa. Cambridge University Press, Cambridge.

Payne, A. 2013. Animals, South Africa. [online] Available at: globerove.com/ south-africa/south-african-rock-dassies

Savage N. M. 1972. Soft-Sediment Glacial Grooving of Dwyka Age in South Africa. Journal of Sedimentary Petrology Vol. 42 (1972) No. 2. (June), Pages 307-308

Schulze, R.E. 1997. South African Atlas of Agrohydrology and Climatology. Report TT82/96, Water Research Commission, Pretoria.

Schulze, R.E. 1997. Climate. Pages 21-42 in R.M. Cowling. D.M. Richardson, and S.M. Pierce, editors. Vegetation of Southern Africa. Cambridge University Press, Cambridge.

Schulze, R.E. & McGee, O.S. 1978. Climatic indices and classifications in relation to the biogeography of southern Africa. In: Werger, M.J.A. & Van Bruggen, A.C. (eds), Biogeography and ecology of southern Africa, pp. 19–52. Dr W. Junk, The Hague.

Siegrist, D., Clivaz, C., Hunziker, M. & Iten, S. (eds.) (2006). Exploring the Nature of Management. Proceedings of the Third International Conference on Monitoring and Management of Visitor Flows in Recreational and Protected Areas. University of Applied Sciences Rapperswil, Switzerland, 13-17 September 2006. Rapperswil.

Stuart, C. & Stuart, T. 2007. Field guide to mammals of Southern Africa. Struik Publishers, Cape Town.

# ANNEXURE 1: Conservation Development Framework (CDF) and Use Zone Map

## 1. Introduction

The CDF is a strategic spatial plan for the reserve and its surrounds that indicates a range of visitor use zones, areas requiring special management intervention, the placement of visitor facilities, the nature and size of these facilities, entry points and movement routes through the reserve. It also provides guidelines for potential future development, rehabilitation and the management of land-use along the reserve borders. The CDF is underpinned by a thorough analysis of the biodiversity, cultural-heritage and landscape limits to development, as well as the tourism opportunities. Sensitivity-value analysis is a decision support tool for spatial planning that is designed to integrate best available biodiversity information into a format that allows for defensible and transparent decisions to be made.

## 2. Basic planning principles applied

The basic planning principles applied in the compilation of the CDF and facilities in reserves are as follow:

### 2.1. Reserve Interface Zone

- Recognize that Reserve boundaries are not static and that there are factors beyond the current or future boundaries that can influence the Reserve.
- Interface Zones, shows the areas within which surrounding land-use changes could affect the reserve.
- The zones serve as a basis for identifying focus areas in which reserve management should respond to development proposals and EIAs, identifying impacts that would be important at a particular site, and most importantly, serving as the basis for integrating long-term protection of a reserve into the spatial development plans of municipalities and other local authorities.

### 2.2. Regional Influences

- Recognize that the Reserve cannot exist in isolation and that planning needs to ensure that the Reserve is integrated with the surrounding landscapes and economic and social structures.
- Ensure that the plans take account of the IDP/SDF of the local municipality
- Conduct market research to ensure that the proposed facilities are sustainable in the local regional and national market.
- Provide unique integrated ranges of products.
- Provide facilities that serve the local community.
- Determine the extent to which Reserve management will be involved in planning issues outside of the future boundary (Reserve interface Zone) and produce guidelines for this area.

### 2.3. Biodiversity conservation

- Recognize that the prime mandate of Reserves is to conserve biodiversity.
- All planning will be underpinned by a thorough sensitivity analysis of all biophysical aspects using the best available data.

- Apply the principles of Strategic Environmental Assessment (SEA) that is similar to that of EIA for projects.
- Apply the principles of Limits of Acceptable Change to determine the carrying capacity of the Reserve.
- Follow the IEM system for all developments that promotes the principles of transparency, accountability and informed decision-making at all stages of the project life-cycle.
- Apply the "precautionary" principle whenever insufficient information is available to make an informed decision.
- Reduce the current impacts of structures and roads.
- Rationalize and consolidate the roads system.
- Mitigate current impacts.
- Rehabilitate impacted areas.

### 2.4. Scenic resources

- Recognize that conservation and management of scenic quality is a vital part of Reserves mandate.
- Mitigate the visual impact of current structures and where necessary remove structures from highly visually sensitive areas.
- Ensure that new developments and roads do not impact on the scenic quality.
- Visual sensitivity must inform the acquisition of land outside of the Reserve.
- Improve the sense of place at existing facilities in the Reserve.

### 2.5. Heritage/Cultural assets

- Recognize that Reserves has a mandate not only in terms of the NEMPAA but also the National Heritage Resources Act to manage cultural assets.
- Ensure that cultural sites are not disturbed by developments.
- Celebrate cultural assets in the provision of facilities, information and interpretation.

### 2.6. Visitor facilities and infrastructure

- Recognize that Reserve offers a wide range of unique opportunities for experiences of solitude and nature-based recreation.
- All facilities to comply with "Touching the Earth Lightly" principles.
- Determine the optimum number of visitors to ensure quality experiences.
- Provide a range of unique experiences without significant impacts on biodiversity and scenery.
- Zone the Reserve to allow for different levels of intensity of use.
- Consolidate and minimize entry points.
- Where possible place new management and visitor facilities on the periphery of the Reserve.
- Provide opportunities to experience the Reserve on foot and or bicycles

## 3. Sensitivity analysis

As a first step in compiling the CDF a sensitivity analysis was done for the reserve. Biodiversity conservation, wilderness attributes, unique landscape features, and the legacy of development that includes obsolete structures, infrastructure considered as heritage in terms of the National Heritage Resources Act, all act as the primary

informants to land-use planning. The process analysed the overall reserve environment and assessed the range and scale of activities that the reserve can support. Where available the data extend beyond the Reserve estate and cover the complete domain. Ideally data should include the complete interface.
The following data used in the Sensitivity analysis is only the basic requirements and all available data should be sourced.

### 3.1. Reserve interface

- This layer should be divided into historic, current situation with regard to conservation and protected areas as well as the vision for the future (yesterday, today and tomorrow).
- A rudimentary reserve interface delineation exercise for reserves has been conducted and identified three Interface Zone categories:

➢ Priority Natural Areas:
- These are key areas for both pattern and process that are required for the long-term persistence of biodiversity in and around the reserve and include other protected and conservation areas.
- The zone also includes areas identified for future reserve expansion. Inappropriate development and negative land-use changes should be opposed in this area.
- Developments and activities should be restricted to sites that are already transformed. Only developments that contribute to ensuring conservation friendly land-use should be viewed favorably.
- This layer was derived from identification of intact natural areas around reserves as highlighted through the CBA assessment combined with an evaluation of areas for their corridor value.

➢ Catchment Protection Areas:
- These are areas important for maintaining key hydrological processes within the reserve.
- Inappropriate development (dam construction, loss of riparian vegetation etc.) should be opposed.
- Control of alien vegetation and soil erosion as well as appropriate land care should be promoted.
-
- This assessment is not very well geared at showing areas of reserve vulnerability to specific hydrological impacts, and the Aquatic Ecosystems of the reserve must be formally classified according to the six-tiered structure of the Classification System for Wetlands and other Aquatic Ecosystems in South Africa'.

➢ Viewshed Protection Areas:
- These are areas where development is likely to impact on the aesthetic quality of the visitor's experience in a reserve.
- Within these areas any development proposals should be carefully screened to ensure that they do not impact excessively on the aesthetics of the reserve.
- The areas identified are only broadly indicative of sensitive areas, as at a fine scale many areas within this zone would be perfectly suited for development.
- In addition, major projects with large scale regional impacts may need to be re-considered even if they are outside the Viewshed Protection Zone.
- This layer was derived from a visual analysis conducted for the reserve.

### 3.2. Reserve domain (Planning domain)

- Planning domain include current reserve boundaries (estate) with planned expansion for next 5-year planning period.

### 3.3. Reserve estate (Boundaries & Beacons)

- Layout plan of the reserve showing current boundary.
- All corners (beacons) should be listed with their co-ordinates in the legend[15].

### 3.4. Climate regions

- CSIR Köppen-Geiger map based on 1985 to 2005 South African Weather Services data on a very fine 1 km x 1 km grid.
- This layer was completed on a large scale for the complete Northern Cape Province.

### 3.5. Digital Terrain Model (topography)

- This was done on a 30m resolution and indicate areas with special natural features (waterfalls, canyons, plato's, escarpments, caves and rock formations).
- This layer also indicates all high points with names and or trig beacons.
- Areas that have particular aesthetic value were also mapped as polygons.

### 3.6. Geology map

- Fine scale units according to the maps provided by the Council of Geoscience were used and were geo-referenced to produce the layer for the reserve domain.

### 3.7. Land types & Soil map:

- The Land Type Map covering the reserve domain together with the Land Type Memoir with explanatory information on land types, modal profiles and climate zones were used to compile this layer.

### 3.8. Aquatic Ecosystems

- Classification and mapping according to SANBI System for Wetlands and other Aquatic Ecosystems in South Africa' were used to map the aquatic ecosystems.
- Distinction is made between Floodplain wetlands, Un-channeled valley-bottom wetlands, Wetland flats, Channeled valley-bottom wetlands, Depressions, Seeps and Rivers

### 3.9. Biomes and Bioregions

- The biomes and bioregions according to the reserve domain were mapped.

### 3.10. Vegetation Map

- This layer needs to broadly fit in with the new national classification.

[15] Only estimated position but needs to be replaced with surveyed co-ordinate according to deeds diagrams

- Sub-categories including management units and disturbed areas that will include degraded areas for the previous 5 years and all transformed areas were also included.

### 3.11. Special habitats:

- Known concentrations of species of special concern (breeding colonies, etc.) needs to be mapped.
- This will only be broadly mapped (complete habitat), and can be based on expert assessment.

### 3.12. Archaeological and Cultural resources:

- Brief survey with cultural/heritage sites points data.
- Specialist studies needed to classify the value of each site (national-local etc.) (Research proposals submitted).

### 3.13. Existing infrastructure, services and facilities:

- All visitor facilities provided in the reserve estate were mapped.
- All tourism facilities in reserve domain were mapped.
- All infrastructure within the reserve domain were mapped.
- All existing and potential access points were mapped.
- All services (potable water, Eskom power supply) within the reserve domain were mapped.

### 3.14. Visual Analysis:

- The view shed from the reserve domain was determined to establish the footprint of the reserve interphase.
- Visual analysis was also done to determine the view shed from existing visitor facilities and other infrastructure.
- The analysis was used to determine the aesthetic value.

## 4. Reserve Policies & Context

### 4.1. Reserve policies in respect of biodiversity conservation and the provision of facilities

- The second step in the CDF process were to determine the policies in respect of biodiversity conservation and the provision of facilities
- These policies are provided for as Appendix 1 to this IMP as it also needs to be approved as part of the IMP.

### 4.2. Determine what the short- and longer-term visitor requirements are

- This should be underpinned by a visitor survey which sets out the visitor profile, site patronage & visitor's concerns and requirements.
- This should be accompanied by a market survey of the demand for services and products.
- In order to be strategic, the planning process should look beyond the current boundaries and plan accordingly.
- It is also essential to determine the extent to which local (adjacent to reserve domain) and regional (reserve interface) influences will determine visitor requirements in the reserve.

## 5. Sensitivity-values mapping

### 5.1. Determine significant informants

- All the data layers collected during the first step of the CDF process (sensitivity analysis) were examined in terms of significance and sensitivity to development.
- The result has informed the use zone mapping and the placing, extent and the nature of visitor facilities.
- To determine and map sensitivity-values it must be emphasized that the data required to make this exercise defensible, is often inadequate or not available at all. Thus, the first step in the CDF process, the collecting and recording of the best available data should be seen as an extremely high priority for all reserves.

## 6. Use Zone map and development sites

### 6.1. Determine use zones

- This step of the CDF process is a requirement for all reserves in terms of the NEMPAA. A draft was exposed to all stakeholders and amended as required by the NEMPAA that is now submitted to the Executive Management for ratification and approval by the MEC as part of this IMP.
- This process was informed largely by the sensitivity map and reserve policies and planning principles.
- The generic set of visitor use zones for all reserves was used as a guideline.

### 6.2. Determine locations for future development of specific facilities

- Informed by the use zones, regional influences, visitor requirements, market needs and other informants, sites for potential visitor facilities and alternates were identified.
- At the same time potential transport routes and alternates are identified and the standards for all roads, footpaths and cycle routes will be set.
- Using the principle of SEA the alternate sites will be critically examined and the most suitable location decided on.
- The scale of development and the numbers of visitors need to be informed by an assessment of cumulative impacts for the whole reserve.

Based on available information, and in consultation with the RPT, the Conservation Development Framework (CDF) (Annexure 1) is presented as a strategic spatial planning framework for the GGNR and its surrounds. Annexure 1 describes the objectives, characteristics, uses, management guidelines and broad conservation and tourism infrastructural requirements designated for each of the use zones shown in Figure 24. Each of these zones has criteria for the type of activities, interaction with other users the type and size of facilities, the sophistication of facilities and the standard of roads.

## 7. Site plans

- As a final step in the planning process detailed planning will be undertaken for each site to produce a site plan for each visitor site which will inform the development of the specific facilities.
- The percent plans will determine the nature and scale of the facilities and will guide future phased expansion.

- In the long term it is proposed to produce a design manual for each reserve which will guide the style of al facilities and accompanying signage.

## 8. CDF Guide to Use Zones - General characteristics and objectives

### 8.1. Wilderness Zone

i. General Characteristics

- It complies fully with the criteria for the designation in terms of the NEMPAA.
- This is an area retaining an intrinsically wild and rugged appearance and character, or capable of being restored to such and which is undeveloped and without roads.
- Different wilderness blocks are usually separated from each other by management tracks, a necessity in areas with increased poaching pressure and the need to access remote areas by rangers.
- The area provides outstanding opportunities for solitude and has awe-inspiring natural characteristics.
- Areas where users have little chance of encountering any other human presence or group.
- Sight or sound of human activities outside zone barely discernible and at far distance; preferably no human impact or infrastructure inside the zone other than trails.
- Natural burning regimes, with no active fire management and road/firebreak infrastructure.
- Areas with minimal Invasive Alien Plant infestations, where IAP control can be done without vehicle access.
- Include sensitive or threatened habitats & species, important heritage sites and features in this low use zone when contiguous sites meet the criteria for wilderness.

ii. Conservation Objective:

- Wilderness zones are managed to protect and maintain natural and cultural biodiversity and the provision of environmental goods and services.
- Management interventions use a “minimum tool approach” and “no-trace-left” activities may be conducted.
- Maintain the zone in as near to a natural state as possible with no impact on biodiversity pattern or processes.
- Existing impacts on biodiversity either from historical usage or originating from outside the zone should be minimized.

iii. Aesthetic / recreational objectives

- To provide an experience of solitude in pristine landscapes with minimal evidence of human presence or use.
- Activities which Impact on the intrinsically wild appearance and character of the area, or which impact on the wilderness characteristics of the area (solitude, remoteness, wildness, serenity, peace etc.) will not be tolerated.

iv. Conservation and Special Management (Resource Utilisation)

- Minimal management requirements, typically natural burning regime.
- Prevent or restore visible trampling or any other impact.
- Rehabilitate non-essential roads to natural vegetation. Re-zone essential roads out of Wilderness Zoning.
- Resource Utilisation not compatible with the area.

v. Visitor Management

- Manage to conserve natural and cultural resources, ecological processes and wilderness integrity.
- Limited management interventions. Management measures may be carried out in extreme conditions, but tread lightly principles must apply.
- Intensive maintenance of visitor activities. Leave no trace ethic. Restrict numbers of visitors and allow for no-use rest periods if required.
- Active enforcement of reserve regulations.
- Since visitor use cannot be intensively managed, re-route trails away from any areas with sensitive local habitats or plant and animal species.
- Trail layout, design and construction must reduce maintenance requirements.

### 8.2. Remote Zone

i. General Characteristics

- These areas provide a "wilderness experience", but do not necessarily comply with the criteria for legal designation as wilderness.
- The same criteria as for wilderness although limited unimproved management tracks (mostly extreme 4x4) are allowed. There are no permanent improvements or any form of human habitation. Moderate levels of visibility obtrusiveness allowed.
- Popular view sites or natural and cultural attractions only accessible by extreme 4X4 self-drive or access by boat.
- Areas that may have natural burning regimes, with no active fire management and road/firebreak infrastructure or areas that require active fire management to stay within thresholds of concern.

ii. Conservation Objective:

- The conservation objective is to maintain the zone in a natural state with no impact on biodiversity pattern or processes. Existing impacts on biodiversity either from historical usage or originating from outside the zone should be minimized.
- Habitats with minimal management requirements, typically natural burning zones.
- To minimise and mitigate the effects of visitor use on the reserve's natural habitats and species and its cultural sites.

iii. Aesthetic / recreational objectives

- To provide an experience of relative solitude and wildness. Signs and sounds of the urban area are more obvious and encounters with other visitors are more frequent than in Wilderness. There may be some signs of infrastructure mainly of a heritage nature.
- Although less physical exertion is required, a reasonable level of fitness, self-reliance and experience is necessary.
- The nature of the experience is dependent on the quality of the natural environment.

iv. Conservation and Special Management (Resource Utilisation)

- May require active conservation management interventions erosion control, fire breaks and block burning.
- Intensive maintenance of visitor activities.
- Intensive conservation management activities undertaken (rehabilitation).
- Resource Utilisation not compatible with the area.

v. Visitor Management

- Manage to conserve natural and cultural resources, ecological processes and wilderness integrity.
- Limited management interventions. Management measures may be carried out in extreme conditions, but tread lightly principles must apply.
- Intensive maintenance of visitor activities. Leave no trace ethic. Restrict numbers of visitors and allow for no-use rest periods if required.
- Active enforcement of reserve regulations.
- Since visitor use usually cannot be intensively managed, re-route trails away from any areas with sensitive local habitats or plant and animal species. Trail layout, design and construction must reduce maintenance requirements.
- Trail layout, design and construction must reduce maintenance requirements.

### 8.3. Primitive Zone

i. General Characteristics

- Intrinsically wild appearance & character
- Areas where users will seldom encounter other human groups or presence with access controlled in terms of numbers, frequency and size of groups.
- Any visible human impact or infrastructure inside the zone is unobtrusive. Views of human activities and development outside of the reserve or zone may be audible or visible in places.
- The zone has limited access roads and the potential for basic small-scale self-catering accommodation facilities or small Rest Camps (which would generally have more sophisticated facilities).
- Areas remote from management centres, or otherwise difficult or expensive to access for management.
- Primitive areas are designated to buffer remote or wilderness areas from higher use areas and activities outside the reserve, as well as to protect most of the remaining sensitive areas from high levels of tourist activity.
- Almost all highly and moderately sensitive environments that were not included within the Wilderness or Remote zone are included in this zone.
- Primitive areas are also designated in valleys with relatively low environmental sensitivity to allow access to remote areas as well as to contain the infrastructure required for management and tourist activity in these areas (e.g. trail huts and access roads).
- Areas that might not meet the criteria for Wilderness or Remote but can serve as undeveloped visual buffers for these zones.
- Areas that may have natural burning regimes, with no active fire management and road/firebreak infrastructure OR areas that require active fire management to stay within thresholds of concern.

ii. Conservation Objective:

- The conservation objective is to maintain the zone in an almost completely natural state with little or no impact on biodiversity processes, and very limited and site-specific impacts on biodiversity pattern.
- Existing impacts on biodiversity either from historical usage or originating from outside the zone should be minimized.
- To limit visitor use, numbers and infrastructure to minimise impact in sensitive environments. To reduce need for management of users and visitor impacts.
- Allows for minimal or more intensive biodiversity management intervention.

- Include extensive areas of sensitive or threatened habitats & species in this low use zone when sites do not meet the criteria for wilderness.

iii. Aesthetic / recreational objectives

- The aesthetic/recreational objectives for the zone specify that activities which impact on the intrinsically wild appearance and character of the infrastructure/facility should be designed to fit in with the environment within which it is located in order to avoid aesthetic impacts.
- To provide an experience of solitude in natural landscapes with little nearby evidence of human presence.
- Can provide access to and buffer Wilderness and Remote Zones.
- To provide easy access to experience the reserve's natural landscapes, habitats, species and heritage resources.
- Limited range of activities and relaxation in a natural environment.

iv. Conservation and Special Management (Resource Utilisation)

- Habitats with lower or higher management requirements.
- Usually remote areas so roads and trails should be planned and constructed assuming infrequent maintenance.
- Intensive maintenance of visitor activities and facilities
- Prevent or restore visible trampling or any other visitor impact.
- Rehabilitate non-useful roads to natural vegetation
- Sustainable use can be appropriate under controlled circumstances subject to a formal assessment and application in accordance with DAERL policies.

v. Visitor Management

- Manage to conserve natural and cultural resources, ecological processes and wild appearance & character.
- Restrict numbers of visitors and allow for no-use rest periods if required.
- Active enforcement of reserve regulations.
- All facilities will be small, very basic, self-catering and distributed to avoid contact between users.
- There should be limited if any interaction between groups. Visible & audible human impacts from adjacent zones should be mitigated.
- Since visitor use can be intensively managed, trails can be routed to access areas with sensitive local habitats or plant and animal species.

### 8.4. Quiet Zone

i. General Characteristics

- The same as for primitive with the exception that this zone is characterised by unaccompanied (or accompanied under some circumstances) non-motorised access, where visitors can walk or cycle and experience nature without the intrusion of any form of motorised transport.
- Visitor numbers and density are higher than in the primitive zone and contact between visitors is frequent.
- This zone provides experiences of a relative sense of solitude and relaxation in an environment that is openly exposed to the sights of the surrounds.
- There is less of a challenge and the zone is easier to access and less physical exertion is required.
- The quality of the experience is less dependent on the quality of the natural environment than primitive with the provision of basic facilities as for the leisure low intensity zone.

- It also serves as a buffer to the adjoining primitive or farm/urban area.

ii. Conservation Objective:

- The same as for primitive.

iii. Aesthetic / recreational objectives

- The same as for leisure low intensity

iv. Conservation and Special Management (Resource Utilisation)

- The same as for primitive.

v. Visitor Management

- The same as for leisure low intensity with the exception of no motorised transport

### 8.5. Leisure Zone Low Intensity

i. General Characteristics

- Areas with extensive lower sensitivity habitats:
- Areas able to accommodate higher numbers of visitors regularly, with no identified sensitive or regionally rare biodiversity.
- Popular view or access sites.
- Extensive areas able to accommodate roads, trails and tracks without high risk of erosion and degradation.
- Areas accessible for regular management of roads and trails.
- Areas where roads and trail infrastructure can be located with low visibility from the surrounding landscape, particularly from adjacent Primitive or Wilderness Zones.
- Usually areas that require active fire management with firebreaks to stay within thresholds of concern, but may also include natural burning regimes.
- Facilities along roads are limited to basic self-catering picnic sites with toilet facilities.
- Low intensity leisure areas are designated in current game viewing loops, around current accommodation and other associated infrastructure outside of the main camps, and along existing public access roads where they form part of the reserve road network.
- Areas with a contained, low-density development footprint.
- The underlying characteristic of this zone is motorised self-drive access with the potential for roads, trails and small to medium scale recreational facilities and self-catering accommodation units in small basic camps without modern facilities such as shops and restaurants.

ii. Conservation Objective:

- The conservation objective is to mitigate the biodiversity impacts of the relatively high levels of tourism activity and infrastructure that are accommodated within this zone through careful planning and active management, and to ensure that both the negative effects of the activities and infrastructure are restricted to the zone, and that the zone is maintained in a generally natural state that is in keeping with the character of a protected area.
- To manage and direct visitor use, and plan infrastructure to minimise impact on sensitive environments.
- To actively manage users and visitor impacts. Allows for minimal or more intensive biodiversity management intervention.
- Provide additional protection to localised sensitive or threatened habitats, species or other features by Special Management Overlays

- Deviation from the natural / pristine state should be minimized and limited to restricted impact footprints as far as possible. However, it is accepted that some damage to the biophysical environment associated with tourist activities and facilities will be inevitable.

iii. Aesthetic / recreational objectives

- The aesthetic / recreational objectives for the zone specify that although activities and facilities will impact on the wild appearance and reduction of the wilderness characteristics of the area (solitude, remoteness, wildness etc.) is inevitable, these should be managed and limited to ensure that the area still provides a relatively natural outdoor experience.
- To provide easy access to natural landscapes with low expectation of solitude at all times. Can buffer between development and wilderness or Primitive Zones.
- To provide a wide range of medium sized accommodation, facilities, activities and services with relaxation in a relatively natural environment.
- Although it is inevitable that activities and facilities will impact on the wild appearance and reduce the wilderness characteristics of the area, these should be managed and limited to ensure that the area still provides and relatively natural outdoor experience.

iv. Conservation and Special Management (Resource Utilisation)

- Habitats with lower or higher management requirements.
- May be natural burning zones. Prevent or restore visible trampling or any other visitor impact.
- Rehabilitate non-useful roads to natural vegetation.
- Limited conservation management activities undertaken.
- Sustainable use of natural resources may, where feasible, be considered on application, and subject to a formal permitting arrangement.

v. Visitor Management

- More frequent monitoring of these areas is necessary to prevent damage or degradation.
- More frequent footpath maintenance must be scheduled for busy routes, with particular attention paid to use of railings or other access control to prevent damage to sensitive areas.
- Unless visitor access can definitely be intensively guided and managed, re-route trails away from any sensitive local habitats or plant and animal species.
- Trail layout, design and construction must be specified to reduce maintenance requirements under higher use.
- Visible & audible human impacts to adjacent Primitive or Wilderness Zones should be mitigated.
- Active enforcement of reserve regulations.
- Active visitor control.
- Risk management (e.g. fire safety) measures implemented.
- Development footprint actively contained.

### 8.6. Leisure Zone High Intensity & Reserve administration

i. General Characteristics

- The main characteristic is that of a high-density tourist development node with amenities such as shops, restaurants and interpretive centres.

- Areas where new infrastructure can be located with low visibility from the surrounding landscape. Areas not visible from Primitive or Wilderness Zones.
- Areas where risk of fire damage to infrastructure is low or can be mitigated without unacceptable impacts on surrounding environment.
- This is the zone where more concentrated human activities are allowed and is accessible by motorised transport on high volume transport routes.
- Major provincial roads cutting through the reserve should be in the high intensity leisure zone.
- Areas with extensive degraded or transformed footprints.
- Areas with an extensive high-density development footprint.
- Areas with limited biodiversity significance.
- Areas where risk of fire damage to infrastructure is low, or can be mitigated.
- Areas that have access to potable water and Eskom power, and not sensitive to disposal of treated wastewater.
- Areas that is easily accessible from the reserve entry points.
- Areas with low visibility from the surrounding landscape.

ii. Conservation Objective:

- The main focus is to ensure a high-quality visitor experience; however, the conservation objectives still require that the high levels of tourism activity and infrastructure that are accommodated within this zone are planned and managed to minimize the effect on the surrounding natural environment, and that the zone must still retain a level of ecological integrity consistent with a protected area.
- To actively manage users and visitor impacts on adjacent sensitive areas.
- To contain the impacts and footprint of reserve visitor facilities, services and infrastructure.
- Deviation from the natural / pristine state should be minimized and limited to restricted impact footprints as far as possible. However, it is accepted that some damage to the biophysical environment associated with tourist activities and facilities will be inevitable.
- To define the location of the infrastructure and facilities for reserve administration.

iii. Aesthetic / recreational objectives

- To provide access to adjacent natural landscapes with no expectation of solitude.
- The aesthetic/ recreational objectives for the zone specify although the high visitor numbers, activities and facilities will impact on the wild appearance and reduction of the wilderness characteristics of the area (solitude, remoteness, wildness etc.) is inevitable, these should be managed and limited to ensure that the area generally still provides a relatively natural outdoor experience.
- To provide a wide range of medium sized to large scale accommodation, facilities and associated attractions and conveniences.
- Comfortable and sophisticated facilities while retaining a natural ambiance.

iv. Conservation and Special Management (Resource Utilisation)

- Provide access and generate maximum revenue.
- Management should aim to mitigate the biodiversity impacts of the high number of visitors only in sensitive areas (if any) identified by Special Management Overlay.
- These are highly transformed habitats with lower management requirements.

- Natural fire exclusion areas.
- Prevent or rehabilitate visible trampling or any other visitor impact.
- Plan for a compact overall development footprint, avoiding dispersed infrastructure that will increase fire risk and/or environmental footprint. This is most critical in fire-prone environments.
- Sustainable use unlikely to be compatible.

v. Visitor Management

- Management action will focus mostly on maintenance of facilities & providing high quality experiences.
- Use infrastructure solutions such as railings, hard surfacing and boardwalks to manage undesirable visitor impacts.
- Frequent landscape, footpath and road maintenance must be scheduled for high impact areas.
- Active enforcement of reserve regulations.
- Risk management (e.g. fire safety) measures implemented.
- Active visitor control.
- Visible impacts to adjacent Zones should be mitigated.

### 8.7. Azonal - Special Protection Zones (Species, Habitats, Heritage)

i. General Characteristics

- Sites or areas where uncontrolled public access is undesirable due to the presence of threatened species and habitats or sensitive heritage features.
- Sensitive habitat types identified for special protection in order to reduce any potential loss and to priorities rehabilitation work in these areas.

ii. Conservation Objective:

- Protection of species, habitats or heritage sites of special conservation concern.
- No deviation from natural / pristine state is allowed, Infrastructure, especially paths and viewpoints should be designed to limit the impact of large numbers of visitors on the biophysical environment.

iii. Aesthetic / recreational objectives

- Na

iv. Conservation and Special Management (Resource Utilisation)

- Restrictions on access and numbers of visitors may be enforced.
- Active conservation and heritage management activities undertaken, as required.

v. Visitor Management

- Where visitor access is permitted, strict access control is required to delimit access routes, and, if necessary, screen visitors; i.e. hides, boardwalks, screened routes, and paths with railings may be appropriate.

### 8.8. Azonal - Special Management Zones (Resource Utilisation)

i. General Characteristics

- Demarcated sites or areas where seasonal utilisation of natural resources (e.g. harvesting of grass for thatching, collection of reeds for building material, hunting of wildlife for trophies or meat, angling etc.) takes place.
- Demarcated sites or areas where bait collection will be allowed
- Regulation and control of resource utilisation (commercial and/or community based), including hunting.
- Seasonal restrictions on access may be enforced.

- Active management of resource utilisation permits.

### 8.9. Azonal - Special Management Zones (Private Land)

i. General Characteristics

- These are areas of land which are fenced into the reserve through stewardship programs or agreements with the Department, but which are owned by private individuals, companies, trusts, communities, etc.
- A co-management agreement should be drawn up and management should be implemented through negotiation with the Co Management Committee.
- While owners are not restricted to this zone, they do have exclusive use in it.
- Reserve Management, however, retains access and all management rights in these zones at all times.
- No access is allowed to these areas unless by prior arrangement with the landowners. Reserve Management, or their nominated agent, will obviously have access for control purposes.
- The owner retains any agreed development rights subject to an Environmental Impact Assessment (EIA) and possible re-negotiation of fees and carries any costs associated therewith.

## 9. CDF Use Zones - Desired State Limits of acceptable change (LAC)

| Zone | Limits of acceptable change: Biophysical | Limits of acceptable change: Aesthetics and recreational |
|---|---|---|
| Wilderness Zone<br>Remote Zone | The zone should be kept in a natural state with no impact on biodiversity pattern or processes. | The area should be kept in a natural state, and activities which impact on the intrinsically wild appearance and character of the area, or which impact on the wilderness characteristics of the area (solitude, remoteness, wildness, serenity, peace etc.) should not be allowed. Controlled access, only on foot for visitors. Established footpaths where erosion maybe a problem. Essentially undeveloped and without roads |
| Primitive Zone | Deviation from a natural/pristine state should be small and limited to restricted impact footprints and existing impacts should be reduced. | Any facilities constructed in these areas, and activities undertaken here should be done in a way that limits environmental impacts. Road and infrastructure specifications should be designed to limit impacts. Infrastructure, especially paths and viewpoints should be designed to limit the impact of large numbers of visitors on the biophysical environment. |
| Quiet Zone | The zone should be maintained in a generally natural state, but some deviation from a natural/pristine state is allowed. Infrastructure should only be allowed within a restricted development footprint, and infrastructure, especially paths and viewpoints should be designed to limit the impacts of large numbers of visitors on the biophysical environment. | The zone should retain a generally natural appearance and character, and activities which impact on this should be restricted. In particular visitors are not allowed motorised access to this zone. It is however recognized that the presence of larger numbers of visitors and the facilities they require, may impact on the feeling of wildness found in this zone. |
| Leisure Low Intensity | Although it is inevitable that activities and facilities will impact on the wild appearance and reduce the wilderness characteristics of the area (solitude, remoteness, wildness etc), these should be managed and limited to ensure that the area still provides a relatively natural outdoor experience. | The area should be managed to provide a relatively natural outdoor experience. Although, it is inevitable that the high visitor numbers, activities and facilities will impact on the wild appearance, the aesthetics of the zone still need to be maintained in a sufficiently natural state to ensure that the overall objectives and purpose for proclamation of the reserve are not compromised. |
| Leisure High Intensity | The zone must retain a level of ecological integrity consistent with a protected area. The greatest level of deviation from a natural/pristine state is allowed in this zone, and it is accepted that damage to the biophysical environment associated with tourist activities and facilities will be inevitable, however no activities or infrastructure should be allowed which compromise the overall objectives and purpose for proclamation of the reserve. | |

## 10. CDF Use Zones - Guidelines for Managing Recreational Activities

| Recreational Activities | Interaction between users groups | Off-road self-drive | Mountain Biking | Horse Riding | Hiking | Walking (Day trails) | Running | Bouldering Kloofing | Traditional & Free Climbing | Sport Climbing | Guided nature / heritage tours | Hang & Paragliding | Overnight | Caravanning / camping | Picnic and braaing | Row boats | Canoes and kayaks | Sailing (large yachts) | Dinghies and Sail board (wind surfing) | Power boating (fuel driven) | Swimming & Water sports | Angling | On –road self-drive | Tourist route Busses | Workshop or conference |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Wilderness Zone | None | | | | 1 | | | | 1 | | | | 2 | | | | 3 | | | | | | | | |
| Remote Zone | None to low | 4 | | | 1 | 1 | 1 | 1 | 1 | | 1 | | 2 | | | | 3 | | | 8 | | | | | |
| Primitive Zone | Low to medium | 4 | 4 | 4 | 5 | 4 | 4 | 4 | 5 | 4 | 5 | 7 | 6 | | 4 | 7 | 7 | | 7 | 8 | 8 | 8 | 4 | | |
| Quiet Zone | Medium | | 4 | 4 | 9 | 4 | 4 | 4 | 9 | | | 7 | 6 | 6 | | 7 | 7 | | 7 | | 8 | 8 | | | |
| Leisure Low Intensity | Frequent | 4 | 4 | 4 | | | | | | 10 | | 7 | | | | 7 | 7 | | 7 | 10 | 10 | 8 | 4 | | |
| Leisure High Intensity | Frequent | | 4 | | | | | | | 10 | | 10 | | | | | | | | 10 | 10 | 8 | | | |

| | |
|---|---|
| | Restricted activities - If an activity is not listed in the table, then it is not permitted |
| | Controlled activities - Suitable under management conditions |
| | Unrestricted activities - Very suitable |
| 1 | Only groups >3 and <10 people per group on designated trails “Leave-no-trace” activities: "Carry in, Carry out" principle for all food and waste. |
| 2 | Overnight hiking, without any sleeping facilities, formal campsites, or with only basic, un-serviced shelters. No fires. |
| 3 | Entry is by foot or by river from outside the zone provided all equipment is carried in and out. |
| 4 | Only on designated routes or sites, seasonal restrictions if needed for safety |
| 5 | Only small groups <16 people per group |
| 6 | Basic, un-serviced, accommodation (cabin, huts) or formal campsites (tent camps). Isolated, small, unobtrusive facilities for up to 16 guests on restricted footprints. Designated fire places |
| 7 | From launch sites provided or by river from outside the zone or provided all equipment is carried in and out. |
| 8 | Only on designated sites. No skiing and restrictions on size of outboard motors. No beaching on islands or bank. Angling regulations applicable. |
| 9 | Only small groups <8 people per group |
| 10 | Skiing can be allowed and restrictions on size of outboard motors. . |

| infrastructure and Facilities | Signage | Trails | Water ways, jetty's | Horse, donkey cart, pack animals | Shelters Natural | Tracks | Internal fences & firebreaks | Interpretive & Educational Centres | Launching sites | Refuse bins | Picnic site | Accommodation and Houseboats | Camping & Caravan sites | Bird/Game hides or view points | Rustic Campsites | Interpretive signage | Toilets | Roads | Access Points Reception offices, gate huts | Lodges and Rest Camps | Conference | Bulk infrastructure | Services (power, waste management, water, etc.) | Food & Beverages Outlet, Equipment Rental | Curios & Craft Sales | Air strip | Swimming pools and water parks | Fuel supply pump |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Wilderness Zone | 6 | 7 | 2 | 3 | 1 | | | | | | | | | | | | | | | | | | | | | | | |
| Remote Zone | 6 | 7 | 2 | 3 | 1 | 5 | 5 | | | | | | | | | | | | | | | | | | | | | |
| Primitive Zone | 6 | 7 | 2 | 3 | 1 | 8 | 10 | 10 | 10 | 13 | 10 | 11 | | 10 | 10 | 10 | 10 | 9 | | | | 19 | 19 | | | | | |
| Quiet Zone | | | | | | | | | | | 10 | 11 | | 12 | 12 | 12 | 13 | | | | | 19 | 19 | | | | | |
| Leisure Low Intensity | | | | | | | | | | | 14 | 14 | 14 | | | | 13 | 16 | 17 | 15 | | 19 | 19 | | | | | |
| Leisure High Intensity | | | | | | | | | | | | | | | | | | 17 | | 4 | 18 | | | | | 20 | | |

| | |
|---|---|
| | Restricted activities - If an activity is not listed in the table, then it is not permitted except for temporary structures |
| | Controlled activities - Suitable under management conditions |
| | Unrestricted activities - Very suitable |
| 1 | No structures except small existing buildings of cultural, historic or aesthetic value. Can be used as un-serviced sleeping shelters for hikers & provided with composting toilets. |
| 2 | Use of non-motorised canoe or flotation device on rivers can be acceptable where entry is by foot or by river from outside the zone. |
| 3 | Use of donkeys, horses or other pack animals with an official guide only on designated historical routes and trails, or existing tracks, and only where this will not cause trampling, erosion or any degradation. |
| 4 | High density tourist resorts with modern amenities including restaurants, curio and refreshment stalls, shops, education centres and high volume roads. Infrastructure should be designed to reduce impacts of higher visitor numbers and planning should ensure that area still provides relatively natural outdoor experience. |
| 5 | No roads but limited vehicle tracks mainly on fire breaks. Unguided visitor access only on foot. Only allows for 4x4 routes or vehicle access if specifically considered and noted. |
| 6 | No signage except small, unobtrusive markers for closed routes, or at trail junctions. |
| 7 | Narrow permanent walking trails. Visitors have freedom to use various trails. The traditional wilderness concept of access without defined trails is unsafe and rapidly results in undesirable user-created trails and erosion. |
| 8 | All roads, tracks or trails to be located and constructed to reduce maintenance, visibility and erosion. Where un-surfaced tracks will result in erosion, use concrete strip or interlocking pavers to stabilise. Re-route unstable or erosion-prone road sections if this will lower long-term visual and environmental impact. |
| 9 | New roads for visitor access only justified if also required for management access or firebreaks. Avoid wide surfaced roads or roads and tracks wider than required for a single vehicle. |
| 10 | Deviation from natural state to be minimised. Infrastructure should not be visible from Wilderness Zones. Designated fire places with services. |
| 11 | May provide isolated, small, unobtrusive accommodation facilities for up to 16 guests on restricted footprints, |
| 12 | Unaccompanied non-motorised access to specific facilities. Vehicle access on dedicated routes, with pedestrian access from parking areas or adjacent Development Zones. |
| 13 | Facilities maybe provided in high use areas. |

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|---|---|
| **14** | Self-catering accommodation and camping for up to 100 guests in total at any time |
| **15** | Single small Rest Camps for up to 30 guests are permissible if all facilities are contained in a compact footprint, this represents the total accommodation for the zone, and any restaurant or catering facilities are for overnight guests only. |
| **16** | Roads open to the public should be accessible by 2x4 sedan. Roads in this zone should be surfaced to reduce management cost and environmental impacts. |
| **17** | Accessible by motorised transport (car/bus) on high volume transport routes, including delivery vehicles. If possible roads should be narrow with separate incoming and outgoing routes; otherwise double vehicle width roads are strongly advisable for safety and usability. |
| **18** | Meetings, workshop or -conference activities for no more than the number of people that can be accommodated overnight in the zone. |
| **19** | Location of infrastructure and facilities for Reserve Administration & especially conservation management facilities (storage facilities, workshops, game capture and holding facilities). Not compatible with tourism and tourism access. |
| **20** | The Reserve Airspace is regulated by Section 47 of the Protected Areas Act as 2500 ft. (762 meters) above the highest point. |

## 11. CDF Use Zones - Guidelines for Managing External Commercial Activities & Organised Events

| Recreational Activities | Film shoots | Group Events | Helicopter tours | Cultural events | Specialised adventure events | Environ Education | Commercial passenger boats (ferries) | Houseboats (private and commercial) | Research |
|---|---|---|---|---|---|---|---|---|---|
| **Wilderness Zone** | | | | | | | | | |
| **Remote Zone** | **2** | | | 1 | 1 | 1 | | | 1 |
| **Primitive Zone** | 3 | | | 1 | 1 | 1 | | | 1 |
| **Quiet Zone** | | | | 1 | 3 | 1 | | | 1 |
| **Leisure Low Intensity** | 3 | | | 3 | 3 | 3 | | | 1 |
| **Leisure High Intensity** | 3 | 3 | 4 | 3 | **3** | | 3 | 3 | 1 |

| | |
|---|---|
| | Restricted activities - If an activity is not listed in the table, then it is not usually permitted |
| | Controlled activities - Suitable under management conditions. The type of activities may be considered but not necessarily approved. |
| | Unrestricted activities - Very suitable |
| **1** | The number of events, the number of participants and frequency of events to be strictly controlled |
| **2** | Restricted to nature and scientific films. All equipment to be carried in and out. |
| **3** | Activities should not interfere with designated use of the zone |
| **4** | The Reserve Airspace is regulated by Section 47 of the Protected Areas Act as 2500 ft (762 meters) above the highest point (900 meters). |

## 12. CDF Visitor Site Categories – Role, Facilities and Management Guidelines

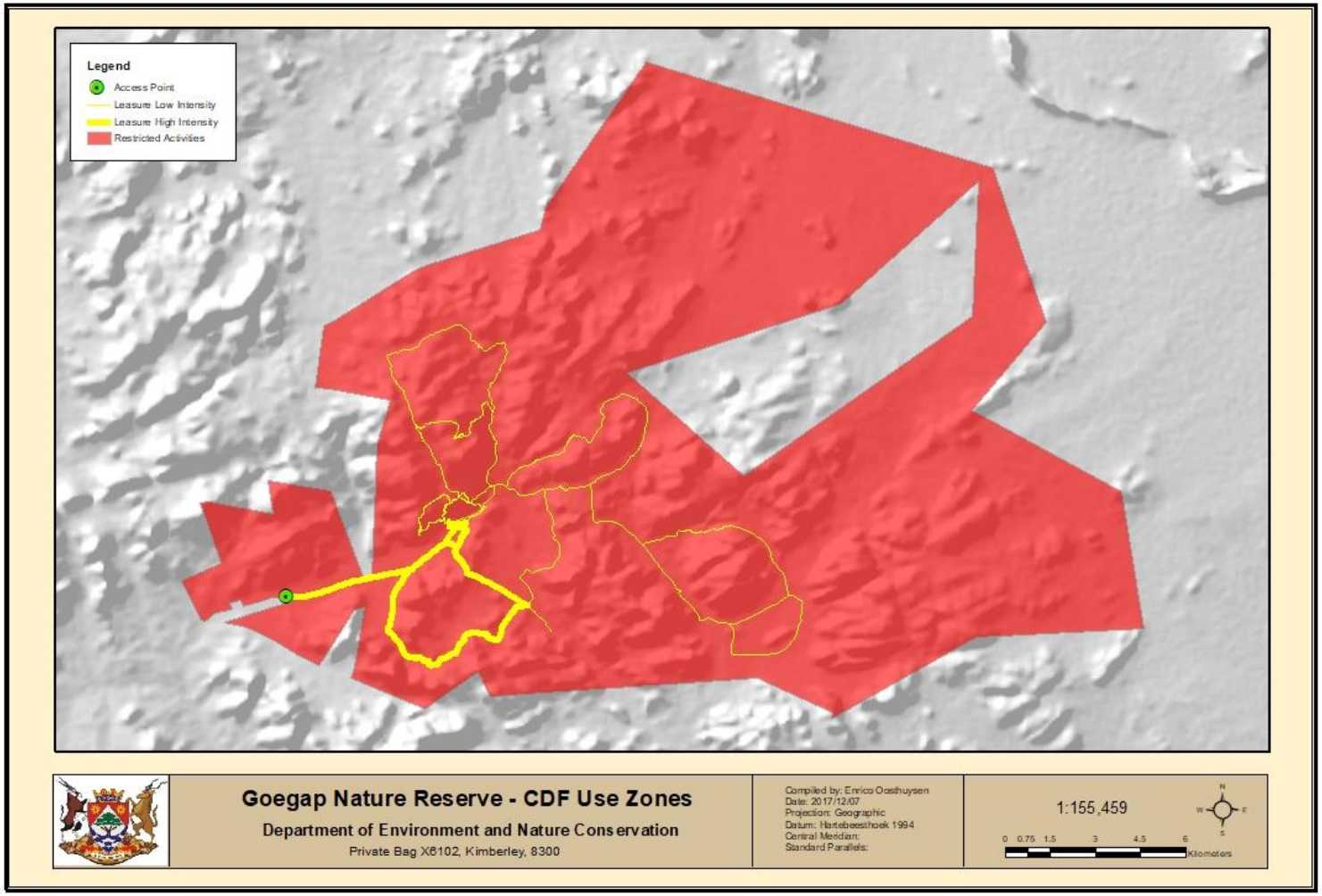
| Site | Role | Facilities | Applicable zones | Guidelines |
|---|---|---|---|---|
| Tourist Destination | Main tourist destinations. Seeing and experiencing specific attractions. Short duration visit. | Appropriate facilities to deal with large numbers of tourists e.g. parking, ablutions, interpretation, footpaths, transport systems, refreshments. | High Intensity Leisure | Due to high pressure of tourist volumes and the sensitive nature of the surrounds, these sites are maintained as destinations of high volumes and short duration. Facilities should not detract from the intrinsic qualities of the area. |
| Mixed Use | Serves a variety of purposes - recreation, leisure, transit, education, refreshments. Varies in scale and purpose according to context | Ablutions, parking, food outlets, interpretative centres, education facilities, recreation facilities (picnic & braai). Administration facilities. | High Intensity leisure, Low Intensity leisure, Primitive | Length of stay is longer than for Tourist Destinations and provides for a range of activities. |
| Picnic / braai, Camping | Provides braai and/or picnic facilities. Rustic camping sites | Only picnic and braai facilities, tables with seating and ablutions. No other facilities. | Low Intensity leisure, Primitive | Provides for safe and secure family orientated facilities for low intensity leisure activities |
| Entry Point | Points of entry which can be categorised as: -Pay Points, -Gateways, -Minor Access Points and -Local Access Points | Parking with signage & information. Ablutions and trading at selected sites. | Low Intensity Leisure | Maintained as entry points Not suitable to diversify into Mixed Use sites. Management of security is required |
| Accommodation | Provides accommodation from which adjoining zones can be accessed. | Small (max. 16 beds) accommodation units, preferably self-catering for visitors | Low Intensity leisure, Primitive Quiet | The accommodation should be appropriate to the surrounding environment. |

## 13. CDF: Management Guidelines for the Reserve Movement Network

| Category | Characteristics | Applicable zones | Guidelines |
|---|---|---|---|
| Transit route | A high volume road used to gain access to high intensity visitor sites. Used by delivery, service and management vehicles to tourist and admin facilities. Commercialised coach tours are allowed. | High Intensity leisure | Managed to allow tourism and management access to destinations. Minimal facilities such as view sites along road. The view shed is included in zone for all new roads and where possible for existing roads. |
| Tourist Roads | These may be surfaced or un-surfaced roads used for game viewing and sight-seeing in sedan vehicles and microbuses. Self-drive and tours. Busses are allowed, but no commercial coach tours. | Low intensity leisure | View sites and interpretative boards at suitable sites. Parking to access footpaths and facilities. The view shed is included in zone for all new roads and where possible for existing roads. |
| Limited access roads | These may be surfaced or un-surfaced roads used only for accessing campsites and accommodation | Primitive Quiet | Minimal facilities such as view sites along road. Directional and regulatory signage provided. |

| | | | |
|---|---|---|---|
| Tracks | These may be two wheel or 4x4 tracks. Used as footpaths and for activities such as Mountain Biking, horse riding and approved scenic/game drives on extreme 4X4 roads requiring specialised driving skills under controlled conditions. | Remote<br>Primitive<br>Quiet | These tracks are used primarily for recreational access. There must be strict management guidelines for the use of vehicles. Generally maintenance is low key to allow the road to be as unobtrusive as is possible. Directional and regulatory signage provided. |
| Reserve Roads | These may be two wheel or 4x4 tracks or roads used only for management purposes. | Remote<br>Primitive<br>Quiet | These roads are used only for management access. Generally maintenance is low key to allow the road to be as unobtrusive as is possible. No directional and regulatory signage provided. |
| Paths | Used as footpaths and for activities such as Mountain Biking, horse riding<br>. | Remote<br>Primitive<br>Quiet | These paths are used primarily for recreational access. Generally maintenance is low key to allow the paths to be as unobtrusive as is possible. Directional and regulatory signage provided. |
| Notes: | | | |
| 1. The movement network provides for linking visitor sites across different use zones as determined through local planning processes and statutory approvals (e.g. EIA and HIA) | | | |
| 2. If the Reserve's use zones are traversed by public roads. Joint management arrangements will be sought between the Reserve and the relevant authorities to uphold the experiential qualities of the zone that the road traverses. | | | |

**Figure 1. GGNR Use Zone Map 2019 -2024**



# ANNEXURE 2: Annual Plan of Operation (APO) for 2020 to 2024 planning cycle

| CATEGORY | PRIORITIES |
|---|---|
| **HIGH PRIORITY -** Once off activity | Critical to the effective management of the reserve. Funding and resources should be secured to implement these actions. As reflected in the Management Effectiveness Tracking Tool (METT) |
| **HIGH PRIORITY -** Routine activity | |
| **MEDIUM PRIORITY** | Important to the effective management of the reserve, but its implementation may be delayed because of limited funds or resources. |
| **LOW PRIORITY -** Activity on hold | Constitutes good management practice, but not necessarily critical or important to reserve management effectiveness. Implementation may be dependent on availability of external funding or support. |
| **COMPLETED** | Activities Completed for the 5 year cycle to be assesst during the following 5-year planning cycle |

| KPA 1: Biodiversity and Heritage Conservation | | | | | | | | | R631 821,85 | R1 338 769,35 | R2 453 076,30 | R2 340 293,04 | R1 969 131,38 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Objective 1.1 Obtain Biodiversity knowledge about the PA** | | | | | | | | | R347 474,13 | R511 007,91 | R725 366,37 | R837 486,40 | R842 006,16 |
| # | Management action | Management targets | Key performance indicators Mett-Sa Vers 3 | Activity planned & Priority | | | | | Cost Estimates | | | | |
| | | | | 2019 | 2020 | 2021 | 2022 | 2023 | 2019/2020 | 2020/2021 | 2021/2022 | 2022/2023 | 2023/2024 |
| 1 | Identify, and prioritise the biodiversity management requirements of the PA for baseline information and monitoring. | Research needs have been identified and projects relevant to all management needs are being undertaken, enabling the monitoring of results of management actions against set objectives. | 3.1 Management Research Programme | | | | | | R 33 822,85 | R 86 665,66 | R 26 264,69 | R 27 577,93 | R 37 089,17 |
| 2 | Develop and maintain a targeted research and monitoring program relevant to management needs to guide biodiversity management. | There is an established Monitoring & Evaluation program which is fully implemented with PA management participation and is used to guide adaptive management. | 3.1.1 Monitoring and Evaluation Programme | | | | | | R 39 690,88 | R 41 675,43 | R 43 759,20 | R 45 947,16 | R 57 913,65 |
| a | *Compile archive of all research completed on the site.* | | | | | | | | | | | | |
| 3 | Facilitate access for and assist external research institutions to implement the priority research and monitoring requirements of the reserve. | | | | | | | | | | | | |
| a | *Facilitate controlled access for external institutions undertaking relevant research and monitoring programs within the reserve.* | There is an established working relationship with researchers and regular liaison leads to research results feeding into management decisions. | 3.1.2 Relationship with researchers | | | | | | R 6 355,53 | R 11 684,85 | R 7 016,15 | R 9 199,07 | R 9 659,02 |
| b | *Create DB with potential institutions to assist with outsourced research projects.* | | | | | | | | | | | | |
| 4 | Collect and update key baseline information - Monitoring & Research in PA Estate | | | | | | | | | | | | |
| a | *01 BMP 1 Biodiversity mechanisms* | Information and the understanding thereof concerning key species, habitats, ecosystems of the PA supports the achievement of all biodiversity objectives. | 1.4. Biodiversity knowledge and understanding | | | | | | R267 604,86 | R 370 981,97 | R648 326,32 | R754 762,24 | R737 344,32 |
| b | *02 BMP 2 SSC* | | | | | | | | | | | | |
| c | *03 BMP 3 Freshwater and Wetlands* | | | | | | | | | | | | |
| d | *04 BMP 4 IAS* | | | | | | | | | | | | |
| e | *05 BMP 5 Resource Use Tourism* | | | | | | | | | | | | |
| f | *07 BMP 7 Degradation Rehabilitation* | | | | | | | | | | | | |
| g | *08 BMP 8 Cultural Heritage* | | | | | | | | | | | | |
| h | *09 BMP 9 Climate and Climate Change* | | | | | | | | | | | | |

| Objective 1.2: Restoration and mitigation of degradation | | | | | | | | | R121 240,61 | R476 120,66 | R1 264 140,09 | R651 854,99 | R360 446,32 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| # | Management action | Management targets | Key performance indicators Mett-Sa Vers 3 | Activity planned & Priority | | | | | Cost Estimates | | | | |
| | | | | 2019 | 2020 | 2021 | 2022 | 2023 | 2019/2020 | 2020/2021 | 2021/2022 | 2022/2023 | 2023/2024 |
| 1 | Compile an invasive species control and eradication plan in terms sec. 76 of the NEM: Biodiversity Act, 2004 | | | | | | | | | | | | |
| a | *Eradication plan for damage-causing and problem animals in PA* | There is a plan for addressing control and eradication of invasive species within the PA. | 2.6 Restoration of degraded areas | | | | | | R - | R - | R - | R - | R - |
| b | *Eradication plan for invasive alien plant infestations in PA* | No spread or densification of excotic encroachment. Extent, by density, of invasive alien plants known | | | | | | | | | | | |
| 2 | Impliment an invasive species control and eradication plan in terms sec. 76 of the NEM: Biodiversity Act, 2004 | | | | | | | | | | | | |
| a | *Implement, environmentally friendly measures to reduce the impacts of any damage-causing and problem animals (notably Donkeys, Cattle, Dogs).* | No spread or densification of excotic encroachment. | 2.6 Restoration of degraded areas | | | | | | R - | R 37 630,30 | R 72 954,50 | R 72 911,68 | R 94 518,62 |
| b | *Eradicate, on an ongoing basis, all known invasive alien plant infestations occurring in the reserve* | | | | | | | | | | | | |
| 3 | Compile Rehabilitation Programme BMP 7 | There is a plan for addressing degraded areas within the PA | 2.6 Restoration of degraded areas | | | | | | R 7 938,18 | R - | R - | R - | R 9 648,90 |
| 4 | Rehabilitation or mitigation of degradation in PA | | | | | | | | | | | | |
| a | *Identify and map all degradation as part of BMP 4 and BMP 7* | There is a plan for addressing degraded areas within the PA | 2.6 Restoration of degraded areas | | | | | | R 113 302,43 | R 438 490,36 | R1 191 185,60 | R 578 943,30 | R 256 278,80 |
| b | *Rehabilitation, Restoration or mitigation of all un-natural and/or highly erodible areas in the PA estate and maintain mitigation measures* | | | | | | | | | | | | |
| c | *Rehabilitation, Restoration or mitigation of visitor impact wrt. special natural features and heritage resources in te PA estate* | | | | | | | | | | | | |
| d | *Close and rehabilitate solid waste dump sites in the reserve, and remove all solid waste to the nearest municipal dump sites.* | | | | | | | | | | | | |
| e | *Close/remove/demolish and rehabilitate all extraneous and redundent mining related buildings, foundations, waste dumps, equipment, excavations and fencing.* | | | | | | | | | | | | |
| f | *Close and rehabilitate all unused, extraneous and/or highly erodible tracks and roads in the reserve and maintain road closures* | | | | | | | | | | | | |

| Objective 1.3: Maintenance of ecological processes in the PA | | | | | | | | | R23 822,85 | R84 824,48 | R78 042,93 | R118 467,71 | R126 059,53 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| # | Management action | Management targets | Key performance indicators Mett-Sa Vers 3 | Activity planned & Priority | | | | | Cost Estimates | | | | |
| | | | | 2019 | 2020 | 2021 | 2022 | 2023 | 2019/2020 | 2020/2021 | 2021/2022 | 2022/2023 | 2023/2024 |
| 1 | ID the ecological processes critical for the achievement of biodiversity targets. | A scientifically based assessment has shown that ecological processes are being effectively maintained /augmented with the result that ecological integrity and biodiversity are not being compromised. | 6.3 Ecological processes | | | | | | R 23 822,85 | R 25 013,99 | R 3 508,08 | R 11 031,17 | R 11 582,73 |
| 2 | Re-establish, manage and maintain viable populations of locally indigenous fauna and flora | | | | | | | | | | | | |
| a | *Determine historical distribution of game animals* | A scientifically based assessment has shown that ecological processes are being effectively maintained /augmented with the result that ecological integrity and biodiversity are not being compromised. | 6.3 Ecological processes | | | | | | R - | R - | R - | R 26 335,44 | R 27 053,35 |
| b | *Compile reintroduction program* | | | | | | | | | | | | |
| 3 | Develop and maintain a vegetation monitoring program, including an annual veldt condition assessment. | | | | | | | | R - | R 56 469,46 | R 71 026,77 | R 60 890,13 | R 68 135,77 |
| 4 | Prepare and/or update a simple, functional Fire Management Programme for the reserve. | | | | | | | | R - | R - | R - | R 18 369,23 | R 19 287,69 |
| 5 | Manage watering points for game | | | | | | | | | | | | |
| a | *Determine provision of artificial watering points* | A scientifically based assessment has shown that ecological processes are being effectively maintained /augmented with the result that ecological integrity and biodiversity are not being compromised. | 6.3 Ecological processes | | | | | | R - | R 3 341,02 | R 3 508,08 | R 1 841,74 | R - |
| **Objective 1.4: Maintenance of critical ecosystem services** | | | | | | | | | **R0,00** | **R20 028,67** | **R21 030,11** | **R97 390,63** | **R125 405,39** |
| # | Management action | Management targets | Key performance indicators Mett-Sa Vers 3 | Activity planned & Priority | | | | | Cost Estimates | | | | |
| | | | | 2019 | 2020 | 2021 | 2022 | 2023 | 2019/2020 | 2020/2021 | 2021/2022 | 2022/2023 | 2023/2024 |
| 1 | ID critical ecological services that deliver services to surrounding communities | | | | | | | | | | | | |
| a | *Description and monitoring change wrt biodiversity importance of PA.* | PA Expansion Plan in line with expansion strategy for the organisation and the size and shape of the PA is adequate to achieve the conservation mandate. | 2.1 PA design<br>2.1.1 PA expansion plan | | | | | | R - | R 20 028,67 | R 21 030,11 | R 11 031,17 | R 69 445,80 |
| b | *Description and monitor change wrt conservation interphase* | | | | | | | | | | | | |
| 2 | ID ecological services & Develop a structured and scientific measurement system for effective maintenance of ecological services. | A structured and scientific measurement and monitoring system has shown that ecosystem services are being effectively maintained with the result that the PA and neighbouring land users are deriving benefit from these services. | 6.4 Ecosystem services | | | | | | R - | R - | R - | R 45 947,16 | R 48 244,52 |
| 3 | Monitoring benefit of ecological services to PA and neighbouring land users. | | | | | | | | R - | R - | R - | R 3 673,85 | R 3 857,54 |
| 4 | Compile an Wilderness Management Programme. | A scientifically based programme wherebt ecological processes are being maintained/ augmented with the result that ecological integrity and biodiversity are not being compromised. | 6.4 Ecosystem services | | | | | | R - | R - | R - | R 36 738,46 | R 3 857,54 |

| Objective 1.5: Land use planning and management outside of the protected area | | | | | | | | R0,00 | R20 028,67 | R21 030,11 | R31 996,81 | R33 596,65 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| # | Management action | Management targets | Key performance indicators Mett-Sa Vers 3 | Activity planned & Priority | | | | | Cost Estimates | | | | |
| | | | | 2019 | 2020 | 2021 | 2022 | 2023 | 2019/2020 | 2020/2021 | 2021/2022 | 2022/2023 | 2023/2024 |
| 1 | Provide and define a zone of influence and applicable buffering mechanisms (interphases) with guidelines for suitable land uses. | A zone of influence (interphases) with guidelines for suitable land uses for input into the municipal IDP: catchment and river plans. | 2.1.2 Delineation of a zone of influence | | | | | | | | | | |
| a | *Complete sensitivity analysys and demarcate ZOI and Domain* | | | | | | | | R - | R 20 028,67 | R 21 030,11 | R 12 872,91 | R 13 516,56 |
| b | *Determine applicable buffering mechanisms* | | | | | | | | | | | | |
| c | *Develop guidelines for suitable land uses.* | | | | | | | | | | | | |
| d | *Demarcate corridors and include in ZOI or Domain* | | | | | | | | | | | | |
| 2 | Collect baseline information and control illegal harvesting of natural resources and grazing in reserve interface and domain. | A zone of influence (interphases) with guidelines for suitable land uses for input into the municipal IDP: catchment and river plans. There is a bilateral relationship between any relevant Biodiversity Plan and/or the applicable aspects of the IDP of the local municipality and the planning and management of the PA. There is formal agreement with industries within the zone of influence. | 2.1.2 Delineation of a zone of influence<br>2.1.3 Corridor management<br>6.5 Land use planning and management outside of the protected area | | | | | | R - | R - | R - | R 19 123,90 | R 20 080,10 |
| a | *01 BMP 1 Biodiversity mechanisms* | | | | | | | | | | | | |
| b | *02 BMP 2 SSC* | | | | | | | | | | | | |
| c | *03 BMP 3 Freshwater and Wetlands* | | | | | | | | | | | | |
| d | *04 BMP 4 IAS* | | | | | | | | | | | | |
| e | *05 BMP 5 Resource Use Tourism* | | | | | | | | | | | | |
| f | *07 BMP 7 Degradation Rehabilitation* | | | | | | | | | | | | |
| g | *08 BMP 8 Cultural Heritage* | | | | | | | | | | | | |
| h | *Establish working relationship (MOU) with landowners and residents in domain and interface.* | | | | | | | | | | | | |

| Objective 1.6: Water use planning and management operations influencing the protected area | | | | | | | | R0,00 | R16 328,51 | R19 539,71 | R22 501,66 | R23 626,74 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| # | Management action | Management targets | Key performance indicators Mett-Sa Vers 3 | Activity planned & Priority | | | | | Cost Estimates | | | | |
| | | | | 2019 | 2020 | 2021 | 2022 | 2023 | 2019/2020 | 2020/2021 | 2021/2022 | 2022/2023 | 2023/2024 |
| 1 | Collect and update key baseline information concerning land use practices of the reserve catchment interface and control illegal harvesting of | Catchment and river plans and water management fully take the water needs of the PA into account and the water quality meets required standards as set out by the relevant authority. | 6.6 Water use planning and management operations influencing the protected area | | | | | | | | | | |
| a | *01 BMP 1 Biodiversity mechanisms* | | | | | | | | R - | R - | R - | R 7 500,55 | R 7 875,58 |
| b | *02 BMP 2 SSC* | | | | | | | | | | | | |
| c | *03 BMP 3 Freshwater and Wetlands* | | | | | | | | | | | | |
| d | *04 BMP 4 IAS* | | | | | | | | | | | | |
| e | *05 BMP 5 Resource Use Tourism* | | | | | | | | | | | | |
| f | *07 BMP 7 Degradation Rehabilitation* | | | | | | | | | | | | |
| g | *08 BMP 8 Cultural Heritage* | | | | | | | | | | | | |
| h | *Establish working relationship (MOU) with landowners and* | | | | | | | | | | | | |
| i | *Map and monitor cross boundary movement hotspots.* | | | | | | | | | | | | |
| 2 | Assist other enforcement agencies in cross border and other operations. | | | | | | | | R - | R 16 328,51 | R 19 539,71 | R 15 001,11 | R 15 751,16 |
| 3 | Participation in Catchment Management and other forums to ensure that the quality and quantity of water meets the needs for maintaining habitats, species and ecosystems | Catchment and river plans and water management fully take the water needs of the PA into account and the water quality meets required standards as set out by the relevant authority. | 6.6 Water use planning and management operations influencing the protected area | | | | | | R - | R - | R - | R - | R - |
| 4 | Compile Esturine Man Plans and Ramsar Man Plans | Catchment and river plans and water management fully take the water needs of the PA into account and the water quality meets required standards as set out by the relevant authority. | 6.6 Water use planning and management operations influencing the protected area | | | | | | R - | R - | R - | R - | R - |

| Objective 1.7: Audit achievement of biodiversity targets | | | | | | | | | R0,00 | R0,00 | R0,00 | R0,00 | R0,00 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| # | Management action | Management targets | Key performance indicators Mett-Sa Vers 3 | Activity planned & Priority | | | | | Cost Estimates | | | | |
| | | | | 2019 | 2020 | 2021 | 2022 | 2023 | 2019/2020 | 2020/2021 | 2021/2022 | 2022/2023 | 2023/2024 |
| 1 | Monitoring results of management actions against set objectives. State of biodiversity report. | A structured and scientific biodiversity condition assessment has shown that the management of biodiversity is meeting the set targets. Management techniques are constantly being adapted to changing environments and new knowledge. | 6.2 Achievement of biodiversity targets | | | | | | R - | R - | R - | R - | R - |
| **Objective 1.8: Manage and mitigate the environmental impacts of conservation management, tourism, recreation and natural resource use in the PA** | | | | | | | | | **R129 755,12** | **R199 446,39** | **R307 604,20** | **R391 544,22** | **R395 136,33** |
| # | Management action | Management targets | Key performance indicators Mett-Sa Vers 3 | Activity planned & Priority | | | | | Cost Estimates | | | | |
| | | | | 2019 | 2020 | 2021 | 2022 | 2023 | 2019/2020 | 2020/2021 | 2021/2022 | 2022/2023 | 2023/2024 |
| 1 | Develop management guidelines for the sustainable extractive use of biotic and abiotic resources . | Management guidelines for the sustainable extractive use of biotic and abiotic resources that apply to both the organisation and outside parties are in place. | 4.12 Sustainable Extractive Use | | | | | | R - | R 58 319,38 | R 61 235,35 | R 31 232,51 | R 42 443,03 |
| 2 | Introduce more environmentally-friendly technologies (recycling, water and energy saving, sourcing of biodegradable materials, dry and wet waste disposal, sustainable benefits to local communities, sourcing supplies locally and using certified sources of building materials). | The PA has been accredited with a recognised green standard. Examples are Green Globe. Green Leaf and Travelife. This does not only relate to tourism infrastructure. | 4.16 Environmentally Responsible practice | | | | | | R 15 868,03 | R 1 670,51 | R 1 754,04 | R 27 331,91 | R 30 000,00 |
| 3 | Mitigate Visitors Impact | Visitor impacts which could result from current and anticipated levels of visitation are fully mitigated by the design of the tourism infrastructure | 5.1 Tourism Infrastructure (mitigating impacts) | | | | | | R 113 887,08 | R 139 456,50 | R 244 614,81 | R 332 979,80 | R 322 693,29 |
| a | *Maintain information about the reserve visitors* | | | | | | | | | | | | |
| b | *Compile occupancy Schedules (carrying capasity) for any Tourism operations* | | | | | | | | | | | | |
| c | *Develop and impliment a visitors compliments and complains register and adress issues* | | | | | | | | | | | | |
| 4 | Waste Management | A formal legally compliant programme with functional infrastructure for the management of hazardous substances (flammable and non-flammable) is in place. | 4.13 Management of Hazardous Substances | | | | | | R - | R - | R - | R - | R - |
| a | *Develop a formal legally compliant programme for the management of domestic waste* | | | | | | | | | | | | |
| b | *Develop a formal legally compliant programme for the management of hazardous waste* | | | | | | | | | | | | |
| c | *Develop a formal legally compliant programme for the management and use of pesticides & insectisides* | | | | | | | | | | | | |
| 5 | Develop functional infrastructure for the management of waste | A formal legally compliant programme with functional infrastructure for the management of hazardous substances (flammable and non-flammable) is in place. | 4.13 Management of Hazardous Substances | | | | | | R - | R - | R - | R - | R - |

| Objective 1.9 Obtain Cultural Heritage knowledge about the GNR | | | | | | | | | R9 529,14 | R10 984,06 | R16 322,79 | R189 050,63 | R62 854,25 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| # | Management action | Management targets | Key performance indicators Mett-Sa Vers 3 | Activity planned & Priority | | | | | Cost Estimates | | | | |
| | | | | 2019 | 2020 | 2021 | 2022 | 2023 | 2019/2020 | 2020/2021 | 2021/2022 | 2022/2023 | 2023/2024 |
| 1 | In collaboration with academic institutions, research, document and inventorize the cultural heritage resources of the reserve an determine significance | A formal cultural heritage survey by an accredited heritage practitioner has identified heritage resources and values and has been verified by SAHRA and is included in the IMP. | 1.5 Cultural Heritage knowledge | | | | | | R - | R - | R - | R 135 871,99 | R 54 818,17 |
| 2 | In collaboration with academic institutions develop management plans for significant Cultural Heritage assets | | | | | | | | | | | | |
| a | *Palaeontological resources* | Formal Site Management Plans for all significant cultural heritage sites have been drawn up by an accredited heritage practitioner and approved if applicable by SAHRA . | 2.4 Management plans for significant Cultural Heritage assets | | | | | | R - | R - | R - | R 49 208,70 | R 3 867,65 |
| b | *Archaeological resources* | | | | | | | | | | | | |
| c | *Cultural-Heritage resources* | | | | | | | | | | | | |
| 3 | Develop guidelines for finding and recording of heritage artifacts as part of Subsidary Plan for Management of significant heritage resources according to NEMPAA guidelines | The Collections Management Plan has been developed and is fully implemented. | 2.7 Collections management/curatorship of heritage artefacts | | | | | | R - | R - | R - | R - | R - |
| 4 | Monitor and regular condition assessment of Cultural Heritage Resources | A structured assessment conducted by an accredited heritage practitioner, has shown that the management of cultural heritage assets and values are meeting the set management objectives. | 6.7 Cultural Heritage condition assessment | | | | | | R 9 529,14 | R 10 984,06 | R 16 322,79 | R 3 969,93 | R 4 168,43 |

| KPA 2: Recreation, Marketing, Education, Awareness and Interpretation | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | R33 345,76 | R193 577,66 | R203 722,19 | R262 503,57 | R258 289,08 |
| **Objective 2.1: Develop, deliver and maintain a diverse range of tourism and recreational services for visitors to the PA in accordance with CDF** | | | | | | | | | | R33 345,76 | R50 047,66 | R98 552,16 | R75 602,69 | R75 020,06 |
| # | Management action | Management targets | Key performance indicators Mett-Sa Vers 3 | Activity planned & Priority | | | | | Cost Estimates | | | | | |
| | | | | 2019 | 2020 | 2021 | 2022 | 2023 | 2019/2020 | 2020/2021 | 2021/2022 | 2022/2023 | 2023/2024 | |
| 1 | Develop Subsidiary Plan - Commercial Tourism with guidelines that apply to both the organisation and outside parties concession holders. | Tourism infrastructure is optimal to manage the current and anticipated future volume of visitors. | 3.8 Adequacy of Tourism infrastructure | | | | | | R - | R - | R - | R - | | |
| 2 | Facilitate controlled access to the reserve for other complementary recreational activities, link up with adventure events (Namaqua Quest, Goegap Challenge). | Tourism infrastructure is optimal to manage the current and anticipated future volume of visitors. | 3.8 Adequacy of Tourism infrastructure | | | | | | R 17 841,50 | R 18 733,57 | R 35 741,89 | R 35 740,80 | R 31 895,08 | |
| 3 | Support entrepreneurial opportunities for local communities to participate in the provision and management of tourist and recreational products. | | | | | | | | R 15 504,26 | R 31 314,09 | R 62 810,27 | R 39 861,89 | R 43 124,98 | |
| **Objective 2.2: Develop and implement a focused and cost-effective marketing programme for the PA** | | | | | | | | | R - | R 104 085,79 | R 63 753,62 | R 154 688,11 | R 159 592,64 | |
| # | Management action | Management targets | Key performance indicators Mett-Sa Vers 3 | Activity planned & Priority | | | | | Cost Estimates | | | | | |
| | | | | 2019 | 2020 | 2021 | 2022 | 2023 | 2019/2020 | 2020/2021 | 2021/2022 | 2022/2023 | 2023/2024 | |
| 1 | Develop a tourism management plan for the Reserve. | There is an approved and updated Marketing Programme and it is fully integrated into the management plan of the PA. Level of conformance (%) with South African National Standard (SANS) 1197:2012. | 2.3 Education, awareness and interpretation programme | | | | | | R - | R 14 608,96 | R 15 339,41 | R 3 221,28 | R 3 382,34 | |
| 2 | Design, publish and distribute reserve-specific brochures and pamphlets for visitors and users. | | | | | | | | R - | R 57 337,11 | R 14 667,51 | R 23 454,07 | R 20 769,24 | |
| 3 | Continually provide updated information in the ongoing development of corporate, regional and provincial tourism marketing products and materials.development of corporate, regional and provincial tourism marketing products and materials. | | | | | | | | R - | R 32 139,72 | R 33 746,70 | R 128 012,76 | R 135 441,06 | |
| 4 | Accreditation of activities and facilities with a recognised tourism grading standard. | | | | | | | | R - | R - | R - | R - | R - | |
| **Objective 2.3: Develop and implement a focused and cost-effective awareness-raising and educational programme** | | | | | | | | | 0 | 39444,19983 | 41416,40982 | 32212,76319 | 23676,38095 | |
| # | Management action | Management targets | Key performance indicators Mett-Sa Vers 3 | Activity planned & Priority | | | | | | | | | | |
| | | | | 2019 | 2020 | 2021 | 2022 | 2023 | 2019/2020 | 2020/2021 | 2021/2022 | 2022/2023 | 2023/2024 | |
| 1 | Develop site specific Education, awareness and interpretation programme. | The education, awareness and interpretation programme is fully linked to the objectives and needs of the PA and is being fully implemented. | 4.9 Implementation of Education, awareness and interpretation programme. | | | | | | R - | R 18 991,65 | R 19 941,23 | R 16 106,38 | R 16 911,70 | |
| 2 | Establish links with local educational institutions and networks in order to promote subsidised access to, and use of, the reserve as an educational resource. | | | | | | | | R - | R 20 452,55 | R 21 475,18 | R 16 106,38 | R 6 764,68 | |
| a | *Assist with ad hoc awareness-raising and educational programs* | | | | | | | | | | | | | |
| b | *Make facilities including environment available for educational programmes* | | | | | | | | | | | | | |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **KPA 3: Enforcement, Security and Access Control** | | | | | | | | | | **R120 703,08** | **R290 065,19** | **R264 028,92** | **R1 303 269,66** | **R2 418 509,58** |
| **Objective 3.1: Secure the legal tenure of, and management authority for, the PA** | | | | | | | | | | **R0,00** | **R87 981,16** | **R62 989,01** | **R54 738,46** | **R7 715,08** |
| # | Management action | Management targets | Key performance indicators Mett-Sa Vers 3 | Activity planned & Priority | | | | | | Cost Estimates | | | | |
| | | | | 2019 | 2020 | 2021 | 2022 | 2023 | | 2019/2020 | 2020/2021 | 2021/2022 | 2022/2023 | 2023/2024 |
| 1 | Ensure declaration of all properties within the estate to obtain legal status in terms of NEMPAA and registered on the SAPAD. | | | | | | | | | | | | | |
| a | *Compile and submit notice of intend to be approved and gazetted* | All properties managed as part of the PA have been declared and listed in the NPA Register and the registrar of Deeds has recorded the declaration against the relevant register and documents. | 1.1 Legal Status | | | | | | | R - | R 87 981,16 | R62 989,01 | R 54 738,46 | R 7 715,08 |
| b | *Record the declaration against the SAPAD* | | | | | | | | | | | | | |
| c | *Record the declaration against the relevant Title Deed.* | | | | | | | | | | | | | |
| d | *Consolidation of properties* | | | | | | | | | | | | | |
| e | *Apply for MPRDA sec 53 permission for all properties in PA domain* | | | | | | | | | | | | | |
| f | *Formal management agreements regarding properties in domain* | | | | | | | | | | | | | |
| **Objective 3.2: Secure the boundaries of, and maintain controlled access to, the PA** | | | | | | | | | | **R117 529,47** | **R142 032,97** | **R164 269,34** | **R1 244 857,35** | **R2 379 913,97** |
| # | Management action | Management targets | Key performance indicators Mett-Sa Vers 3 | Activity planned & Priority | | | | | | Cost Estimates | | | | |
| | | | | 2019 | 2020 | 2021 | 2022 | 2023 | | 2019/2020 | 2020/2021 | 2021/2022 | 2022/2023 | 2023/2024 |
| 1 | Impliment the protection systems or mechanisms for controlling current and anticipated levels of legitimate and illegitimate access or activities in the PA | | | | | | | | | | | | | |
| a | *Regular boundary patrols and access hotspots* | Protection systems or mechanisms for controlling current and anticipated levels of legitimate and illegitimate access or activities in the PA are fully implemented. The success has been verified by a relevant PA integrity audit (eg. SOAM or PAME). | 5.2 Functioning of Law Enforcement and Compliance systems | | | | | | | R 35 304,64 | R 47 457,75 | R74 679,15 | R 70 166,81 | R 73 675,15 |
| b | *Implement, mechanisms for subsidised entry for local community user and interest groups.* | | | | | | | | | | | | | |
| c | *Provide, on request, controlled access to recognised cultural/religious sites and non-destructive or consumptive cultural/religious practices.* | | | | | | | | | | | | | |
| 2 | Complete the construction of the perimeter demarcation/fencing to meet all requirements of the DENC Technical Guidelines and Principles | | | | | | | | | | | | | |
| a | *Verify position of estate beacons agains title deeds* | The reserve assets are secure. The reserve visitors and users have equitable access to the reserve, and are safe from harm. | 1.3 Protected Area boundary demarcation | | | | | | | R 82 224,83 | R 94 575,22 | R89 590,20 | R 1 174 690,54 | R2 306 238,82 |
| b | *Maintain beacons in correct position* | | | | | | | | | | | | | |
| c | *Construction of the perimeter signage* | | | | | | | | | | | | | |
| d | *Demarcation of boundary by fencing, bollards, beacons, sign posts.* | | | | | | | | | | | | | |
| e | *Ensure regular maintenance of the perimeter demarcation/fencing in the reserve.* | | | | | | | | | | | | | |
| **Objective 3.3: Sustain an effective law enforcement and compliance capacity in the PA** | | | | | | | | | | **R3 173,61** | **R60 051,06** | **R36 770,57** | **R3 673,85** | **R30 880,54** |
| # | Management action | Management targets | Key performance indicators Mett-Sa Vers 3 | Activity planned & Priority | | | | | | Cost Estimates | | | | |
| | | | | 2019 | 2020 | 2021 | 2022 | 2023 | | 2019/2020 | 2020/2021 | 2021/2022 | 2022/2023 | 2023/2024 |
| 1 | Integrated Compliance Plan | | | | | | | | | | | | | |
| a | *Draw up an Integrated Compliance Plan* | The PA has an Integrated Compliance Plan addressing all aspects of law enforcement that incorporates inter alia raising awareness, improving community relationships, training and cooperation with legal agencies. | 5.2.1 Integrated Compliance Plan | | | | | | | R - | R 31 696,04 | R10 505,88 | R - | R 23 155,34 |
| b | *Impliment Integrated Compliance Plan* | | | | | | | | | | | | | |
| 2 | Ensure capacity/resources/support to impliment the Integrated Compliance Plan | | | | | | | | | | | | | |
| a | *Determine capasity RB Martin or IUCN and develop list of critical skills required with training cources available for field rangers.* | Ensure capacity/resources/support to enforce (arrest and prosecute) PA internal rules/regulations. | 3.6. Law Enforcement Capacity & Capability | | | | | | | R 3 173,61 | R 28 355,02 | R26 264,69 | R 3 673,85 | R 7 725,19 |
| b | *Ensure the provision of enforcement and compliance training for all reserve field staff.* | | | | | | | | | | | | | |
| c | *Ensure that the field ranger staff complement is adequately resourced and equipped to fulfil an effective enforcement and compliance function.* | | | | | | | | | | | | | |

| KPA 4: Infrastructure and Equipment | | | | | | | | | R895 762,09 | R1 128 623,34 | R1 657 372,49 | R1 634 711,35 | R2 071 621,42 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Objective 4.1: Acquire and maintain operational equipment and vehicles for the PA** | | | | | | | | | R599 465,47 | R654 499,35 | R693 449,10 | R964 009,84 | R1 356 360,22 |
| # | Management action | Management targets | Key performance indicators Mett-Sa Vers 3 | Activity planned & Priority | | | | | Cost Estimates | | | | |
| | | | | 2019 | 2020 | 2021 | 2022 | 2023 | 2019/2020 | 2020/2021 | 2021/2022 | 2022/2023 | 2023/2024 |
| 1 | Acquire and maintain stores and equipment | | | | | | | | | | | | |
| a | *General submissions for procurement* | Operational equipment is adequate and suitable for current and future anticipated operational needs.There is a maintenance schedule and all operational equipment is being correctly maintained and meeting the set standards. | 3.7 Adequacy of Operational equipment 4.6 Maintenance of operational equipment | | | | | | R 57 600,73 | R 151 995,38 | R 135 191,85 | R 217 872,73 | R 111 398,60 |
| b | *Establish an electronic network (i.e. internet and e-mail) for, and connect services and applications to, the reserve.* | | | | | | | | | | | | |
| c | *Procure, install and maintain a reliable internal communications network for the reserve, including repeaters, base station, hand-held radios and car radios.* | | | | | | | | | | | | |
| d | *Maintain and/or replace all reserve equipment according to the manufacturers' specifications and/or corporate replacement cycles.* | | | | | | | | | | | | |
| 2 | Adequacy of transport fleet | The transport fleet is totally appropriate and sufficient for all management needs with adequate numbers and range of vehicles (including boats, aircraft etc.) to meet management needs? There is a maintenance schedule and the entire transport fleet is being maintained and meeting the set standards. | 3.9 Adequacy of transport fleet 4.6.2Maintenance of Transport fleet | | | | | | R 541 864,74 | R 502 503,97 | R 558 257,24 | R 746 137,11 | R1 244 961,62 |
| a | *Do needs analyses regarding transport fleet for all management needs with adequate numbers and range of vehicles (including boats, aircraft etc.)* | | | | | | | | | | | | |
| b | *Maintain and/or replace all reserve vehicles and equipment according to the manufacturers' specifications and/or corporate replacement cycles.* | | | | | | | | | | | | |
| **Objective 4.2: Construct, maintain and upgrade the administration infrastructure and bulk services infrastructure in the PA** | | | | | | | | | R150 991,76 | R250 734,18 | R523 544,08 | R215 983,23 | R294 174,35 |
| # | Management action | Management targets | Key performance indicators Mett-Sa Vers 3 | Activity planned & Priority | | | | | Cost Estimates | | | | |
| | | | | 2019 | 2020 | 2021 | 2022 | 2023 | 2019/2020 | 2020/2021 | 2021/2022 | 2022/2023 | 2023/2024 |
| 1 | Construct and upgrade the administration and bulk services infrastructure in the reserve and constantly update the infrastructure | | | | | | | | | | | | |
| a | *Construct a permanent administration building, and associated facilities, within the reserve* | Infrastructure required for operational management purposes buildings, roads, bulk services including jetties, storage facilities and staff housing is optimal for current and future anticipated management needs.. State (using a grading system) of reserve buildings and infrastructure. Records of instances of overloading of the bulk service supplies. | 3.7.1 Adequacy of Operational infrastructure. Level of conformance (%) with South African National Standard (SANS) 1197:2012. | | | | | | R 68 193,32 | R 78 183,25 | R 321 128,47 | R 73 950,71 | R 117 390,90 |
| b | *Construct the entrance/control gate infrastructure and associated ablution facilities to accommodate disabled visitors.* | | | | | | | | | | | | |
| c | *Facilitate the provision|of ESKOM power to Lodges, critical staff accommodation and all administrative facilities.* | | | | | | | | | | | | |
| d | *Install and maintain generator and/or solar power systems for the functioning of remote reserve operational equipment (e.g. water pumps) and the smaller tourism and recreational facilities.* | | | | | | | | | | | | |
| e | *Develop a water supply, storage and treatment capacity for the reserve.* | | | | | | | | | | | | |
| f | *Develop waste treatment facilities and waste removal systems for the reserve water supply, storage and treatment capacity for the reserve.* | | | | | | | | | | | | |
| g | *Develop the road, track and footpath network in the GGNR* | | | | | | | | | | | | |
| h | *Standardise, install and maintain directional and informational signage within, and en route to, the reserve.* | | | | | | | | | | | | |
| 2 | Develop Infrastructure Maintenance Programme: | | | | | | | | | | | | |
| a | *Develop Site Plans.* | Infrastructure required for operational management purposes on uniform standards as required | 3.7.1 Adequacy of Operational infra-structure. Level of conformance (%) with SANS 1197:2012. | | | | | | R 82 798,44 | R 172 550,93 | R 202 415,61 | R 142 032,51 | R 176 783,45 |
| b | *Maintenance standards & prosedures* | | | | | | | | | | | | |
| c | *Maintenance of all reserve administrative, staff and operational buildings and infrastructure.* | | | | | | | | | | | | |
| d | *Schedule and implement the maintenance of the network of roads in the reserve, with a strong focus on maintaining and mitigating highly erodible areas.* | | | | | | | | | | | | |
| e | *Link up with EPIP projects as well as external projects with available funds* | | | | | | | | | | | | |

| Objective 4.3: Construct, upgrade and maintain day and overnight visitor buildings and infrastructure in the PA | | | | | | | | | R145 304,86 | R223 389,81 | R440 379,31 | R454 718,28 | R421 086,85 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| # | Management action | Management targets | Key performance indicators Mett-Sa Vers 3 | Activity planned & Priority | | | | | Cost Estimates | | | | |
| | | | | 2019 | 2020 | 2021 | 2022 | 2023 | 2019/2020 | 2020/2021 | 2021/2022 | 2022/2023 | 2023/2024 |
| 1 | Assess the feasibility of developing additional overnight accommodation and camping/caravanning sites and day visitor facilities with reference to the CDF and update CDF if required. | Tourism infrastructure is optimal to manage the current and anticipated future volume of visitors. | 3.8 Adequacy of Tourism infrastructure | | | | | | R - | R - | R - | R - | R - |
| 2 | Assess the cost-effectiveness of different management options for the operating of Lodges, Camps and select the preferred/optimal management option/s. | | | | | | | | | | | | |
| a | *Plan and Develop the overnight visitor buildings, facilities, equipment and linked infrastructure, in accordance with the CDF to meet DENC standards for the provision of nature-based tourism products.* | Tourism infrastructure is optimal to manage the current and anticipated future volume of visitors. | 3.8 Adequacy of Tourism infrastructure | | | | | | R - | R - | R - | R - | R - |
| b | *Implement, and formalise (as required), the selected management option for the Lodges, Camps (e.g. concessioning, leasing, service agreement, community-managed, etc.).* | | | | | | | | | | | | |
| 3 | DevelopTourism Infrastructure Maintenance Programme | | | | | | | | | | | | |
| a | *Develop Site Plans* | Tourism infrastructure is optimal to manage the current and anticipated future volume of visitors. | 3.8 Adequacy of Tourism infrastructure | | | | | | R 145 304,86 | R 223 389,81 | R 440 379,31 | R 454 718,28 | R 421 086,85 |
| b | *Maintenance standards & prosedures* | | | | | | | | | | | | |
| c | *Maintenance of all tourism buildings and infrastructure.* | | | | | | | | | | | | |

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| **KPA 5: Stakeholder Involvement** | | | | | | | | | | **R61 912,97** | **R298 738,32** | **R254 347,83** | **R334 179,48** | **R463 998,78** |
| **Objective 5.1: Interaction with stakeholders and communities in the planning, development and management of the PA** | | | | | | | | | | **R15 868,03** | **R36 271,39** | **R20 590,46** | **R35 892,28** | **R30 922,21** |
| # | Management action | Management targets | Key performance indicators Mett-Sa Vers 3 | Activity planned & Priority | | | | | | Cost Estimates | | | | |
| | | | | 2019 | 2020 | 2021 | 2022 | 2023 | | 2019/2020 | 2020/2021 | 2021/2022 | 2022/2023 | 2023/2024 |
| 1 | Under the guidance of the Regulations for the proper administration of Nature Reserves, as promulgated in terms of Section 86 (1) of NEMPAA, establish a Reserve Advisory Committee and meet on a regular, agreed to basis. | A well represented functioning and formalised Community Liaison Structure contributes significantly to the management/development of the PA. | 4.11 Community Liaison Structure | | | | | | | R - | R 13 766,38 | R 14 454,70 | R 15 659,48 | R 16 442,45 |
| 2 | Develop and impliment an active Public Relations (PR) and Communication Programme | | | | | | | | | | | | | |
| a | *Ensure positive press coverage is obtained and timeously and effectively respond to items in public media which may negatively impact on the organisation.* | There is a wide ranging multi media public relations and communication programme keeping the general public and internal role players informed of important aspects of the PA. | 4.10 Public Relations (PR) and Communication Programme | | | | | | | R - | R 5 843,59 | R 6 135,76 | R 6 442,55 | R 6 764,68 |
| b | *Initiate and sustain ongoing communications with the communal and/or private landowners to discuss opportunities for ongoing cooperation and collaboration.* | | | | | | | | | | | | | |
| 3 | Ensure members of the community are involved in supporting the PA through volunteering, projects and fundraising by establishing formal groups such as Friends groups, Volunteers or Honorary rangers. | There are a wide range of projects supported by volunteers including fund raising and assistance with management that contribute significantly to increased PA management effectiveness. | 5.5 Community Support | | | | | | | R 15 868,03 | R 16 661,43 | R - | R 13 790,24 | R 7 715,08 |
| **Objective 5.2: Actively participate in local and regional conservation and socio-economic development initiatives that may affect or benefit th** | | | | | | | | | | **R15 791,33** | **R232 054,64** | **R233 757,37** | **R240 113,36** | **R374 219,03** |
| # | Management action | Management targets | Key performance indicators Mett-Sa Vers 3 | Activity planned & Priority | | | | | | Cost Estimates | | | | |
| | | | | 2019 | 2020 | 2021 | 2022 | 2023 | | 2019/2020 | 2020/2021 | 2021/2022 | 2022/2023 | 2023/2024 |
| 1 | Participate in local municipal IDP planning processes, with a specific focus on the provision of municipal infrastructure and services to the reserve and supporting local economic development initiatives in the community. | | | | | | | | | | | | | |
| a | *Identify, and make application for, EPWP-related funding for relevant tourism and conservation initiatives in the reserve.* | A formal published review/audit has shown that the PA delivers quantifiable long term stimuli to the regional (and possibly the national) economy and delivers a broad range of long term quantifiable community benefits that improve the livelihood strategies and resilience in the lives of communities. | 6.1 Economic and Social benefit assessment Direct and measurable benefitsaccrue to local community from the reserve. | | | | | | | R - | R - | R - | R 13 790,24 | R 14 479,76 |

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| 2 | Participate in the planning and development of other conservation initiatives with a specific focus on strengthening linkages | | | | | | | | | | | |
| a | Assist other DENC PA's with specific projects | The PA is influencing the local or regional economy and providing measurable social benefits to communities? Social benefits to direct benefits such as jobs, training and health care. Stimulus of the economy through businesses benefiting from tourism and meeting the needs of the protected area. | 6.1 Economic and Social benefit assessment Direct and measurable benefitsaccrue to local community from the reserve. | | | | | | R - | R - | R - | R 11 958,14 | R 12 556,05 |
| b | *Establish linkages with ARTFCA, with a specific focus on strengthening tourism products and on improving access to technical and professional support/resources from TFCA partners.* | | | | | | | | | | | |
| 3 | Investigate and select mechanisms for optimising employment, empowerment and capacity building opportunities for the local community. | | | | | | | | | | | |
| a | *Develop opportunities for selected individuals from the local community to be trained and directly employed in appropriate conservation and tourism related work.* | Direct and measurable benefits accrue to local community from the reserve. Extent (number of beneficiaries) and nature (employment – permanent/ temporary; business opportunity; training; capacity-building) of community benefits. | 4.15 Commercial Tourism | | | | | | R 15 791,33 | R232 054,64 | R 233 757,37 | R214 364,98 | R 347 183,23 |
| b | *Develop opportunities to facilitate an empowerment component for selected individuals from the local community in any outsourcing/concessioning of the tourism and recreational products.* | | | | | | | | | | | |
| c | *Identify, and if feasible develop, opportunities for the establishment of community-based entrepreneurial opportunities within, or linked to, the reserve, including: game drives; sale of curios and crafts; guided heritage trails; village tourism; conservation enterprise; horse trails; event management and commercial hunting packages.* | | | | | | | | | | | |
| **Objective 5.3: Develop, implement and maintain effective mechanisms for ongoing communications with co-management partners** | | | | | | | | | **R30 253,61** | **R30 412,29** | **R0,00** | **R58 173,85** | **R58 857,54** |
| # | Management action | Management targets | Key performance indicators Mett-Sa Vers 3 | Activity planned & Priority | | | | | Cost Estimates | | | | |
| | | | | 2019 | 2020 | 2021 | 2022 | 2023 | 2019/2020 | 2020/2021 | 2021/2022 | 2022/2023 | 2023/2024 |
| 1 | Continually review, and amend (as required), the structure, representation and TOR of the Co-Management Committee to ensure that it contributes to realising the intent of the Co-Management Agreement. | There is a formal representative structure for community partners to participate in decision making according to a legally binding co-management agreement. | 4.14 Community partners | | | | | | R 30 253,61 | R 30 412,29 | R - | R 58 173,85 | R 58 857,54 |
| 2 | Provide ongoing support (e.g. logistical, administrative, technical, professional and leadership) to, and actively participate in, an effectively functioning Co-Management Committee. | | | | | | | | | | | | |
| a | *Hold quarterly (more regular if required) meetings with the Co-Management Committee to ensure that co-management decisions are made timeously and effectively.* | There is a formal representative structure for community partners to participate in decision making according to a legally binding co-management agreement. | 4.14 Community partners | | | | | | R - | R - | R - | R - | R - |
| b | *Support the ongoing capacity building of the local community representatives on the Co-Management Committee.* | | | | | | | | | | | | |
| c | *Allocate office space in the administrative complex for office bearers of the Co-Management Committee.* | | | | | | | | | | | | |
| d | *Host a regular quaterly meeting, each in a different neighbouring village, to present and discuss issues of mutual concern.* | | | | | | | | | | | | |

| KPA 6: Administration and Planning | | | | | | | | | R841 283,46 | R1 250 307,19 | R996 085,90 | R914 128,21 | R1 039 598,51 |
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| **Objective 6.1: Institute and maintain an effective management planning capability in the PA** | | | | | | | | | R142 937,11 | R388 737,84 | R250 705,85 | R156 381,90 | R353 311,41 |
| # | Management action | Management targets | Key performance indicators Mett-Sa Vers 3 | Activity planned & Priority | | | | | Cost Estimates | | | | |
| | | | | 2019 | 2020 | 2021 | 2022 | 2023 | 2019/2020 | 2020/2021 | 2021/2022 | 2022/2023 | 2023/2024 |
| 1 | Compile fully Integrated MP covering all aspects of PA management with measureable objectives | | | | | | | | | | | | |
| a | *Review and approval of IMP on 5 year cycle* | The IMP is fully integrated covering all aspects of PA management with measureable objectives and is approved by the MEC | 2.2 Management Plan | | | | | | R 39 690,88 | R 83 350,85 | R - | R 45 947,16 | R 54 046,00 |
| b | *Follow PPP and Obtain approval from MEC* | | | | | | | | | | | | |
| c | *Update a CDF (zoning system) based on a sensitivity analysis indicating visitor use zones, and positioning and nature of operational & visitor infrastructure* | All relevant standard operating procedures pertaining to all management activities are in place and are regularly updated to ensure best practice. | | | | | | | | | | | |
| 2 | Administer the administrative systems supportive of effective management and proper functioning of the PA | | | | | | | | | | | | |
| a | *Do annual Mett assesment* | Information and the understanding thereof concerning key species, habitats, ecosystems of the PA supports the achievement of all biodiversity objectives. | 1.5.1 Format of data | | | | | | R 20 649,25 | R 38 343,14 | R 10 505,88 | R 11 031,17 | R 48 244,52 |
| 3 | Update APO and OMF identifying all the activities, tasks and outcomes (operational & nanagement) in accordance with predetermined time frames and approved management plans to be completed in a financial year with costing. | | | | | | | | | | | | |
| a | *Review APO accorrding to planning cycle* | An approved APO exists and actions are linked to the PA's management plan targets and to the Key Performance Areas of the PA manager | 4.1 Annual Plan of Operation (APO) 5.4 Linking of management Plan to Key Performance Areas | | | | | | R 20 649,25 | R 85 472,57 | R 89 746,20 | R 38 670,62 | R 77 265,93 |
| b | *Link APO to operational budget* | | | | | | | | | | | | |
| c | *Annual review of APO Workplans & OMF* | | | | | | | | | | | | |
| d | *Link OMF to the Key Performance Areas of the PA manager and key personnel.* | | | | | | | | | | | | |
| 4 | Update State of Knowledge Data Repository - General & Logistical Data | | | | | | | | | | | | |
| a | *01 Update declaration summary* | All properties managed as part of the PA have been declared and listed in the NPA Register and the registrar of Deeds has recorded the declaration against the relevant register and documents. | 1.1 Legal Status | | | | | | R 20 649,25 | R 104 885,00 | R 110 129,25 | R 38 670,62 | R 77 265,93 |
| | *02 Fences Beacons* | | | | | | | | | | | | |
| b | *Property descriptions and history according to deeds with records* | | | | | | | | | | | | |
| | *Record all boundary deviations in a legally binding document.* | | | | | | | | | | | | |
| | *Compile a register of all servitudes and the conditions relating thereto.* | | | | | | | | | | | | |
| | *Description of beacons* | | | | | | | | | | | | |
| c | *03 S.H.E.Contingency plans for Disaster Management* | All threats identified and listes in accordance with OHSA and Deparmental Risk Registers | 5.2.1 Integrated Compliance Plan | | | | | | | | | | |
| | *Undertake a Threat Analysis to determine all potential threats to the safety and security of the reserve.* | | | | | | | | | | | | |
| | *Update Risk assesment* | | | | | | | | | | | | |
| | *Compile a Disaster Management Plan for the reserve* | | | | | | | | | | | | |
| d | *04 Protected area expenditure including historical data* | All inventories are updated and linked to Key Performance Areas | *5.4 Linking of management Plan to Key Performance Areas* | | | | | | | | | | |
| f | *06 Economic valuation* | | | | | | | | | | | | |
| g | *06a Assets and stock inventory registers* | | | | | | | | | | | | |
| h | *07 Vehicle Fleet with utilisation* | | | | | | | | | | | | |
| i | *08 Maintenance schedules* | | | | | | | | | | | | |
| j | *14 Literature Inventory & Web Links.docx* | | | | | | | | | | | | |
| 5 | Update State of Knowledge Data Repository - Guiding management principles | | | | | | | | | | | | |
| a | *Complete list of 01 International Conventions, Commisions and* | Management Guidelines in place and Principles adhered to as listed in relevant legislation | 4.16 Environmentally Responsible practice | | | | | | R 20 649,25 | R 38 343,14 | R 14 023,13 | R 11 031,17 | R 48 244,52 |
| b | *Complete list of 02 National Legislation with Regulations with* | | | | | | | | | | | | |
| c | *Complete list of Provincial Legislation and Municipal Bylaws with* | | | | | | | | | | | | |
| d | *Complete list of 04 Policies to guide decision-making and* | | | | | | | | | | | | |
| e | *Develop Protected Area internal rules ito section 52 of NEM:PAA* | | | | | | | | | | | | |
| f | *Compile standard operating procedures pertaining to all* | | | | | | | | | | | | |
| g | *Draw up a protection systems for controlling anticipated levels of* | | | | | | | | | | | | |
| h | *Verified success by a relevant PA integrity audit (eg. SOAM or* | | | | | | | | | | | | |

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| 5 | Update State of Knowledge Data Repository - Guiding management principles | | | | | | | | | | | |
| a | *IMP Maps* | Relevant information captured in digital map format Management Guidelines in place and Principles adhered to according to Managemnt Principles | 4.16 Environmentally Responsible practice | | | | | R 20 649,25 | R 38 343,14 | R 26 301,40 | R 11 031,17 | R 48 244,52 |
| | *Map 1:Reserve Interface* | | | | | | | | | | | |
| | *Map 2: Reserve Interface comparison* | | | | | | | | | | | |
| | *Map 3: Reserve Estate* | | | | | | | | | | | |
| | *Map 4: Climate (Climatic regions within the NDM)* | | | | | | | | | | | |
| | *Map 5: Digital Terrain Model Map* | | | | | | | | | | | |
| | *Map 6: Geological Map* | | | | | | | | | | | |
| | *Map 7: Land types and soil Map* | | | | | | | | | | | |
| | *Map 8: Drainage and Hydrology* | | | | | | | | | | | |
| | *Map 9: Biomes, Bioregions and Vegetation units* | | | | | | | | | | | |
| | *Map 10: Plant communities and Management units* | | | | | | | | | | | |
| | *Map 11: Special habitats - Hotspots* | | | | | | | | | | | |
| | *Map 12: Archaeological and Cultural, Heritage resources* | | | | | | | | | | | |
| | *Map 13: Infrastructure and Bulk services* | | | | | | | | | | | |
| | *Map 14: Use Zone Map* | | | | | | | | | | | |
| b | *General & Logistical Maps Link to SMP for Estate and Domain* | | | | | | | | | | | |
| | *Map 1: Protected area Expansion* | | | | | | | | | | | |
| | *Map 2: Historical land uses - Polygon Only data From colonial* | | | | | | | | | | | |
| | *Map 3: Conflicting land uses - Polygon Current and known future* | | | | | | | | | | | |
| | *Map 4: Anthropogenic incidence (HIRA) - Polygon Incidence of* | | | | | | | | | | | |
| | *Map 5: Site plans - update with CDF/GIAMA* | | | | | | | | | | | |
| | *Map 5-1: Development Plans - According to CDF* | | | | | | | | | | | |
| | *Map 6: Roads - Historic and current update with CDF* | | | | | | | | | | | |
| | *Map 7: Fences - Historic and current update with CDF* | | | | | | | | | | | |
| | *Map 8: Water supply systems - Historic and current update with* | | | | | | | | | | | |
| | *Map 9: Watering points - Historic and current manmade update* | | | | | | | | | | | |
| | *Map 10: Electrical installations - Historic and current update with* | | | | | | | | | | | |
| | *Map 11: Mining operations and Burrow pits - Historic and current* | | | | | | | | | | | |
| | *Map 12: Erosion areas - Polygon - Rehabilitated and current areas* | | | | | | | | | | | |
| c | *Biodiversity Maps Link to BMS for Estate and Domain not ZOI* | | | | | | | | | | | |
| | *Map 1: Fauna* | | | | | | | | | | | |
| | *Map 1-1 Exotic Fauna - One map all species different coulours per* | | | | | | | | | | | |
| | *Map 1-3a Fauna Distribution of Species of Special Concern -* | | | | | | | | | | | |
| | *Map 1-4 Fauna Distribution Large Predators - One map all species* | | | | | | | | | | | |
| | *Map 1-5 Fauna Distribution Key Raptor Nests - One map all* | | | | | | | | | | | |
| | *Map 1-6 Fauna Monitoring sites - One map all projects different* | | | | | | | | | | | |
| | *Map 2: Flora* | | | | | | | | | | | |
| | *Map 2-1: Flora Exotic - One map all species different coulours per* | | | | | | | | | | | |
| | *Map 2-3 Flora Distribution of species of Special Interest - One* | | | | | | | | | | | |
| | *Map 2-4 Flora Fire insidence - One map all burns different* | | | | | | | | | | | |
| | *Map 2-5 Flora Monitoring sites One map all projects different* | | | | | | | | | | | |

| Objective 6.2: Maintain an adequately equipped, resourced and trained staff complement for the PA | | | | | | | | | R551 274,58 | R661 898,06 | R475 099,30 | R559 592,40 | R463 319,75 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| # | Management action | Management targets | Key performance indicators Mett-Sa Vers 3 | Activity planned & Priority | | | | | Cost Estimates | | | | |
| | | | | 2019 | 2020 | 2021 | 2022 | 2023 | 2019/2020 | 2020/2021 | 2021/2022 | 2022/2023 | 2023/2024 |
| 1 | Ensure that all vacant posts in the reserve's approved organogram are filled and determine actual needs for achieving management objectives as part of work plans. | The approved organogram reflects the actual needs for effectively achieving all management objectives and the HR capacity meets the approved levels. | 3.2 Human Resource capacity | | | | | | R 16 663,51 | R 21 672,97 | R - | R 23 894,45 | R 25 089,17 |
| 2 | Implement the institutional staff performance appraisal system and link WP and PA to APO . | HR management and staff development systems are excellent and fully support management effectiveness. | 4.3 HR Management systems 4.4 Administrative support systems | | | | | | R 330 904,37 | R 358 088,12 | R 244 012,52 | R257 025,92 | R 152 964,94 |
| a | *Have clear job descriptions and Performance Agreements on record. Link KPA's to APO and Mett* | | | | | | | | | | | | |
| b | *Identify training needs, and facilitate access to training programs for reserve staff, with a priority focus on field ranger, first aid, hospitality and IT skills training.* | | | | | | | | | | | | |
| c | *Maintain Leave and CWW register part of Monthley planner* | | | | | | | | | | | | |
| 3 | Maintain all staff information for the reserve (leave records, attendance registers, overtime, etc.).HR related documentation and policies (Legislation posters) | HR management and staff development systems are excellent and fully support management effectiveness. | 4.3 HR Management systems | | | | | | R 88 813,56 | R 77 062,83 | R 27 270,63 | R 80 888,61 | R 84 933,04 |
| 4 | Implement the institutional Occupational Health and Safety policies and procedures in the reserve. | An external audit has certified that PA management complies with and implements the Occupational Health and Safety Act. | 3.10 Health and safety | | | | | | R 106 938,32 | R 181 730,66 | R 203 816,15 | R197 783,42 | R 200 332,60 |
| 6 | Develop a policy and standards for staff housing and ensure all staff housed accordingly. | HR management and staff development systems are excellent and fully support management effectiveness. | 4.3 HR Management systems | | | | | | R 7 954,82 | R 23 343,48 | R - | R - | R - |
| **Objective 6.3:Institute and maintain an effective financial and administartive planning capability in the PA** | | | | | | | | | **R147 071,76** | **R199 671,29** | **R270 280,75** | **R198 153,90** | **R222 967,35** |
| # | Management action | Management targets | Key performance indicators Mett-Sa Vers 3 | Activity planned & Priority | | | | | Cost Estimates | | | | |
| | | | | 2019 | 2020 | 2021 | 2022 | 2023 | 2019/2020 | 2020/2021 | 2021/2022 | 2022/2023 | 2023/2024 |
| 1 | Information Technology systems | | | | | | | | | | | | |
| a | *Ensure electronic data are backed up on a routine basis and* | Information Technology systems are excellent and fully support management effectiveness. | 4.5 Information Technology systems | | | | | | R 113 467,82 | R 144 408,85 | R 227 648,32 | R177 928,20 | R 203 099,07 |
| b | *Institute and maintain an electronic and/or hard copy filing system* | | | | | | | | | | | | |
| c | *Inventory of all literature* | | | | | | | | | | | | |
| 2 | Ensure financial management is excellent and all management goals are met | | | | | | | | | | | | |
| a | *Prepare annual budget according to the APO and identify needs* | The available budget is sufficient and meets the full management needs of the PA. There are skills and capacity in the organisation to raise external sources of funding for specific projects. An operational budget, specific to the PA, is secure and is guaranteed on a 3-5 year cycle. Updated guidelines, policies and procedures available at the reserve. | 3.3 Adequacy of Operational budget 3.4 Security of Operational budget 3.4.1 Capital budget 3.4.2 Budget Management 4.8 Insurance | | | | | | R 33 603,94 | R 55 262,44 | R 42 632,43 | R 20 225,70 | R 19 868,28 |
| b | *Compile database of external sources of funding for specific projects* | | | | | | | | | | | | |
| c | *Link OMF to operational budget and obtain dedicated budget* | | | | | | | | | | | | |
| d | *Maintain a reserve-based record of all purchases made, accounts paid and services procured in support of reserve operations over each financial year.* | | | | | | | | | | | | |
| e | *Keep record and manage own revenue according to PFMA and supply inputs when required* | | | | | | | | | | | | |