

STRATEGIC MANAGEMENT PLAN

for the

GYS WIESE PROTECTED ENVIRONMENT

2020 – 2030

Compiled by : Melkboomhoek closed corporation,
Registration number: 2007/16474/23

With the support of the Wilderness Foundation Africa (WFA),
World Wide Fund for Nature. (WWF-SA)
South African National Parks (SANParks) and
The Leslie Hill Succulent Karoo Trust (LHSKT)

REVISION DATE FOR STRATEGIC MANAGEMENT PLAN: 2025

MAGTIGING

In vervulling van Afdeling 39 en 41 van die Nasionale Omgewingsbestuur: Wet op Beskernde gebiede Nr 57 van 2003, word die strategiese bestuursplan hierdeur aanvaar en gemagtig vir die bestuur van die Gys Wiese Beskernde Omgewing (GWBO).

Ondersteun deur: Suid-Afrikaanse Nasionale Parke

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BESTUURSPLAN HERSIENINGSDATUM: 2025

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List of Acronyms and Abbreviations

ACPV	Annual Precipitation Coefficient of Variance
AOP	annual operational plan
CBA	Critical Biodiversity Area
CC	closed corporation
DENC	Department of Environment and Nature Conservation
DFFE	Department of Forestry and Fisheries and the Environment
EPWP	Extended Public Works Projects
GWPE	Gys Wiese Protected Environment
ha	hectare
ID	identification
LSU	livestock unit
MA	management authority
MAP	Mean Annual Precipitation
MAPE	Mean Annual Potential Evaporation
MASM	Mean Annual Soil Moisture
MAT	Mean Annual Temperature
MFD	Mean Frost Days
NC PAES	Northern Cape Protected Area Expansion Strategy
NC	Northern Cape
NEMBA	National Environmental Management: Biodiversity Act
NFEPA	National Freshwater Ecosystem Priority Area
NNP	Namaqua National Park
No.	number
NPAES	National Protected Areas Expansion Strategy for South Africa.
NRM	Natural Resource Management
RSA	Republic of South Africa
SABAP	South African Bird Atlas Project
SANParks	South African National Parks
SKEP	Succulent Karoo Ecosystem Programme
WFA	Wilderness Foundation Africa
WWF	World Wide Fund for Nature

1. INTRODUCTION

The Gys Wiese Protected Environment (GWPE, also known as the farm 'Bokskraal') has mainly been proclaimed because the owner highly values good stewardship over that which has been entrusted to them. The proclamation of the protected area will better equip the owner to improve the overall ecological condition of the land over time, as well as obtain legal recognition for conservation work in an agricultural production environment.

After Melkboomhoek Closed Corporation (owner and Management Authority) showed interest in a type of protected area declaration in 2017, the Wilderness Foundation Africa (WFA) conducted a biodiversity assessment of the property. In collaboration with WFA, the World Wide Fund for Nature. (WWF-SA), South African National Parks (SANParks) and the Northern Cape Department of Environment and Nature Conservation (DENC), it has been determined that the property is worthy of declaration as a Protected Environment under the Protected Areas Act No.57 of 2003.

In terms of permanent conservation organisations in the Namaqualand region, the GWPE is located in the South African National Parks (SANParks) domain. The declaration of the Protected Area is therefore channeled by SANParks for the signing and declaration by the Minister of the Department of Forestry and Fisheries and the Environment (DFFE). The declaration process was started in 2017 and was at an advanced stage of the declaration process at the time of compiling the management plan.

The above has paved the way for the eventual legal protection of 1044ha of the Succulent Karoo biome in the Namaqualand region. The property covers 564ha Category 1 Critical Biodiversity Area (CBA1) and 480ha Category 2 Critical Biodiversity Area (CBA2). The GWPE borders the Namaqua National Park (NNP) for 5.6km and is part of the NNP's core buffer zone. The protected area also forms part of the catchment area of the Swartlintjies River, a priority river in the NNP, and therefore contributes to the protection status of this catchment area and can potentially improve hydrological processes within the NNP. The GWPE also contributes to the conservation status of two Succulent Karoo biome vegetation types, viz. *Namaqualand Klipkoppe Shrubland* and *Namaqualand Heuweltjieveld*, that are currently poorly protected.

Upon the declaration of the GWPE, it will be subject to the requirements of the Protected Areas Act. The law requires the management authority of the protected area, the Melkboomhoek CC, to submit a strategic management plan for the protected area to the Minister within a period of 12 months after the declaration date. This document, which forms the basis of the management of the GWPE, has been compiled in fulfillment of the requirements of the above law.

This document is a Strategic Management Plan and explains the legislation and policies for the management of a protected area. It also describes the vision, mission and management objectives for the GWPE.

2. DESCRIPTION OF THE GYS WIESE PROTECTED ENVIRONMENT

2.1. LOCATION

The Gys Wiese Protected Environment (GWPE) is located in the Namaqualand region, a rural geographical area that stretches from the Orange River in the north to Vanrhynsdorp in the south. The protected area is 25km west of Kamieskroon and borders the Namaqua National Park.

2.2. DECLARATION AGREEMENT

This is available from the owner on request.

2.3. DETAILS OF PORTIONS OF THE PROPERTY

The Gys Wiese Protected Environment (GWPE) consists of three areas as described in Table 2.1 below.

Table 2.1 Property details of portions of the Gys Wiese Protected Environment

Local name	Title deed name	Owner	Erf no.	Size (ha)	Unique ID no.
Bokskraal	Doornfontein	Melkboomhoek CC	5/464	116.4728	C05300000000046400005
Bokskraal	Melkboomhoek	Melkboomhoek CC	RE/443	142.529	C05300000000044300000
Bokskraal	Grootberg	Melkboomhoek CC	10/442	785.1756	C05300000000044200000

(Lexis® WinDeed property reports, 2016)

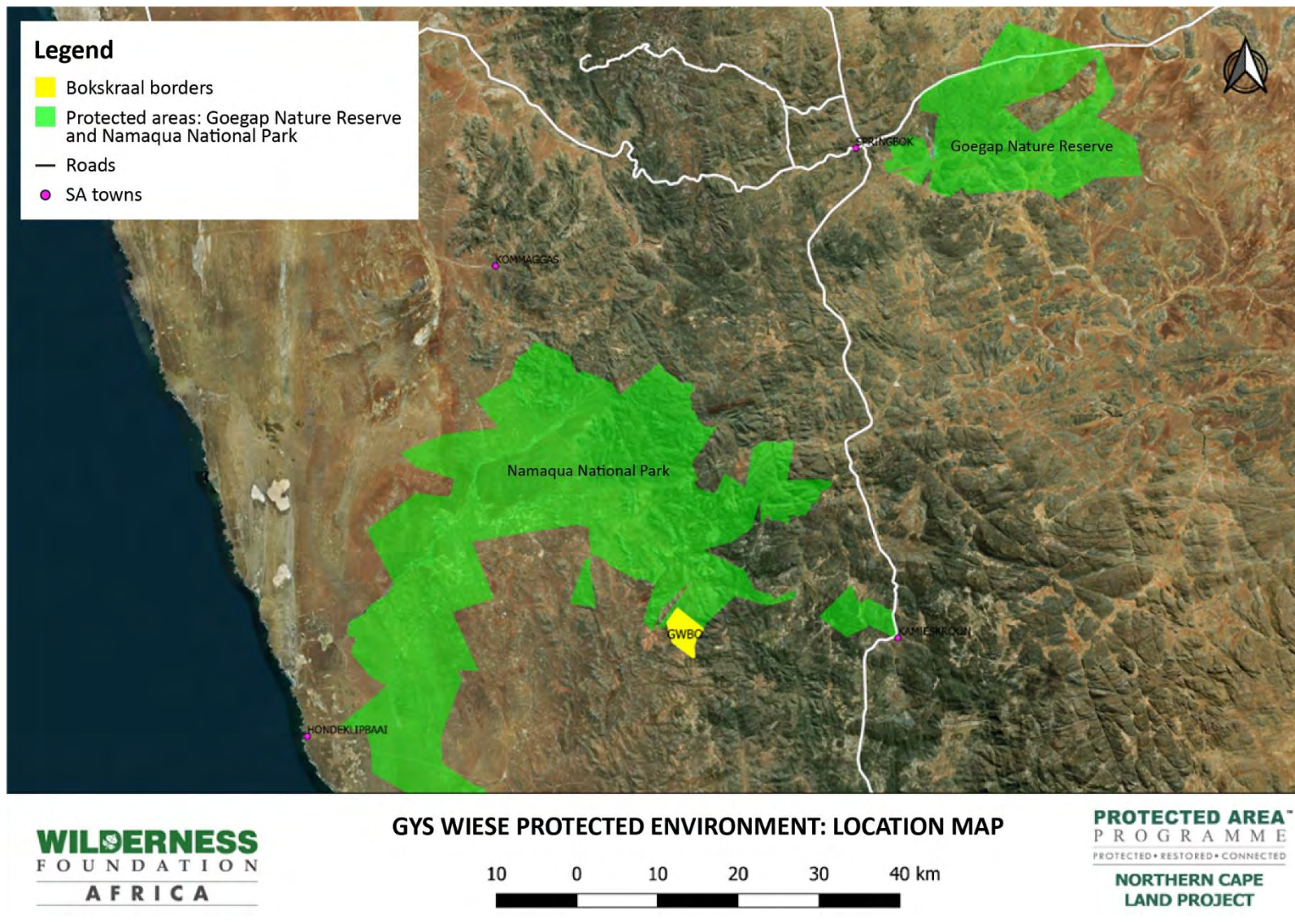


Figure 2.1 Gys Wiese Protected Environment: Location map

2.3.1. Ownership

Gys Wiese Protected Environment (GWPE) is formed by the farm, which is locally known as Bokskraal. In 1934 the land was acquired by Jakobus Wiese from the original owner, G.A. Agenbach. Jakobus Wiese farmed here until 1967, after which his son Gys Wiese, in whose honor the GWPE was named, took over the farm. He kept between 100 and 200 head of livestock depending on the condition of the veld and rain received for that time. This works out to an average carrying capacity of 7ha per small stock unit. The farm was historically plowed for the planting of grain crops whose ancient lands can still be seen today. In 1986, due to poor veld conditions and low rainfall, for five years all livestock was removed from the farm and cultivation of lands was stopped. To this day, no lands have been cultivated further.

In 2007 the farm was bought over by the Melkboomhoek Closed Corporation. The property has since been seasonally grazed lightly, no cultivation of the lands took place and it was only used periodically for tourist accommodation.

2.4. SOCIO-ECONOMIC CONTEXT

The Gys Wiese Protected Environment falls under the Kamiesberg Local Municipality (2019), which is one of the smaller municipalities within the Namaqua District Municipality. The GWPE has a management philosophy/model that accommodates both sustainable commercial livestock farming as well as conservation of biodiversity. Outcomes of the management philosophy contribute to local socio-economics by:

- Job creation;
- Contributing to food security through livestock farming;
- Contributing to biodiversity conservation; and
- Stimulating tourism.

The above contributions are essential to help address negative social issues. Results of the local 2016 population survey indicate the following social issues:

- Total population of 9605 people;
- Only 34.2% are permanently employed and economically active;
- Unemployment rate of 11%; and
- An average annual household income of R29 400.

Namakwa District Biodiversity Sector Plan (Oosthysen, 2008) states that the socio-economic well-being of the region will benefit more from biodiversity conservation than from mining. The statement stems from the fact that the mining industry is temporary in nature and in most cases irreparably destroys the natural

environment. The protection of nuclear biodiversity areas such as the GWPE will contribute to the local economy through, for example, tourism and infrastructure opportunities.

The GWPE contributes to at least two of the spatial objectives of the Nama Khoi 2018/2019 Integrated Development Plan (Nama Khoi Municipality, 2018: 32-35):

- **“Spatial objective 3:** To develop sustainable and diverse local economies by the utilisation of opportunities in the different spatial categories – Tourism.
- **Spatial objective 4:** To protect the pristine and unique natural environment with its four distinct biogeographical regions by means of effective management and managed use – Core and buffer areas (biodiversity).”

2.4.1. Land use – historical and current

The region's economic sectors consist mainly of extensive livestock farming, tourism and mining activities. Namaqualand has a long farming history dating back to the nomadic Khoekhoen who moved into the area with small flocks of sheep more than 2000 years ago (Webly, 1992). In the mid-18th century, colonial farmers began to inhabit the area which led to more extensive farming practices that included tillage for grain crops (Rohde & Hoffman, 2008).

Farms had open borders until the 1950s to 1960s, after which fox trial fences were erected through state subsidies to try to combat the impact of predators. These hard boundaries did have an impact on some of the smaller farmers who no longer had rural boundaries, as these hard boundaries reduced their land in a way that started to put more pressure on the veld.

During the summer months, the farmers (including the owners of the GWPE) with land in the summer rainfall region (Bushmanland), moved with their livestock eastwards to rest the winter pastures and thus mimic natural historical grazing patterns.

The GWPE adjoins conservation land, the Namaqua National Park's Milk Tree section for approximately 5.6km, as well as other extensive livestock farming land for the remaining 8.9km of the GWPE's boundary fence.

Diamond and copper mining activities in Namaqualand began to scale down during the 1980s and 1990s, but recent geological surveys and mining exploration in the area have sparked new interest, especially with regard to heavy metal mining (Coastal Environmental Services, 2015). The renewable energy sector also finds the Namaqualand region attractive for wind and solar power developments and is soon becoming part of the local context (Todd, 2012).

2.4.2. Cultural heritage of the Gys Wiese Protected Environment

The Namaqualand region has a rich cultural heritage dating back thousands of years from the early Holocene period, when the first San hunter-gatherers inhabited the area. More or less 2000 years ago, Nama-speaking Khoekhoe shepherds migrated here, after which migrant farmers from the Cape colony arrived in the mid-18th (Webly, 1992; Orton, 2012).

It is claimed that most of the Khoekhoe shepherds remained in the Kamiesberg, but moved seasonally between the Sandveld and western Bushmanland. Across the landscape, there is still evidence of the area's first inhabitants, with the Spoeg River caves perhaps one of the most famous. After archaeological excavations, bones have been discovered here that serve as the oldest evidence of domestic sheep in South Africa (Orton, 2012). The Gys Wiese Protected Environment also has signs of this period. On the farm there are two stone shelters that show evidence of use by San or Khoekhoe shepherds. At present, it is only possible to speculate on how long ago the shelter was used and by which indigenous group, as no archaeological research had been done on the farm.

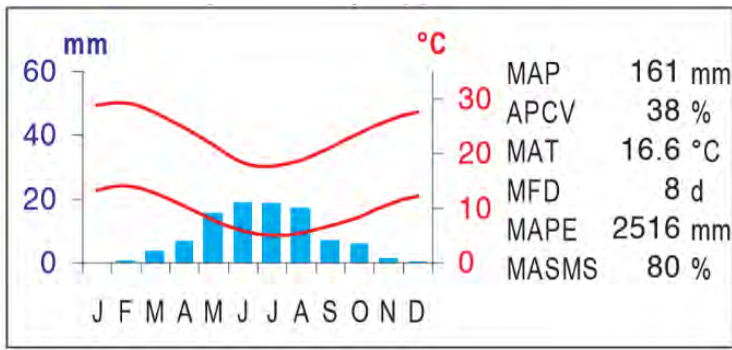
According to the previous owner, Gys Wiese, Bokskraal was named after a Damara herdsman who lived on Killianspas. He had a kraal there where the goats slept at night, but went to a well/gorra under the mountain every day to fetch water for the cattle. Because the Damara's surname was Bok, the wells were named after "Bok's wells". In time he moved the kraal to the well after which the land was known as "Bok se Kraal", and later for convenience only as "Bok's kraal", which was then known as "Bokskraal".

2.5. BIOPHYSICAL ENVIRONMENT

2.5.1. Climate

The GWPE falls under the winter rainfall region of the Northern Cape, within the Namaqualand Hardeveld Bioregion (Mucina et al., 2006). Rainfall varies between 100 and 160 mm per year, and is considered predictable and reliable driven by cold fronts off the coast (Lovegrove, 1993). Dew also occurs right through the winter, contributing to the average rainfall rate (Mucina et al., 2006).

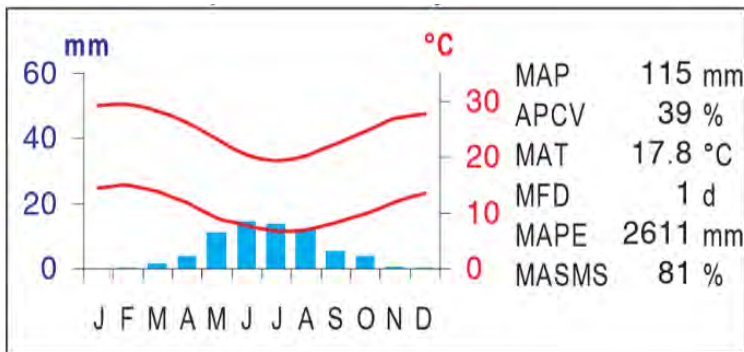
Thanks to the region's location close to the Atlantic Ocean and cold Benguela currents, relative moderate temperatures are maintained (Cowling et al., 1999). Summers are dry and hot with an average maximum temperature of 30°C. However, temperatures can increase significantly when warm mountain winds blow from the higher plateau (40°C) (Cowling et al., 1999). Winters are cold and wet with an average minimum temperature of 5°C (Mucina et al., 2006). Refer to Figures 2.2 and 2.3 for climate diagrams of the two main areas, discussed in Section 2.5.5.



[MAP: Mean Annual Precipitation; ACPV: Annual Precipitation Coefficient of Variance; MAT: Mean Annual Temperature; MFD: Mean Frost Days; MAPE: Mean Annual Potential Evaporation; MASM: Mean Annual Soil Moisture]

Figure 2.2 Climate diagram for SKn1 (Namaqualand Klipkoppe Shrubland)

(Mucina et al., 2006).



[MAP: Mean Annual Precipitation; ACPV: Annual Precipitation Coefficient of Variance; MAT: Mean Annual Temperature; MFD: Mean Frost Days; MAPE: Mean Annual Potential Evaporation; MASM: Mean Annual Soil Moisture]

Figure 2.3 Climate diagram for SKn4 (Namakwaland Heuweltjieveld)

(Mucina et al., 2006)

2.5.2. Topography and site morphology

The topography of the GWPE is characterised by mountainous granite boulders along the southern, western and eastern portions of the property. These heads are separated by a north-flowing tributary of the Swartlintjies River in the direction of the Melkboom section of the Namaqua National Park (NNP).

The lowest point of the GWPE is approximately 325m above sea level, where mountain peaks rise to 545m above sea level.

2.5.3. Geology and soil

The Gys Wiese Protected Environment (GWPE) falls under the Namaqualand geographical area, with underlying geology consisting of highly deformed, metamorphic granite gneiss of the Namaqualand Metamorphic Province (Watkeys, 1999). Topography of the GWPE landscape consists mostly of moderate, rocky slopes with characteristic rocky banks and domes in the *Namaqualand Klipkoppe Shrubland* (SKn1), but changes to undulating plains with deeper soils in the *Namaqualand Heuweltjieveld* (SKn4) (Mucina et al., 2006).

Kamieskroon gneiss is the dominant geology type in the area (Mucina et al., 2006) (Figure 2.4).

Due to slow formation, soils are coarse in texture. Soil is well drained but has poor water retention due to low clay and organic matter content (Watkeys, 1999).

Two dominant land / soil types occur as shown in Figure 2.5 (Mucina et al., 2006):

- Ag: Consists of well-drained, red/yellow soil up to 300mm deep with a high base status; and
- Ib: Consists mostly of stone (60-80%) with the remaining substrate made up of mixed soil types.

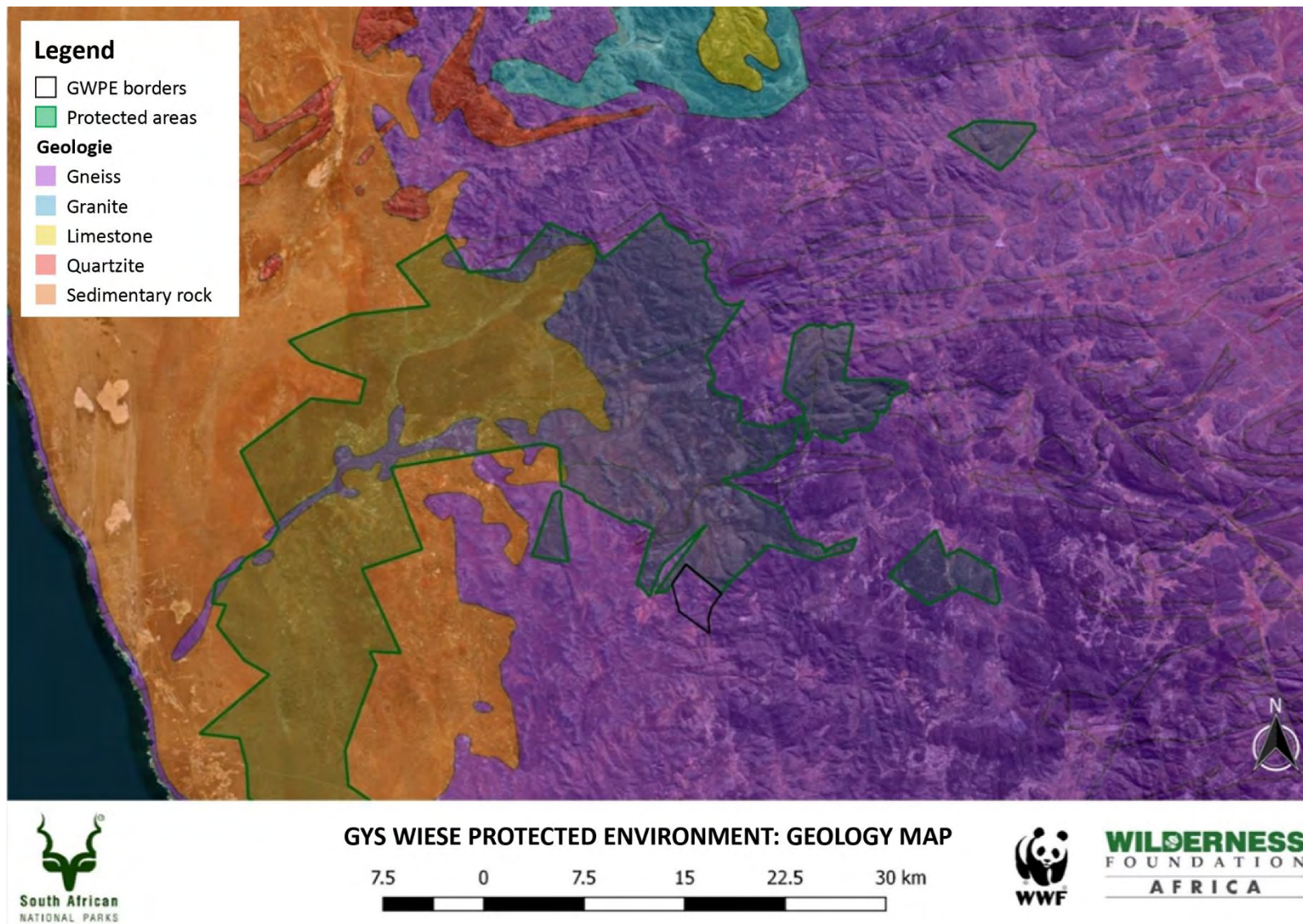
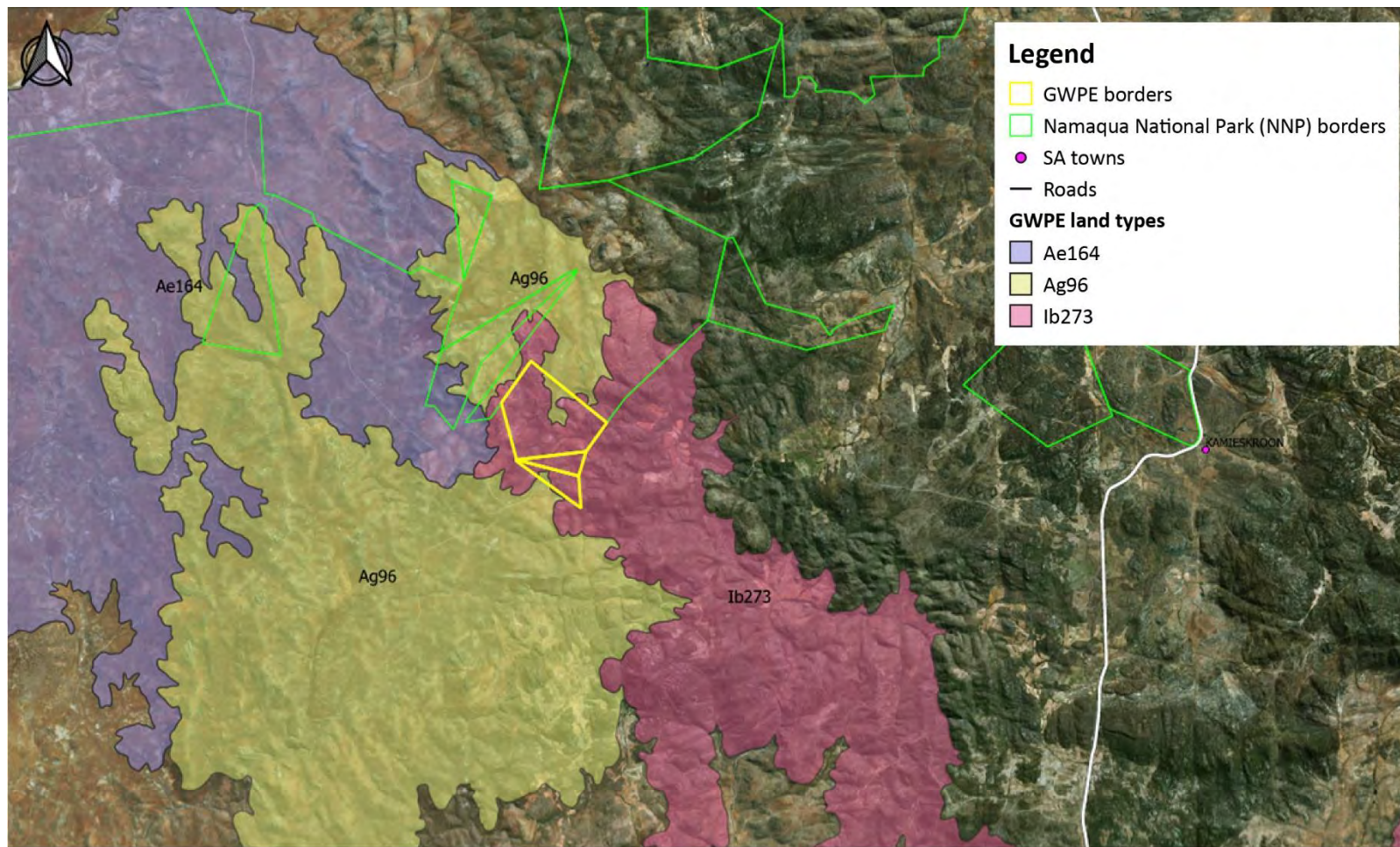


Figure 2.4 Gys Wiese Protected Environment: Geology map showing Gneiss as the dominant rock type



**GYS WIESE PROTECTED ENVIRONMENT:
MAP OF LAND TYPES**

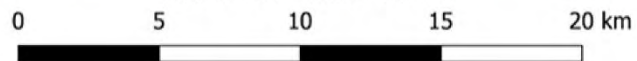


Figure 2.5 Gys Wiese Protected Environment: Map of dominant land types

Where two types of soil meet, there is often a stress zone. Different soil types support different types of vegetation and this meeting point is known as an ecotone. The vegetation in this ecotone area can contain a unique combination of both field types. These ecotone areas are ecologically important because they are often areas of active speciation and high species diversity. For this reason, disturbance in this area should be avoided and rehabilitation thereof encouraged.

The Gys Wiese Protected Environment features ecotones where quartz and gneiss hills meet with the sandy loam soils of the lower plains and valleys. An ecotone also occurs on a broader landscape level where Ag and Ib soil types meet. Although both vegetation types that occur on GWPE grow on the Ag soil type, the ecotone on GWPE specifically serves as the transition between *Namaqualand Klipkoppe Shrubland* and *Namaqualand Heuweltjieveld*. Where these two types of vegetation overlap, unique vegetation and biodiversity are often found.

2.5.4. Hydrology

The aquatic characteristics of the GWPE include three sub-quaternary catchment areas (Nos. 4882, 5012 and 5132) that contain narrow drainage paths to wider seasonal river courses. (See Figure 2.6.) These rivers are classified as Code 4 (No. 4882) and Code 1 (Nos. 5012 and 5132) National Freshwater Ecosystem Priority Area (NFEPA) rivers, respectively. Code 4 NFEPA rivers have been described in the NFEPA database as 'free-flow management areas' and have been singled out as strategic priorities for the conservation of the freshwater ecosystem and associated biodiversity.

The GWPE falls within the Orange River coastal catchment as part of the larger, Lower Orange River catchment (WMA 14). The seasonal riverbeds, which usually flow in times of good winter rain, drain into larger riverbeds that run to the Atlantic coast. In the case of GWPE, it is the Swartlintjies River and to a lesser extent the Horees River which flow into the Spoeg River. These drainage paths and river courses not only support a variety of vegetation, but also serve as a refuge for animal species during dry summer months. Animals dig 'gorras' in ditches that occur in the riverbeds. A 'gorra' is a hole that animals dig especially in riverbeds into which water seeps, and serves as an important source of water during dry times.

The Swartlintjies River is almost completely included in the Namaqua National Park. As part of catchment area no. 4882, which forms the upper river basin management area for the Swartlintjies River, the GWPE will further contribute to the protection and overall functioning of key hydrological and ecosystem processes in this river system. The GWPE is also protected by the Grootberg and Branderseberg catchment areas, which prevent the hydrology of the area from being affected by mismanagement of aquatic systems in surrounding areas (e.g. invasive vegetation, mining and sedimentation).

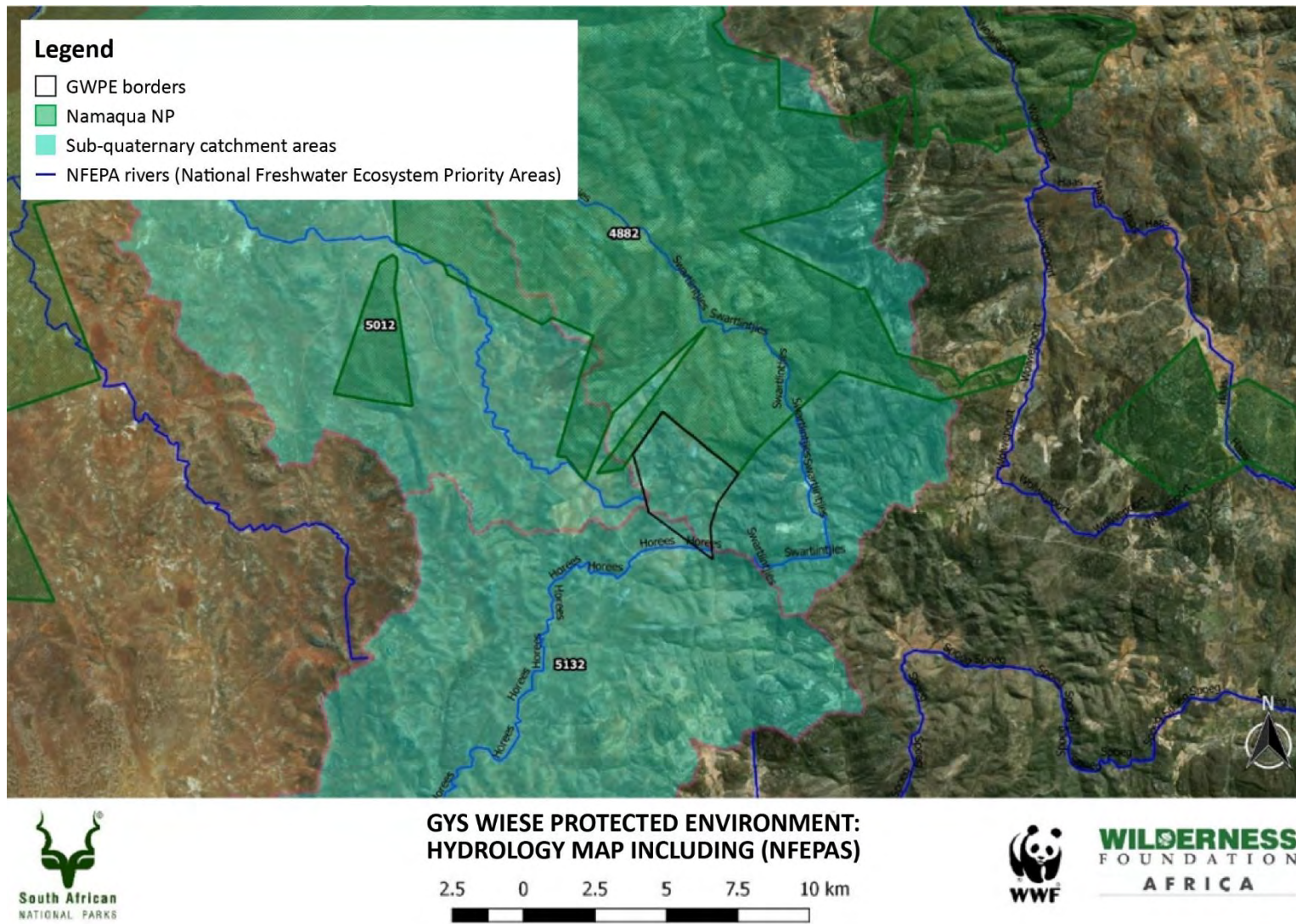


Figure 2.6 Gys Wiese Protected Environment: Hydrology map indicating (NFEPA: National Freshwater Ecosystem Priority Areas) rivers and sub-quaternary catchments

2.5.5. Vegetation

The vegetation of the GWPE can be divided into two large vegetation types, namely: (i) the *Namaqualand Klipkoppe Shrubland (SKn1)*; and (ii) the *Namaqualand Klipkoppe Heuweltjieveld (SKn4)*.

Refer to Appendix B for a preliminary list of plant species. Follow-up visits and ongoing identification of vegetation species will complete the plant species list for the GWPE.

2.5.5.1. *Namaqualand Klipkoppe Shrubland (SKn1)*

This field type is characterised by large granite rocks with flat rock slabs in between, each with its own associated plant species. The soil is coarse loamy sand. Trees such as the quiver tree (*Aloidendron dichotomum*), the wild fig (*Ficus cordata*) and gwarrie (*Euclea tomentosa*) occur on the higher rocky areas, while the sweet thorn (*Vachellia karroo*) is found in the riverbeds. Large, conspicuous shrubs such as *taaibos (Searsia undulata)* en Namaqua red balloon (*Erythrophysa alata*) are found scattered in the outcrops between rocks.



Figure 2.7 Namaqualand Klipkoppe Shrubland on GWPE

Deciduous and other tasty shrubs (50cm to 1m high) are found on the slopes, such as the grey thistle (*Berkheya fruticosa*), *Thesium lineatum*, *Gloveria integrifolia*, *Calobota halenbergensis*, *Calobota sericea*, thorny salad-bush (*Didelta spinosa*), Cape snow bush (*Eriocephalus brevifolius*) and resin daisy (*Pteronia glabrata*). Non-palatable shrubs, such as the itch bush (*Hermannia disermifolia*) and the *Stoeberia utilis* subsp. *lerouxii* also occur here. Dwarf shrubs (10 to 50cm tall) such as vygies species, melon bush or soap bush (*Manochlamys albicans*), yellow milk bush and sweet milk bush (*Euphorbia mauritanica* and *Euphorbia rhombifolia*), bokhoring (*Microlooma sagittatum*).

Monechma spartioides, *Blepharis macra*, *Roepera cordifolia*, *Pelargonium praemorsum* subsp. *Praemorsum* and *Solanum burchellii* occur sparsely distributed in the outcrops (Le Roux, 2015).



Figure 2.8 High-lying, small patches of grassland

This grassland is found in the stony outcrops in deep, coarse loam sand and is dominated by tall bushman grass (*Stipagrostis ciliata*).



Figure 2.9 Dark vegetation of the Sweet thorn/*Soetdoring* (*Vachellia karroo*) in the river bed, along with Yellowbush/*Kraalbos* (*Galenia africana*) in the foreground

Sweet thorn (*Vachellia karroo*), along with Yellowbush (*Galenia africana*) and the *Codon royenii* are usually found in riverbeds. *Lycium amoenum* is also often found here. *Kraalbos* (*Galenia africana*), here in the foreground, is usually dominant on old lands that have not been plowed for years.

In spring there are usually annual herbs growing on open patches amongst the perennial shrubs. These herbs are considered highly palatable fodder for livestock. Unfortunately, spring is also the germination period for perennial plant species which emerge amongst the short lived annual herbs. These seedlings are then grazed along with the herbs and are often not successful at establishing as mature plants if heavy grazing is applied. *Kraalbos* (*Galenia africana*), a non-palatable species, remains and therefore also remains the dominant perennial plant species on old cultivated lands.

2.5.5.2. Namaqualand Heuweltjieveld (SKn4)

The soils of the *Namaqualand Heuweltjieveld*, unlike the soil in the *Namaqualand Klipkoppe Shrubland*, have a finer texture, are more alkaline and a clayey loam. The "hills" that can be seen everywhere are prehistoric termite mounds that date back more than 20 000 years. The plant species that were earlier found on these hills were tasty plants that have been overgrazed.

The texture of the soil is also of such a nature that it can be easily disturbed by animal hooves and is very susceptible to soil erosion. Due to the palatability of the veld, it was therefore historically overgrazed which also led to soil erosion. The soil is also harder than in the *Namaqualand Klipkoppe Shrubland* and digging animals, such as whistling rats and porcupines, tunneled into these hills for shelter. This in turn led to further disturbance of the Heuweltjieveld. As a result of the above, Heuweltjieveld is mostly disturbed and mainly houses annuals and perennials that are adapted to disturbance.

Typical annual plants include the *Aizoon canariense*, *bittergousblom* (*Arctotis fastuosa*), *magrietjies* (*Ursinia cakilefolia*), *perdeblom* (*Didelta carnososa*), beetle daisy (*Gorteria diffusa*), *Lessertia diffusa*, *Leysera tenella*, *Rhynchopsidium pumilum*, *soutslaai* (*Mesembryanthemum guerichianum*) and small and large shrubby mayweed (*Oncosiphon suffruticosus* and *O. grandiflorus*).

Perennial plants include the brackish sorrel (*Kewa salsoloides*) and *Tetraena retrofracta*.

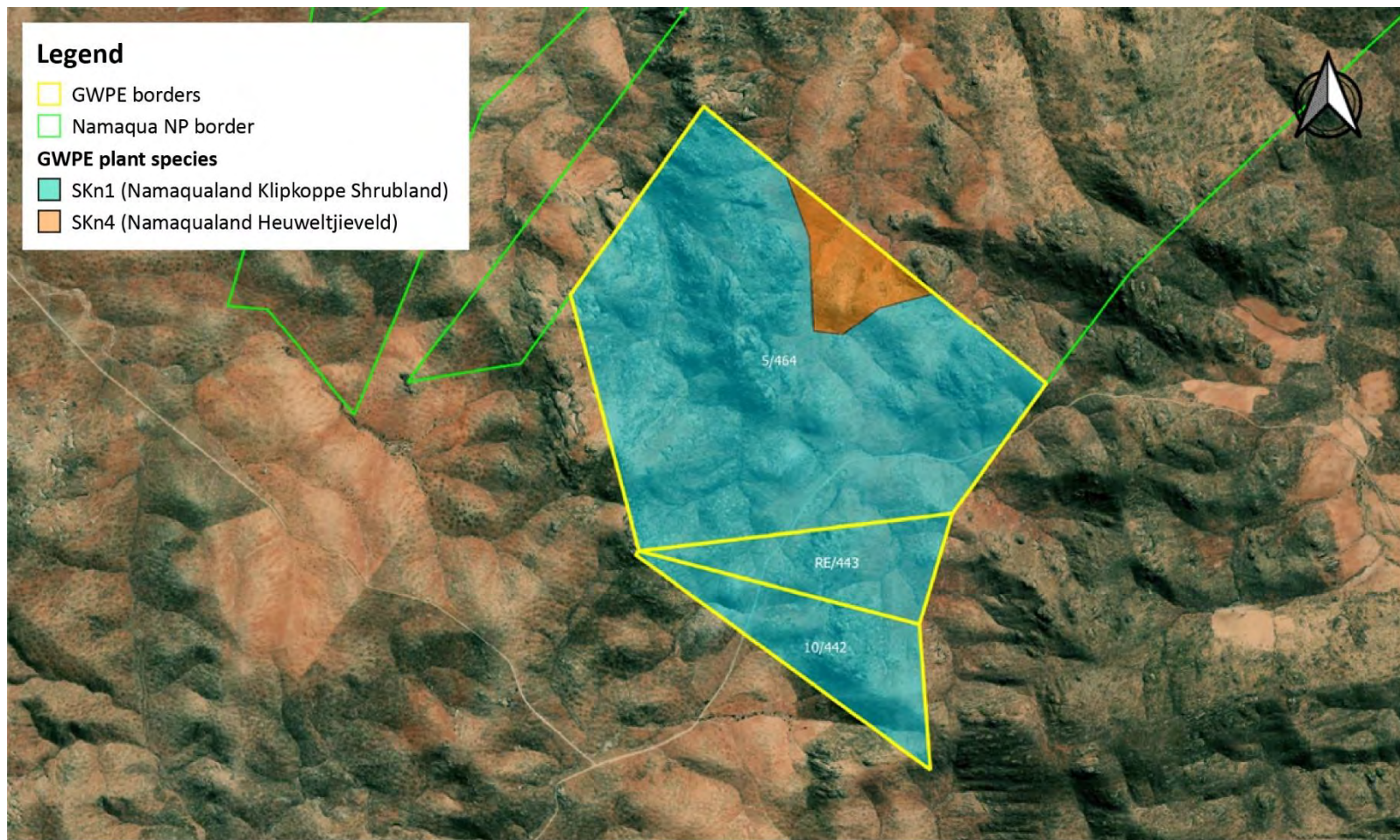
Bulbous plants that occur here include the *Chlorophytum crassinerve*, *Haemanthus amarylloides* subsp. *Polyanthus*, *Lapeirousia fabricii*, *Lapeirousia silenoides*, and *Trachyandra falcata*.



Figure 2.10 Spear grass/steekgras (*Stipa capensis*)

Patches of spear grass (*Stipa cepensis*) also occur in the *Namaqualand Heuweltjieveld* (See Figure 2.10). The typical species adapted to disturbance as mentioned above occur here with sparsely distributed grasses, such as tall bushman grass (*Stipagrostis ciliata*) and small bushman grass (*Stipagrostis obtusa*).

What is worrying, however, is that spear grass (*Stipa cepensis*) is beginning to penetrate here. It usually starts on the hills, but spreads very quickly throughout the landscape as can currently be seen from Klawer to north of Vanrhynsdorp. The annual grass seeds drill into the animals' skin and can have serious consequences. This makes this field difficult to graze, except for three to four weeks of the year when the grass is still coming up. Then it shoots seeds and the seeds remain until the grass germinates again.



GYS WIESE PROTECTED ENVIRONMENT: VEGETATION MAP



WILDERNESS FOUNDATION AFRICA

Figure 2.11 Gys Wiese Protected Environment: Vegetation map

2.5.6. Fauna

The Gys Wiese Protected Environment is home to a variety of indigenous fauna – insects, reptiles, mammals, birds, etc. Complete specialist lists of the various fauna groups have not yet been compiled, but will form part of the monitoring and data collection activities.

During 2002, the Succulent Karoo Ecosystem Programme (SKEP) launched a regional 'SKEP expert map'/database describing priority conservation areas for mammals, amphibians, insects, reptiles and invertebrate groups in the Succulent Karoo. The SKEP expert mammal database indicates that the Gys Wiese Protected Environment falls under the Namaqualand priority area (group mg9) for the possible spread of the endemic mole rat species – Namaqua dune mole rat (*Bathyergus janetta*).

Several species of buck occur naturally on the GWPE, such as the klipspringer (*Oreotragus oreotragus*), steenbok (*Raphicerus campestris*) and common duiker (*Sylvicapra grimmia*). Grey rhebok (*Pelea capreolus*) and kudu (*Tragelaphus strepsiceros*) are thought to occur in the area from time to time. Other mammalian species found in the GWPE include leopard (*Panthera pardus*), caracal (*Caracal caracal*), red-/black-backed fox (*Canis mesomelas*), common genet (*Genetta genetta*), porcupine (*Hystrix cristata*), dassie (*Procavia capensis*), yellow mongoose (*Cynictis penicillata*), striped polecat (*Ictonyx striatus*), aardwolf (*Proteles cristata*), aardvark (*Orycteropus afer*), bat-eared fox (*Octocyon megalotus*), honey badger (*Mellivora capensis*), baboons (*Papio ursinus*) and Cape/silver-backed fox (*Vulpes chama*) (Stuart & Stuart, 2001).

2.5.6.1. Avifauna

The South African Bird Atlas Project 2 (SABAP 2) has a coverage map with several pentads. These pentads are 5 minutes x 5 minutes coordinate grids that cover the Southern African sub-continent. This database contains a record of bird species that have been seen and identified in the specific areas.

The Gys Wiese Protected Environment is located in the SABAP 2 pentad number: 3010_1740. Up until the end of 2018, the following have been seen in this area:

- 49 different bird species;
- 1 bird specie endemic to South Africa’;
- 9 bird species close to endemic (NE = ~70% or more of the population in the RSA);
- 2 red data species: Twee rooidataspecies: Ludwig's bustard (*Neotis ludwigii*) (endangered) and Verreaux's eagle or black eagle (*Aquila verreauxii*) (vulnerable).

The management authority of the GWPE keep a record of bird species in the area. The SABAP 2 list of bird species for the pentad grid number 3010_1740 is available in Appendix C.

2.5.6.2. *Amphibians, reptiles, invertebrates and insects*

The Namaqualand, as part of the Succulent Karoo, is known worldwide for both reptile and insect diversity, many species of which many are endemic to the area (Desmet, 2007).

A complete fine-scale survey of insects, amphibians, invertebrates and insects has not yet been done for the GWPE. Endemic reptile species whose distribution overlaps with the GWPE include the Namaqualand speckled cape tortoise (*Homopus signatus signatus*), Namaqualand tent tortoise (*Psammobates tentorius tremeni*) and the many-horned adder (*Bitis cornuta*).

SKEP's expert database for priority conservation areas also indicates that the GWPE overlaps with the insect priority map. Future fine-scale surveys and mapping of the GWPE are likely to lead to the inclusion of GWPE in the other priority maps.

Partnerships with academic and conservation agencies should be pursued for the compilation of specialist lists and other natural resource inventories.

2.5.7. Plant species of conservation interest



Figure 2.12 Quiver tree/Kokerboom (*Aloidendron dichotomum*)

Table 2.2 GWPE Plant species of conservation interest

Status	Species
Endemic	<i>Chlorophytum crassinerve</i>
Endemic	<i>Erythrophysa alata</i>
Endemic	<i>Oxalis namaquana</i>
Endemic	<i>Stoeberia utilis</i>
Endemic	<i>Chlorophytum crassinerve</i>
Vulnerable	<i>Aloidendron dichotomum</i>

2.5.8. Veld fires

The ecosystem in which the GWPE is located is not fire-driven. Wildfires in the Succulent Karoo are very rare as rainfall is low and vegetation cover is too sparse. The low rainfall causes limited and irregularly available biomass as fuel. In the summer months, fires can occur during thunderstorms due to lightning. The nearby neighbouring farm, Grootvalleij, experienced a partial veld fire in 2010 due to lightning.

The impact of veld fires in the area will mostly remain localised, with the affected area small. In the event of a fire, steps will be taken to properly manage the affected field to avoid trampling, overgrazing and consequent erosion.

The managing authority is not registered with a fire protection association because there are certain irrelevant requirements attached to it. For example, members must create and maintain firebreaks around farms. The impact of firebreaks due to erosion will, in most of the Succulent Karoo veld, have extremely negative consequences.

3. CONSERVATION IMPORTANCE OF THE GYS WIESE PROTECTED ENVIRONMENT

The importance of the Gys Wiese Protected Environment (GWPE) in terms of their biodiversity plans and strategy, as well as their contributions to the conservation of biodiversity patterns, ecological processes and ecosystem services are described in this section.

The following are the main reasons that classify the property as worthy of conservation:

- The GWPE is located in the core buffer zone of the Namaqua National Park (NNP). The protection of the area contributes to SANParks' mandate to implement their buffer zone strategy of extending protected areas.
- The GWPE contains Category 1 (563.8558ha) and Category 2 (480.3216ha) Critical Biodiversity Areas (CBAs).
- The GWPE contributes to the biodiversity patterns and national conservation targets of two, currently poorly protected vegetation types of the Succulent Karoo, namely the *Namaqualand Klipkoppe Shrubland* and *Namaqualand Heuweltjieveld*.
- The GWPE covers part of a priority river's (Swartlintjies) catchment and therefore contributes to the conservation status of the river's catchment, potentially further contributing to improved hydrological processes in the NNP.
- The GWPE contributes to the conservation of ecosystem services and goods.

3.1. PROTECTED AREAS EXPANSION STRATEGIES

The National Protected Areas Expansion Strategy for South Africa (NPAES) (SANBI & DEAT, 2016) calls upon provinces to develop and to implement plans that support the NPAES. The NPAES, which sets out a broad national framework for the expansion of protected areas in South Africa, identifies areas of conservational importance which have been targeted for the expansion of protected areas in the country and mechanisms to achieve this.

The Northern Cape Protected Area Expansion Strategy (NC PAES) of the Northern Cape Department of Environment and Nature Conservation (NC DENC, 2017) identified and prioritised natural habitats in the Northern Cape for formally declared protected areas. The NC PAES aims to protect biodiversity and ecosystem services for future generations. This strategy is in line with the principles and goals of the National Protected Areas Expansion Strategy for South Africa (NPAES).

South African National Parks (SANParks) has also determined an expansion and consolidation plan per National Park. The Gys Wiese Protected Environment (GWPE) is located in the buffer zone of the Namaqua Nationale Park and is also included in the NC PAES.

3.2. CRITICAL BIODIVERSITY AREAS

The GWPE has been classified as having Category 1 and 2 Critical Biodiversity Areas (CBAs), mainly because of the high levels of endemic succulent vegetation diversity. The Northern Cape Critical Biodiversity Area database was mostly used to select the NC PAES focus areas as indicated in Figure 3.1.

Table 3.1 Critical Biodiversity Areas in the Gys Wiese Protected Environment

Critical Biodiversity Area (CBA)	Hectares	% area
CBA1	563.8558	54%
CBA2	480.3216	46%
Total	1044.177	

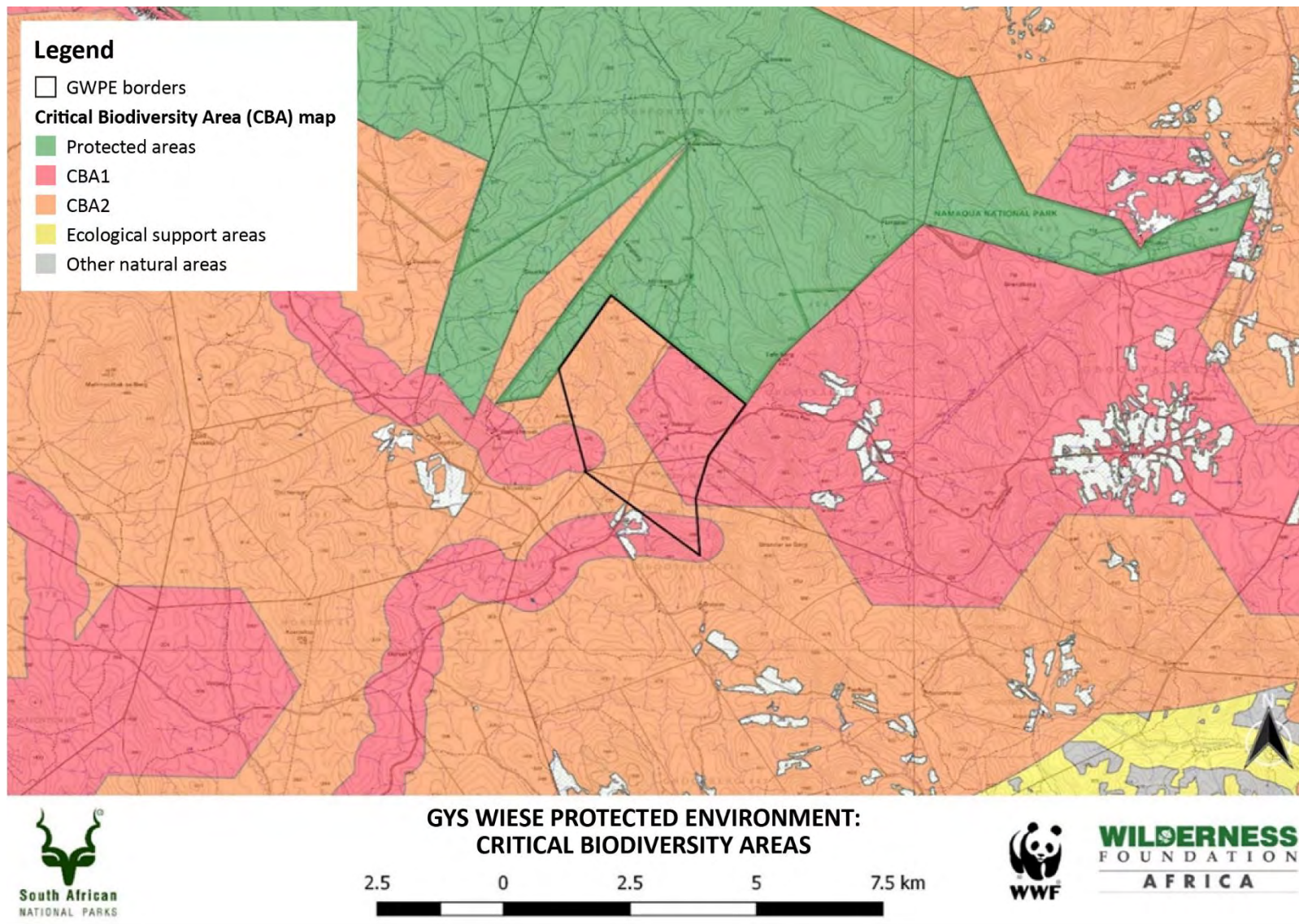


Figure 3.1 Gys Wiese Protected Environment: Map of Critical Biodiversity Areas

3.3. CONTRIBUTION TO THE CONSERVATION OF BIODIVERSITY PATTERNS AND NATIONAL CONSERVATION TARGETS

The Gys Wiese Protected Environment contributes to the conservation targets of two, currently poorly protected ecosystems/vegetation types of the Succulent Karoo:

- *Namaqualand Klipkoppe Shrubland (SKn1)*: contributes 0.32% to the national conservation target of this vegetation type; and
- *Namaqualand Heuweltjieveld (SKn4)*: contributes 0.1% to the national conservation target of this vegetation type.

Table 3.2 Contributions of the GWPE to biodiversity patterns and national conservation targets

Vegetation type	% vegetation of GWPE	Ha in GWPE	National conservation target for vegetation type (Ha)	% contribution by GWPE to national target
SKn1 <i>Namaqualand Klipkoppe Shrubland</i>	93.14%	972.5468	306482.43	0.32%
SKn4 <i>Namaqualand Heuweltjieveld</i>	6.86%	71.63057	71061.306	0.10%

3.4. CONTRIBUTION TO THE CONSERVATION OF CRITICAL ECOLOGICAL PROCESSES

The Swartlintjie River and its catchment are almost entirely within the boundaries of the Namaqua National Park (NNP). The GWPE therefore strengthens the conservation status of this river system as it covers an area of the Swartlintjies catchment that does not fall within the boundaries of the NNP. The associated hydrological and ecological processes therefore benefit from improved management of the area.

3.5. CONTRIBUTION TO THE CONSERVATION OF ECOSYSTEM GOODS AND SERVICES

The Gys Wiese Protected Environment (GWPE) contributes to the ecosystem goods and services in terms of the following:

- *Food security*: The GWPE forms part of the red meat production industry (Figure 3.2) which is managed according to ecologically sustainable principles. A healthy balance is therefore maintained between food production, a corner stone of a country's economy, and the sustainable use of natural resources.

- *Tourism:* The area has the necessary infrastructure to operate a guest house. The GWPE is attractive especially to the flower-watching tourists as the property is adjacent to the NNP. The Park and surrounding area is world famous for its annual spring flower shows. Other tourism opportunities such as mountain biking, hiking, photography, and horseback riding can also be explored.
- *Water security:* As mentioned above, the GWPE covers a section of the catchment area of the Swartlinterjies River. The area therefore contributes to ground water security of the lower lying areas.



Figure 3.2 Dorper sheep with lambs on GWPE

Dorpers are the most popular sheep breed among farmers in the Namaqualand region due to their production capacity, adaptability to extreme climatic conditions and suitability for grazing shrubs and grasses.

3.6. THREATS TO BIODIVERSITY OF THE GWPE

3.6.1. Soil erosion

Soil erosion (Figures 3.3 and 3.4) is considered as the biggest threat to the biodiversity of the GWPE. Due to low average rainfall since 2015, as well as land use factors (Section 2.4.1), there are parts (mostly lower Heuweltjieveld areas) of the property that bear scars in the form of active erosion ditches, dongas and crusty plates where little vegetation occurs. Old cultivated lands are a specific area of concern where signs of erosion are most common.

The management authority is in the process of rehabilitating the prioritised areas in the GWPE. This is done by managing the grazing capacity on the veld, as well as active erosion rehabilitation interventions, for example stone baskets, sediment traps, and micro-catchments.



Figure 3.3 Erosion scars on the GWPE



Figure 3.4 Erosion ditch on the GWPE

3.6.2. Alien and invasive plant species

Alien and invasive plant species is to a lesser extent a threat to the GWPE, but has the potential to cause significant ecological damage to the area. Species such as spear grass (*Stipa capensis*), prickly pear (*Opuntia spp.*), honey mesquite (*Prosopis glandulosa*) and old man saltbush (*Attriplex nummularia*) are some of the most common alien and invasive plant species that are found on the GWPE. The removal and management of alien and invasive species are addressed in Section 5.4.2 below.

3.6.3. Veld fires

(As discussed in Section 2.5.8)

3.6.4. Climate change

Climate change, and more specifically, the longlasting periods of draught experienced.

4. LEGISLATIVE AND ADMINISTRATIVE FRAMEWORK

There are several pieces of legislation that apply to the management of the Gys Wiese Protected Environment, but the primary legislation that governs the management of conservation areas is the National Environmental Management: Protected Areas Act (No.57 of 2003) (hereinafter referred to as the Act).

This Act establishes the legal basis for the creation and management of conservation areas in South Africa, as its objectives include provisions "for the protection and conservation of ecologically viable areas representative of South Africa's biological diversity and the natural landscapes". The Act establishes the mechanisms for the declaration of conservation areas and the requirements for their management.

In the Northern Cape, the Department of Environment and Nature Conservation (DENC), is the Provincial Conservation Authority and its biodiversity stewardship programme facilitates the establishment and management of conservation areas on private land.

A detailed list of legislation that govern the Gys Wiese Protected Environment is available in Appendix A.

Proclamation status of the Gys Wiese Protected Environment:

The Gys Wiese Protected Environment is proclaimed under Article 28(1) of the National Environmental Management: Protected Areas Act (No.57 of 2003)

4.1. LEGISLATIVE AND POLICY FRAMEWORK

4.1.1. National Environmental Management: Protected Areas Act, No.57 of 2003

This Act intends:

- to provide for the protection and conservation of ecologically viable areas representative of South Africa's biological diversity and its natural landscapes and seascapes;
- for the establishment of a national register of all national, provincial and local protected areas;
- for the management of those areas in accordance with national norms and standards;
- for intergovernmental co-operation and public consultation in matters concerning protected areas; and
- for matters in connection therewith.

This Act aims to establish a representative network of protected areas on communal, state and private land and also to promote the sustainable use of protected areas.

The Act encourages local participation in the management of protected areas and seeks to maintain a balance between the natural environment, biodiversity, human settlements and economic development.

This Act is the platform for biodiversity stewardship in South Africa by establishing a legal framework for cooperation between the state and landowners for the declaration of protected areas.

4.1.2. National Environmental Management: Biodiversity Act, No.10 of 2004

This Act provides the industry with planning tools for various aspects of biodiversity conservation. The planning tools provided by the NEMBA are aimed at assisting provincial departments and other conservation organisations by identifying biodiversity priorities and addressing threats. The instruments identified include the National Biodiversity Framework, Bio-Regional Plans, Biodiversity Management Plans, the list of endangered and protected species and ecosystems and the control of species and organisms that pose a potential threat to biodiversity.

Section 76(1) of the Biodiversity Act states: “The management authority of a protected area preparing a management plan for the area in terms of the Protected Areas Act must incorporate into the management plan an invasive species control and eradication strategy”.

4.1.3. National Environmental Management Act (107/1998): Environmental Impact Assessment Regulations, No.543 of 2010

The regulations list activities that cannot proceed without the necessary environmental approval. Depending on the nature of the activity and what listed activities it affects, environmental approval may require a Basic Assessment or a Scoping and Environmental Impact Report.

4.1.4. National Veld and Forest Fire Act, No.101 of 1998

Landowners can form wildfire protection associations for the purpose of predicting, preventing, managing and extinguishing fires. The law requires landowners to prepare and maintain firebreaks at the boundaries of their properties, but the Minister may exempt owners from doing so.

4.1.5. Conservation of Agricultural Resources Act, No.43 of 1983

The Act requires landowners to control declared weed species on their property.

4.1.6. Memorandum of Agreement for the Gys Wiese Protected Environment, 2019

The Memorandum of Agreement for the Gys Wiese Protected Environment is an agreement between the owner of the GWPE and South African National Parks that endorses the Protected Environment's declaration and also forms the basis for the management of the GWPE.

4.2. ADMINISTRATIVE FRAMEWORK

4.2.1. Management Authority

The Melkboomhoek CC, represented by Mr Philip Crous, is the appointed Management Authority (MA) of the Gys Wiese Protected Environment. The managing authority is authorised by the Protected Areas Act No.57 of 2003 to make administrative and management decisions, within the framework of the management plan, regarding the GWPE.

As only one MA is involved in the Declaration of the Protected Environment, the composition and role of an advisory committee for the GWPE is irrelevant. The need for an advisory committee could be reconsidered should the owner and MA decide to add any neighboring land to the GWPE.

5. PROTECTED ENVIRONMENT POLICY AND OPERATIONAL MANAGEMENT FRAMEWORK

This section creates the strategic framework for management activities, which will be used to inform the annual operational plan (AOP) and the resources needed to implement it. The management principles in Section 5.4 will form the basis for monitoring progress in the implementation of the AOP.

5.1. PURPOSE

The purposes of the declaration of protected areas are described in Chapter 3, Section 17 of the Protected Areas Act No.57 of 2003. The following list of purposes are relevant to the Gys Wiese Protected Environment (GWPE):

- “(a) to protect ecologically viable areas representative of South Africa’s biological diversity and its natural landscapes and seascapes in a system of protected areas;*
- (b) to preserve the ecological integrity of those areas;*
- (c) to conserve biodiversity in those areas;*
- (d) to protect areas representative of all ecosystems, habitats and species naturally occurring in South Africa;*
- (e) to protect South Africa’s threatened or rare species;*

- (f) to protect an area which is vulnerable or ecologically sensitive;
- (g) to assist in ensuring the sustained supply of environmental goods and services;
- (h) to provide for the sustainable use of natural and biological resources;
- (i) to create or augment destinations for nature-based tourism;
- (j) to manage the interrelationship between natural environmental biodiversity, human settlement and economic development;
- (k) generally, to contribute to human, social, cultural, spiritual and economic development; or
- (l) to rehabilitate and restore degraded ecosystems and promote the recovery of development; or endangered and vulnerable species."

5.2. VISION

"To rehabilitate and sustainably manage the Gys Wiese Protected Environment's natural assets, as well as to improve the relationship between farming and conservation circles."

5.3. MISSION

The managing authority (MA) seeks to realise the vision by:

- Active rehabilitation initiatives;
- Accurate monitoring;
- Expert and informed management of grazing and rest periods;
- Interaction with grazing, plant, restoration and environmental experts so that the gap between the farmer (land user) and academics (theory) can be bridged.

5.4. POLICY DECLARATIONS AND MANAGEMENT PRINCIPLES

5.4.1. Grazing and veld conditions

Grazing within the GWPE will be managed according to the guidelines provided by the Wilderness Foundation Africa in their document, *'Weidingsriglyne vir Namakwaland'*. These guidelines have been developed specifically for Protected Environments in Namakwalnd as well as other livestock farmers in the region who want to improve the basis of their grazing (Wilderness Foundation Africa, 2018).

5.4.2. Rehabilitation

This section discusses the policy declarations and management principles for the rehabilitation of the GWPE with regards to soil erosion as well as alien and invasive species.

5.4.2.1. Soil erosion

The managing authority (MA) will prioritise erosion control within the GWPE. A preliminary map showing eroded areas is included as Figure 5.1 in Section 5.5 below. As the rehabilitation of ditches and dongas is generally a cost-intensive undertaking, it is recommended that the MA consider additional sources for rehabilitation work on the GWPE. For example, the SANParks: Biodiversity Social Projects Extended Public Works Projects (EPWP) and Natural Resource Management (NRM) programme can be approached for possible collaboration on erosion control and rehabilitation. This can be motivated based on the location of the GWPE in the core buffer zone of the NNP as well as SANParks' buffer zone management strategy.

Previously damaged areas e.g. old lands and trampled areas in lower parts of the GWPE will be given priority.

5.4.2.2. Alien and invasive species

(a) Plants

The Gys Wiese Protected Environment is located in an arid climate region suitable only for plant and animal species specifically adapted to survive with the extreme climatic conditions and associated water constraints. It is therefore only extremely competitive plants and animals that can successfully survive and propagate in these conditions. Compared to higher rainfall regions, such as the Western and Eastern Cape and Kwa-Zulu Natal, the GWPE environment is not as susceptible to the establishment of alien invasive vegetation.

A variety of alien plant species adapted for survival occur in the GWPE, although not in high densities. These include *Schinus molle*, *Echinopsis spachiana*, *Opuntia spp.*, *Agave sisalana*, *Atriplex nummularia*, and *Prosopis spp.* which are found around the old farmyard, with some *Prosopis spp.* which also occur elsewhere, mainly in the dry riverbeds. Note that not all of the species listed above have the potential to become invasive, with *Prosopis spp.* and *Atriplex nummularia* as the exceptions. The status of all invasive species on the GWPE will be evaluated and prioritised as part of the alien invasive plant clearance plan, and managed/eradicated accordingly.

Statice (*Limonium sinuatum*) and the alien spear grass (*Stipa Capensis*) are also found on the GWPE. These alien invasive plants grow especially on disturbed and overgrazed land, and may possibly compete with indigenous pioneer species as well as hinder succession by indigenous plants as the field recovers. These

species can possibly be controlled by grazing techniques, especially if grazing takes place before flowering and seed time.

(b) Animals

Although not an alien species, the pied crow (*Corvus albus*) is sometimes viewed as an indigenous invader. The pied crow is becoming an increasing concern regarding livestock losses and especially endemic tortoise populations in the area.

5.4.3. Problem animals

Problem animals will be managed in accordance to the relevant legislation.

5.4.4. Veld fires

Although veld fires are not common in the area, from time to time, localized veld fires do occur, mostly due to lightning. The MA is affiliated with the relevant fire protection association which has an updated contingency plan in place.

5.4.5. Monitoring and Research

The managing authority (BO) encourages veld-based and grazing-based monitoring and relevant research projects based with the condition that the information (data and results) is made available to the MA to inform management decisions.

5.4.6. Access

The MA will control access to the GWPE. SANParks or other relevant parties may address access requests to the MA.

5.4.7. Financial and Human Resource Management

Management interventions will be funded by the MA. SANParks will, where possible for the organisation, contribute to the management (rehabilitation) of the GWPE.

The MA is able to employ and manage staff for the necessary management activities (e.g. relocation of livestock and maintenance of infrastructure).

5.4.8. Fences and infrastructure

The fences of the borders and inner camps will be patrolled and maintained by the MA. The purpose of the maintenance of fences is management of grazing.

Other infrastructure, such as buildings and water will, as necessary, also be maintained by the MA.

5.4.9. Introduction of species

No exotic wildlife or alien plant species will be introduced to the GWPE.

Future introduction of indigenous antelope species (e.g. gemsbuck (*Oryx gazella*), red hartebeest (*Alcelaphus buselaphus caama*) or springbok (*Antidorcas marsupialis*)), which have historically occurred in the area, will be maintained and managed within prescribed grazing loads. Culling/hunting of these antelope populations will form part of the management principles of the GWPE.

5.5. BIODIVERSITY AND MANAGEMENT GOALS

5.5.1. Management of grazing and veld conditions

Objective: To monitor the field condition in order to manage grazing load according to the grazing guidelines, as well as to rehabilitate eroded areas.

- The grazing of the Gys Wiese Protected Environment will be managed in line with the ‘*Grazing guidelines for Namaqualand: Recommended approach to the management of livestock in a Protected Environment*’ (Wilderness Foundation Africa, 2018).
- A basic monitoring framework will be compiled and implemented.

5.5.1.1. *Grazing guidelines for the veld types of the GWPE*

a) Veld type 1

<i>Namaqualand Klipkoppe Shrubland</i>	Vegetation unit SKn1
Recommended livestock breeds:	Dorper, Damara & Meat Master
Livestock breeds to avoid:	Karakul, as they tend to stay in herds and thus damage shrubs
Recommended grazing load:	Agriculture: 7ha/Livestock unit (LSU) Protected Environment: 10 to 13ha/LSU

Management system: In this terrain it is difficult to move animals, so smaller camps with long-term grazing can be the pragmatic approach – no more than 30 days in a camp. The use of electric fences (as per the “Holistic Resource Management” philosophy) is considered impractical. It is important not to concentrate animals (e.g. at cattle posts or overnight pens) to avoid negative impacts on the field due to trampling.

b) Veld type 2

<i>Namaqualand Heuweltjieveld</i>	Vegetation unit SKn4
Recommended livestock breeds:	Dorper, Damara & Meat Master
Livestock breeds to avoid:	Karakul, as they tend to stay in herds and thus damage shrubs
Recommended grazing load:	Agriculture: 10ha/LSU
	Protected Environment: 12ha/LSU

Management system: This vegetation has an above-average productivity, but is very susceptible to overgrazing as the hills are generally already overgrazed. There should be a four-camp system with one camp undergoing a year-long rest and the other camps being grazed for 15 to 30 days at a time. Seasonal migration is important in this field type, but if this is not possible the herd should be 20ha/LSU.

5.5.1.2. Managing veld conditions

The grazing load for the *Namaqualand Heuweltjieveld*, as determined by grazing guidelines (Wilderness Foundation Africa, 2018) was determined for veld that is generally in a better condition than that of Heuweltjieveld in the GWPE. The guidelines here will therefore have to be adapted to apply adequate management and field rehabilitation through grazing management.

It is recommended that vegetation surveys be done every year for the first five years, at the end of spring, to determine if the veld is starting to recover, especially after the current drought. This will serve as the basis for the condition of the veld. After five years, the grazing load can be reconsidered. Thereafter, the surveys should be done every five years and the load reconsidered.

It is recommended that a small group of farmers from the area do these surveys with the landowner. At the beginning (first five years), botanists can assist the farmers and teach them to do the surveys and to process the data.

Table 5.1 indicates the grazing load and grazing days for the GWPE over a period of 12 months (Wilderness Foundation Africa, 2018) and 8 months (adapted grazing load for GWPE veld rehabilitation) respectively.

Table 5.1 Grazing load (grazing days) for the GWPE

Grazing load for the GWPE (based on SA veld type map, Mucina et al., 2012)				Grazing guidelines	Adapted for GWPE veld rehabilitation (-30% load)
Veld type	ha in GWPE	Grazing guidelines (ha/KVE)	Livestock units (LSU)	Grazing days per year (12 months)	Grazing days: 90LSU over 8 months (1 June to 31 January/244 days)
Namaqualand Heuweltjieveld	71.63056964	12	5.969	2 179	21 960
Namaqualand Klipkoppe Shrubland	972.5468304	12	81.045	29 582	
		Total no. of grazing days		31 760	21 960

According to the grazing guidelines for Protected Environments, a total of 87 livestock units (LSU) (or 31 760 LSU grazing days) per year are acceptable for the GWPE. As rehabilitation is a main objective of the GWPE, the MA will apply a 30% reduced grazing load, compared to what is recommended by the grazing guidelines.

The MA will only utilise 21 960 (90 LSU over a period of a maximum of eight months/244 days) grazing days between 1 June and 31 January. This equates to a difference of 9 800 grazing days, or 30% reduced grazing load per year. This management guideline will be implemented until long-term monitoring shows improvement of the veld condition.

5.5.2. Rehabilitation

The purpose of rehabilitation in the GWPE is to curb and counteract the negative effects of erosion and alien and invasive species. It also aims to improve the biodiversity and ecosystem condition of destroyed areas in the GWPE through rehabilitation initiatives.

An area-specific and fine-scale rehabilitation plan that addresses soil erosion as well as alien invasive vegetation must be drawn up for the GWPE. Figure 5.1 gives a rough indication of the rehabilitation areas in GWPE.

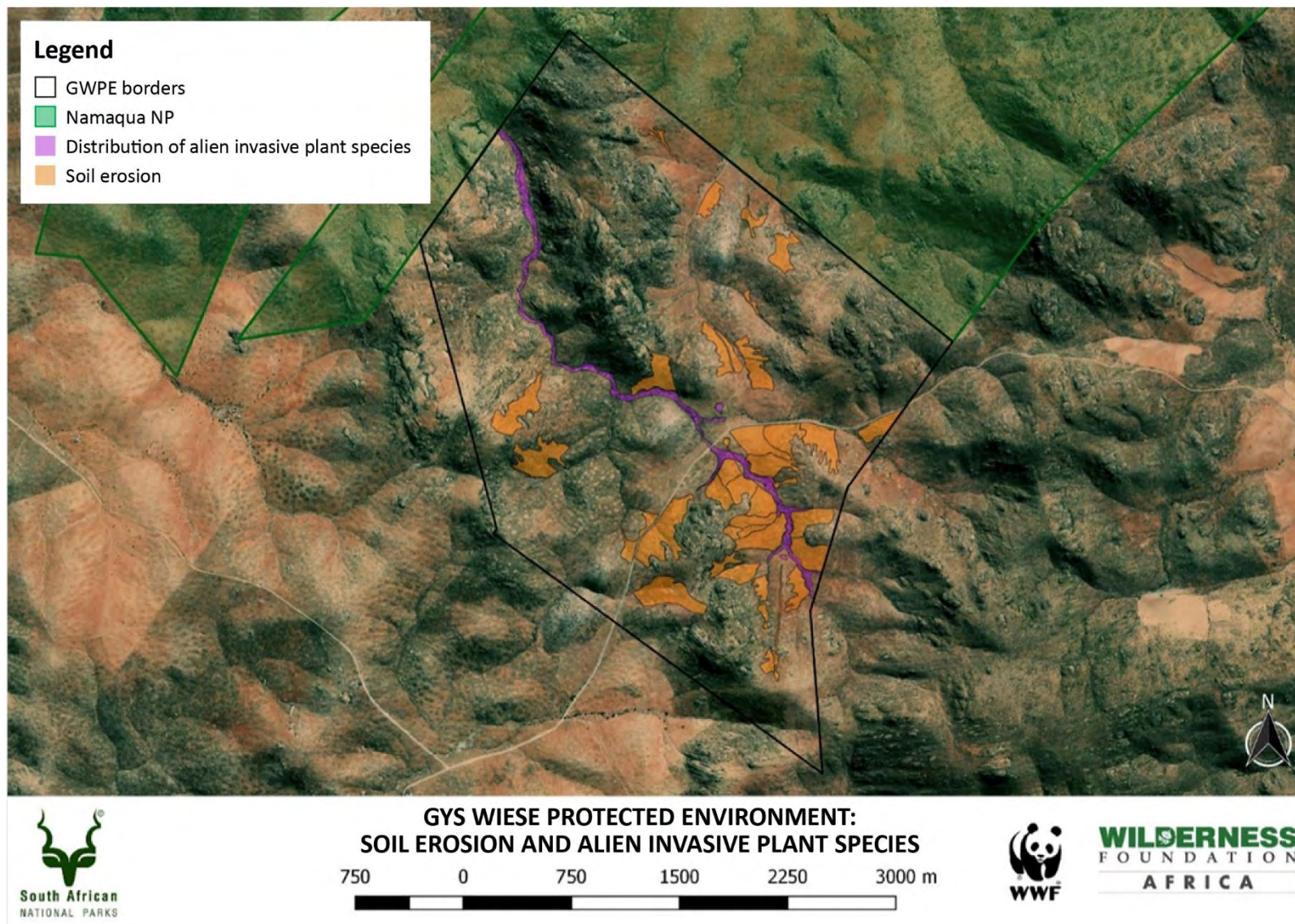


Figure 5.1 Gys Wiese Protected Environment: Map of soil erosion and distribution of alien invasive plant species

5.5.2.1. Soil erosion

Objective: To identify eroded areas, limit further soil erosion and rehabilitate eroded areas.

The Gys Wiese Protected Environment (GWPE) shows signs of soil erosion over several lower-lying areas of the property (Figure 5.1). The loss of topsoil through flushing is particularly noticeable.

The varying topography of the GWPE coupled with shallow, poorly structured soils (especially the loamy soils of Heuweltjieveld) make the area susceptible to erosion. Historical droughts and grazing practices over the last century have led to poor vegetation cover. Accelerated flow of surface water causes further soil loss/erosion. Although many erosion points on the GWPE still appear 'active', the large erosion points/dongas were most likely caused by a once-off abnormal rainstorm (Wiese, 2018).

The speed of water accelerates when rainwater flows over the granite and gneiss rock banks that occur on the stony outcrops. Normally, vegetation under these rock banks will reduce the speed of water flow and increase infiltration, but historical grazing pressure by herbivores (and other indigenous animals such as dassies and termites) has reduced this plant cover.

'Dorbank', which occurs under shallow soils, on slopes right across the GWPE, presumably also played a role in erosion. These shallow soils can be saturated very quickly during abnormal rain showers that fall over a short period of time. At this point, water can no longer drain and begins to flow over the impenetrable dry bank, which suffers from overland flow and erosion.

The types of water erosion that occurs on the GWPE include:

- Rainfall erosion;
- Rill erosion;
- Gully/donga erosion; and
- Sheet erosion.

The impact of erosion on the GWPE will to some extent be combated and prevented by implementing a rehabilitation strategy that includes a variety of the following methods:

- *Agronomic*: These methods involve the use of plants and organic matter to protect the soil. These include organic mulches to retain moisture in the soil, and to create a microclimate for seed germination, as well as sowing indigenous plant species on cultivated areas. Agronomic methods may also include the use of open-weave geotextile nets (e.g. Biojute).
- *Mechanical*: Mechanical methods include manipulating the soil topography and construction of structures to control water flow and capture sediment (sludge fences & stone baskets/gabions).

- *Land management*: Land use methods to manipulate vegetation and even soil structure. In the case of the GWPE, controlled grazing by livestock will continue to play an important role in breaking soil crusts and stimulating germination.

The rehabilitation strategy will also include monitoring actions that measure the effectiveness of the implemented activities.

5.5.2.2. Management of alien and invasive species

Objective: To manage and eradicate alien and invasive species.

a) Alien and invasive plant species

The arid climate means that a limited number and specialist alien invasive plant species can infest the GWPE. Alien invasive vegetation infestations are largely confined to drainage lanes and areas where water is artificially supplied (e.g. yards, wells, and other infrastructure.).

The alien and invasive plant species listed in Table 5.2 occur in the GWPE.

Table 5.2 Alien and invasive plant species of the GWPE

Specie	Common name / Afrikaans name	NEMBA category*
<i>Agave sisalana</i>	Sisal / Garingboom	2
<i>Atriplex nummularia</i>	Old man salt bush / Soutbos	2
<i>Echinopsis spachiana</i>	Orrelkactus	1b
<i>Eucalyptus cladocalyx</i>	Sugar gum / Suikerbloekom	1b**
<i>Limonium sinuatum</i>	Statice / Papierblom	1b
<i>Oppuntia ficus indica</i>	Prickly pear / Turksvy	1b
<i>Prosopis glandulosa</i>	Honey mesquite / Suidwesdoringboom	3 (in NC)
<i>Schinus molle</i>	Pepper tree / Peperboom	3
<i>Stipa capensis</i>	Spear grass / Steekgras	Not listed

*NEMBA: National Environmental Management: Biodiversity Act: Any species found in a riparian area should be treated as a category 1 species.

***Eucalyptus cladocalyx* is not listed in the Succulent Karoo unless it occurs in a riparian area or declared protected environment.

Invasive plant species in the Gys Wiese Protected Environment (GWPE) will be controlled according to their categories listed above through a strategic clearance plan. This fine-scale plan will prioritise species according to objectives, with effective control techniques and monitoring guidelines.

The strategic plan will also provide for the managing authority (MA) to exclude certain species and individual plants/trees from removal operations. These include species such as the honey mesquite (*Prosopis glandulosa*), which is often used for shade around homes and for livestock, and the old man saltbush (*Attriplex nummularia*), which serves as a supplementary grazing source for livestock. The MA will still be responsible for demarcating such individual or groups of plants, and managing their distribution as required by the National Environmental Management: Biodiversity Act (No.10 of 2004) (NEMBA).

b) Alien and invasive animals

Management measures for crows include:

- Improved waste management (ordinary household waste as well as waste from sheep slaughtering);
- Destruction of nests;
- Destruction of eggs in nests (put eggs back in nest in an attempt to limit increased reproduction); and
- Environmental education.

5.5.3. Management of border fences and infrastructure

Objective: Maintenance and patrolling of fences for effective grazing management as well as security. Continuous maintenance of water infrastructure and building infrastructure as required.

- Patrolling of fences for continuous maintenance and repair of openings in border fences and those of inner camps.
- Continuous maintenance of water infrastructure and building infrastructure as required.

6. DEVELOPMENT FRAMEWORK

6.1. ZONATION PLAN

The objective of the Gys Wiese Protected Environment zoning plan (Table 6.1) is to provide guidelines in which a variety of management and use activities can take place, and to ensure that these activities do not contradict each other. It is also a requirement of the National Environmental Management: Protected Areas Act (No. 57 of 2003) that the management plan includes the zoning of the property and indicates which activities are permitted.

As indicated in Figure 6.1, the GWPE is divided into two zones namely:

- Conservation zone; and
- High-impact zone

The GWPE zoning plan in Table 6.1 below details the guidelines.

6.2. DEVELOPMENT PLAN

No further developments are planned for the Conservation Zone. The High-impact Zone will be utilised and possibly further developed for the tourist accommodation and other agricultural activities.

Table 6.1 Zoning plan for the management areas

Zone	Zone description	Management objectives	Permitted activities
Conservation Zone	<p>This zone extends over the four grazing camps into which the farm was originally divided. Commercial grazing is applied seasonally against proposed livestock loads as set out in the grazing guidelines (Refer Table 5.1) (Wilderness Foundation Africa, 2018).</p> <p>Basic agricultural infrastructure also falls under this zone and includes troughs, fences and roads.</p> <p>This zone is transformed land including old lands, eroded and overgrazed land, has been earmarked for rehabilitation.</p>	<ul style="list-style-type: none"> • Providing ecosystem integrity and functioning. • Rehabilitation of eroded areas to counteract the effect of erosion and weed species. • Infrastructure maintenance. • Monitoring and management of veld condition in line with the proposed livestock loads prescribed in the grazing guidelines (Refer Table 5.1) (Wilderness Foundation Africa, 2018: <ul style="list-style-type: none"> ◦ Namaqualand Klipkoppe Shrubland (SKn1) = 10-13 ha / LSU ◦ Heuweltjieveld (SKn4) = 12 ha / LSU 	<p>1) The following activities are permitted in the Conservation Zone:</p> <ul style="list-style-type: none"> a) Grazing by livestock and game against proposed livestock loads as contained in this document and the grazing guidelines for Namaqualand (Wilderness Foundation Africa, 2018); b) Eco-tourism activities, such as guest accommodation, horse riding, cycling routes, hiking trails, use of motorised and non-motorised vehicles (on existing dirt and two-track roads), mountain climbing, stargazing and photography; c) Hunting of game for culling purposes; d) Development of small-scale infrastructure, such as farm roads, water points and fences to support agriculture and conservation activities on the GWPE. <p>2) No person may in the Conservation Zone:</p> <ul style="list-style-type: none"> a) Plow or cultivate natural veld to convert it into lands; b) Develop large-scale infrastructure; c) Undertake any activity that is contrary to the objectives of this management plan, or that deviates from conservation, agriculture or ecotourism oriented land use.

Zone	Zone description	Management objectives	Permitted activities
High-impact Zone	<p>This zone includes infrastructure used for administration, maintenance, management, tourism and other Management Authority related purposes.</p> <p>Any future high-impact infrastructure development can take place in this zone.</p> <p>This zone is a tourism and agricultural development node with related infrastructure.</p>	<p>a) Provision of infrastructure essential for the management and sustainable utilisation of the GWPE.</p> <p>b) Provision of space for possible future developments related to nature conservation, eco-tourism and agriculture.</p>	<p>1) The following activities are allowed in the High-impact Zone, if all legal requirements are met:</p> <p>a) high-impact agricultural activities, such as arable land and irrigation;</p> <p>b) development of large-scale infrastructure, including housing, administration buildings, stores, specialised camps, main roads, dams and tourism accommodation facilities;</p> <p>c) any activity permitted in the Conservation Zone.</p> <p>2) Considering the above description in '1', no person may undertake any activity in the high-impact zone that is contrary to the objectives of this management plan. Activities may not lead to deviation from conservation, agriculture or ecotourism oriented land use.</p>

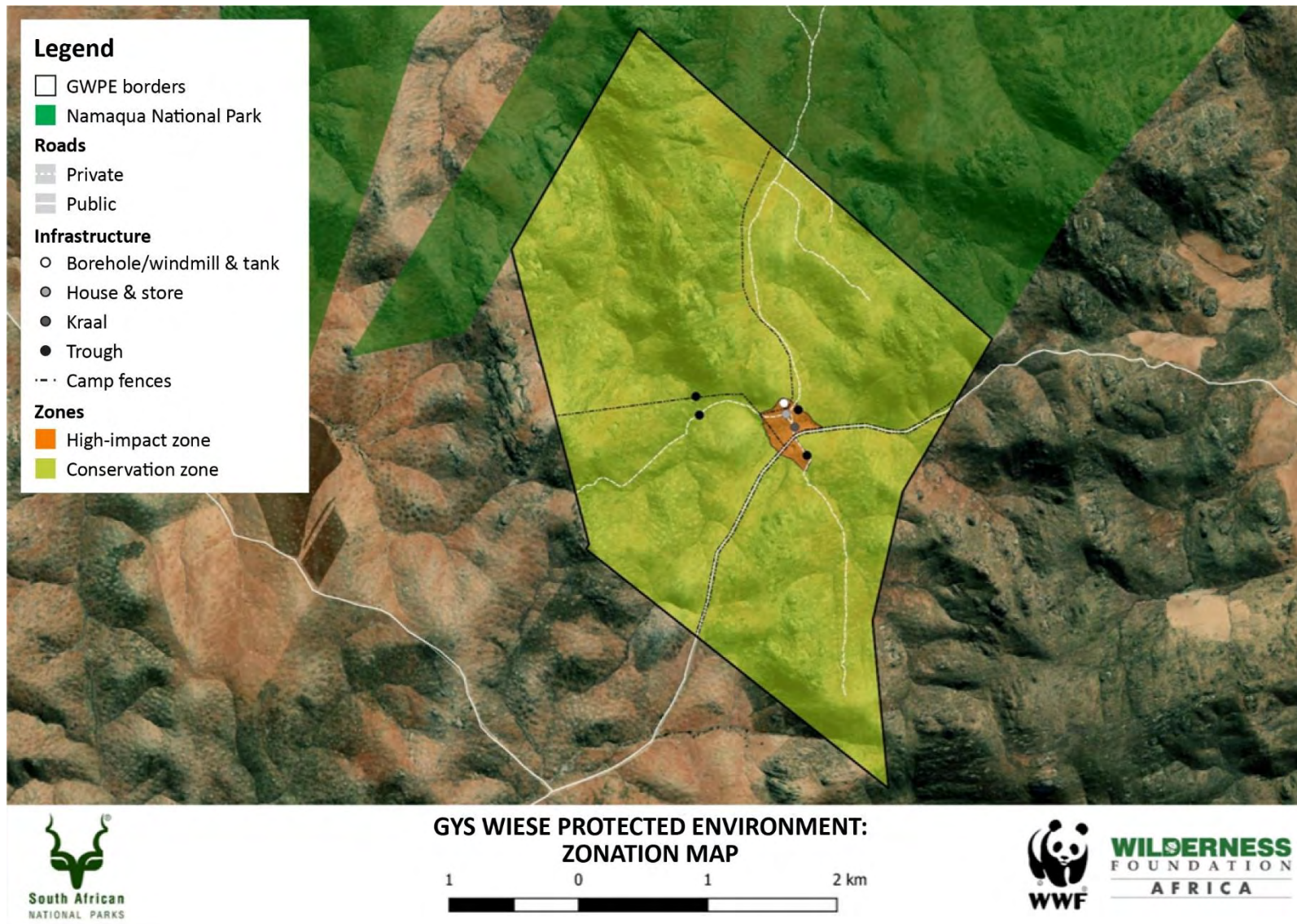


Figure 6.1 Map showing the different management zones of the GWPE

7. COST PLANNING

Table 7.1 Five-year Cost Estimate Plan for the Gys Wiese Protected Environment

Management Objectives	Secondary objectives	Estimated cost per year					Total cost over 5 years
		2020	2021	2022	2023	2024	
Management and monitoring of grazing and veld conditions (Section 5.5.1)	Monitoring	-	-	-	-	-	R1 059 708
	Management of grazing (transport, medicine and handling of live stock)	R10 500	R11 235	R12 021	R12 863	R13 763	
Rehabilitation (Section 5.5.2)	Soil erosion (6 ha / year)	R74 804	R80 041	R85 644	R91 639	R98 053	
	Management of alien and invasive species (sweep once a year, 4 days)	R10 000	R6 000	R6 420	R6 869	R7 350	
Management of border fences and infrastructure (Section 5.5.3)	New fences / replacement and upgrade	R18 000	R160 000	R160 000	R160 000	-	
	Patrolloing and routine maintenance	R6 000	R6 420	R6 869	R7 350	R7 865	
	Total cost per year	R119 304	R263 696	R270 954	R278 721	R127 032	

8. MONITORING AND EVALUATION

8.1. MONITORING

Monitoring the GWPE can include the following:

- Fixed point photography (for example erosion and rehabilitation monitoring);
- Field camera management;
- Veld condition monitoring (for example Milton's Karoo field ecology assessment for farmers/ land users);
- Record rainfall figures;
- Plant surveys;
- Expansion of bird and other fauna species lists;
- Monitor the impact of rehabilitation activities (weeds and erosion);
- Remote sensing.

Liaison with SANParks and other conservation and academic institutions regarding the monitoring and possible research of the GWPE. Long-term veld condition monitoring will be especially welcomed.

8.2. ANNUAL EVALUATION AUDIT

The Management Authority and SANParks will meet annually for the evaluation and audit of the management of the Gys Wiese Protected Environment. The Annual Operational Plan (AOP) will form the basis against which management will be measured.

8.3. REVISION OF STRATEGIC MANAGEMENT PLAN

The Strategic Management Plan will be reviewed every five years. This will create the opportunity for the management objectives to be reconsidered to ensure that they remain relevant to the GWPE's vision and mission.

9. REFERENCES

- Coastal Environmental Services. 2015. Kamiesberg Project, Namaqualand, South Africa, Final Environmental Impact Assessment. [Online] Available at: <http://www.cesnet.co.za/pubdocs/Kamiesberg%20Heavy%20Minerals%20Mining%20249CB/Final%20EIR.pdf> [Accessed 1 May 2022].
- Cowling, R.M., Esler, K.J., Rundel, P.W. 1999. Namaqualand, South Africa – an overview of a unique winter rainfall desert ecosystem. *Plant Ecology*, 142: 3-21. Netherlands: Kluwer Academic Publishers.
- Desmet, P.G. 2007. Namaqualand – A brief overview of the physical and floristic Environment. *Journal of Arid Environments*, 70(4): 570-587. DOI:10.1016/j.jaridenv.2006.11.019
- Kamiesberg Local Municipality. 2019. Kamiesberg Municipality Integrated Development Plan 2017/2022. [Online] Available at: [Accessed 1 May 2022].
- Le Roux, A. 2015. *Wildflowers of Namaqualand: A Botanical Society guide*. Cape Town: Struik Nature.
- Lexis® WinDeed property report company. 2016. [Online] Available at: <http://www.windeed.co.za/> [Accessed 4 November 2016]
- Lovegrove, B.G., 1993. *The Living Deserts of Southern Africa*. Cape Town: Fernwood Press.
- Mucina, L., Jürgens, N., Le Roux, A., Rutherford, M.C., Schmedel, U., Esler, K., Powrie, L.W., Desmet, P.G., Milton, S.J. 2006a. Succulent Karoo Biome. In: Mucina, L. & Rutherford, M.C. (Eds.). *The Vegetation of South Africa, Lesotho and Swaziland*, Strelitzia 19. South African National Biodiversity Institute, Pretoria, pp. 221-299.
- Mucina, L. & Rutherford, M.C. (Eds.) 2006. *The vegetation of South Africa, Lesotho and Swaziland*. Strelitzia 19. South African National Biodiversity Institute, Pretoria.
- Nama Khoi Municipality. 2018. *Draft Integrated Development Plan 2018/2019*. [Online] Available at: <http://www.namakhoi.gov.za/wp-content/uploads/2018/04>Nama-Khoi-Draft-IDP-2018-19.pdf> [Accessed 1 May 2022].
- Northern Cape Department of Environment and Nature Conservation (NC DENC). (2017). *The Northern Cape Protected Area Expansion Strategy*. Kimberley. [Online] Available at: https://provincialgovernment.co.za/department_annual/834/2019-northern-cape-environment-and-nature-conservation-annual-report.pdf [Accessed 1 May 2022].
- Oosthysen, E. 2008. *Namakwa District: Biodiversity Sector Plan 2008*. SA National Biodiversity Institute. [Online] Available at: <https://www.sanbi.org/wp-content/uploads/2018/04/namakwa-district-biodiversity-sector-plan-2008.pdf> [Accessed 1 May 2022].
- Orton, J.D.J. 2012. Late Holocene archaeology in Namaqualand, South Africa: hunter gatherers and herders in a semi-arid environment. Thesis for D.Phil, St. Hugh's College, Oxford, UK.

- Rohde, R.F. and Hoffman, M.T. 2008. One Hundred Years of Separation: The Historical Ecology of a South African Coloured Reserve. *Africa*, 78(2), 189-222. DOI: <https://doi.org/10.3366/E0001972008000132>
- South African Bird Atlas Project. 2018. *SABAP2*. [Online] Available at: http://sabap2.adu.org.za/pentad_info.php?pentad=3010_1740#menu_top. [Accessed 21 December 2018]
- South African National Biodiversity Institute and The Department of Environmental Affairs (SANBI & DEAT). 2016. *National Protected Areas Expansion Strategy for South Africa: Priorities for expanding the protected area network for ecological sustainability and climate change adaptation*. Published by the Government of South Africa, Pretoria. ISBN 978-1-919976-55-6
- Stuart, C. & Stuart, T. 2001. *Field Guide to Mammals of Southern Africa*. Cape Town: Struik Publishers. ISBN 1 86872 537 5.
- Todd, S. 2012. *Renewable Energy Sector Spatial Planning Tool to form part of the NDM Green Economy Strategy: Final Report*. [Online] Available at: <https://www.cepf.net/sites/default/files/57219-renewable-energy-sector-spatial-planning-tool.pdf> [Accessed 5 May 2022].
- Watkeys, M.K. 1999. Soils of the arid, south-western zone of Africa. In: Dean, W.R.J. and Milton, S.J., *The Karoo Ecological Patterns and Processes*. United Kingdom: Cambridge University Press, pp. 17-26. ISBN: 0-521-55450-0.
- Webly, L.E., 1992. The History and Archaeology of Pastoralist and Hunter-gatherer Settlement North Western Cape, South Africa. PhD Thesis, Department of Archaeology, University of Cape Town.
- Wiese, G. 2018. Personal communication. Meeting, Kamieskroon, South Africa.
- Wilderness Foundation Africa. 2018. *Weidingsriglyne vir Namakwaland, Aanbevole beginsels van toepassing vir die ontwikkeling van bestuursplanne vir weiding in 'n Beskermd Omgewing*. Unpublished.

Appendix A: List of legislation that governs the Gys Wiese Protected Environment

A.1 Management and Development of Biodiversity and Cultural resources:

- Atmospheric Prevention Pollution Act [No.45 of 1965]
- Conservation of Agricultural Resources Act [No.43 of 1983]
- Constitution of the Republic of South Africa [No.108 of 1996]
- Criminal Procedure Act [No.51 of 1977]
- Environment Conservation Act [No.73 of 1989]
- Forest Act [No.122 of 1984]
- Hazardous Substances Act [No.15 of 1973]
- National Environmental Management Act [No.107 of 1998]
- National Environmental Management: Biodiversity Act [No.10 of 2004] (NEMBA)
- National Environmental Management: Protected Areas Act [No.57 of 2003]
- National Forests Act [No.84 of 1998]
- National Heritage Resources Act [No.25 of 1999]
- National Water Act [No.36 of 1998]
- National Water Amendment Act [No.45 of 1999]
- National Veld and Forest Fire Act [No.101 of 1998]
- Animals Protection Act [No.71 of 1962]

A.2 General Management:

- Development Facilitation Act [No.67 of 1995]
- Disaster Management Act [No.57 of 2002]
- Fire Brigade Services Act [No.99 of 1987]
- Local Government: Municipal Systems Act [No. 32 of 2000]
- National Road Traffic Act [No.93 of 1996]
- The National Building Regulations and Building Standards Act [No.103 of 1977]
- Occupational Health and Safety Act [No.85 of 1993]

A.3 Financial Management:

- Public Finance Management Act [No 1 van 1999]

A.4 Human Resource Management:

- Basic Conditions of Employment Act [No.75 of 1997]
- Broad-based Black Economic Empowerment Act [No.53 of 2003]
- Compensation for Occupational Injuries and Diseases Act [No.130 of 1993]
- Employment Equity Act [No.55 of 1998]
- Labour Relations Act [No.66 of 1995]
- Occupational Health and Safety Act [No.85 of 1993]
- Pension Funds Act [No.24 of 1956]
- Skills Development Act [No.97 of 1998]
- Skills Development Levy Act [No.9 of 1999]
- Unemployment Insurance Act [No.63 of 2001]
- Protected Areas Act [No.57 of 2003]

A.5 Biodiversity Management Agreement

The Minister may enter into a biodiversity agreement with a person, organisation or state entity in terms of Section 43(2), or any other suitable person, organisation or state entity, with regards to the implementation of a biodiversity management plan, or any aspect of it.

- National Environmental Management: Biodiversity Act [No.10 of 2004]
- National Environmental Management Act [No.107 of 1998]

A.5.1 National Environmental Management: Biodiversity Act [No.10 of 2004]

“Objectives of this Act are (Section 2):

(a) within the framework of the National Environmental Management Act, to provide for-

(i) the management and conservation of biological diversity within the Republic and of the components of such biological diversity;

(ii) the use of indigenous biological resources in a sustainable manner; and

iii) the fair and equitable sharing among stakeholders of benefits arising from bioprospecting involving indigenous biological resources;

(b) to give effect to’ ratified international agreements relating to biodiversity which are binding on the Republic;

(c) to provide for co-operative governance in biodiversity management; and conservation; and

(d) to provide for a South African National Biodiversity Institute to assist in achieving the objectives of this Act.”

A.5.2 National Veld and Forest Fire Act [No.101 of 1998]

Objective:

“1.(1) The purpose of this Act is to prevent and combat veld, forest and mountain fires throughout the Republic.

1.(2) The Act provides for a variety of institutions, methods and practices for achieving the purpose.”

A.5.3 Conservation of Agricultural Resources Act [No.43 of 1983]

Objective:

“The objects of this Act are to provide for the conservation of the natural agricultural resources of the Republic:

- *by the maintenance of the production potential of land,*
- *by the combating and prevention of erosion and*
- *weakening or destruction of the water sources, and*
- *by the protection of the vegetation and*
- *the combating of weeds and invader plants.”*

Other applicable legislation:

- Northern Cape Nature Conservation Act [No.9 of 2009]
- Constitution of the Republic of South Africa [No.108 of 1996]
- The environment clause in the Bill of Rights of the Constitution of the Republic of the South Africa [No.108 of 1996]
(Section 24: “Everyone has the right—
(a) to an environment that is not harmful to their health or wellbeing; and
(b) to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that
— (i) prevent pollution and ecological degradation;
(ii) promote conservation; and
(iii) secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.”
- Local Government Municipal Systems Act [No.32 of 2000]
- National Water Act [No.36 of 1998]
- Environment Conservation Act [No.73 of 1989]
- Forest Act [No.122 of 1984]
- National Environmental Management Act [No. 107 of 1998]

- National Heritage Resources Act [No.25 of 1999]
- World Heritage Convention Act [No.109 of 1999]
- Mountain Catchment Areas Act [No.63 of 1970]
- Land-use planning ordinance 15/1985 (section 29)
- National Water Act [No.36 of 1998]

Appendix B: Preliminary list of plant species of the Gys Wiese Protected Environment

Status	Genus and Specie
Alien	<i>Agave americana</i>
Alien	<i>Agave sisalana</i>
LC	<i>Aizoon canariense</i>
VU	<i>Aloidendron dichotomum</i>
LC	<i>Antizoma miersiana</i>
LC	<i>Arctotis fastuosa</i>
LC	<i>Asparagus capensis</i> var. <i>capensis</i>
LC	<i>Asparagus juniperoides</i>
Alien	<i>Atriplex lindleyi</i> subsp. <i>inflata</i>
LC	<i>Berkheya fruticosa</i>
LC	<i>Calobota halenbergensis</i>
LC	<i>Calobota sericea</i>
LC	<i>Cephalophyllum pillansii</i>
LC	<i>Chlorophytum crassinerve</i>
LC	<i>Codon royenii</i>
LC	<i>Didelta carnososa</i> var. <i>carnososa</i>
LC	<i>Didelta spinosa</i>
LC	<i>Ehrharta barbinodis</i>
LC	<i>Eriocephalus brevifolius</i>
LC	<i>Erythrophysa alata</i>
Alien	<i>Eucalyptus</i>
LC	<i>Euclea tomentosa</i>
LC	<i>Euphorbia mauritanica</i>
LC	<i>Euphorbia rhombifolia</i>
LC	<i>Ficus cordata</i>
LC	<i>Fingerthuthia africana</i>
LC	<i>Galenia africana</i>
LC	<i>Gloveria integrifolia</i>
LC	<i>Gorteria diffusa</i> subsp. <i>diffusa</i>

Status	Genus and Specie
LC	<i>Haemanthus amarylloides subsp. polyanthus</i>
LC	<i>Hermannia disermifolia</i>
LC	<i>Kewa salsoloides</i>
LC	<i>Lapeirousia fabricii</i>
LC	<i>Lapeirousia silenoides</i>
LC	<i>Leobordea digitata</i>
LC	<i>Lessertia diffusa</i>
LC	<i>Leysera tenella</i>
LC	<i>Lycium amoenum</i>
LC	<i>Manochlamys albicans</i>
LC	<i>Mesembryanthemum guerichianum</i>
LC	<i>Mesembryanthemum pallens subsp. Namaquense</i>

Appendix C: Preliminary list of bird species* of the Gys Wiese Protected Environment

*List of species can be supplemented with the management authority's list of bird species.

Birdlife SA - Checklist, 2019				
 Giving Conservation Wings				
Alphabetical name	Full name	Scientific name	Red data status	Endemism
Barbet, Acacia Pied	Acacia Pied Barbet	<i>Tricholaema leucomelas</i>		
Batis, Pririt	Pririt Batis	<i>Batis pririt</i>		
Bishop, Southern Red	Southern Red Bishop	<i>Euplectes orix</i>		
Bishop, Yellow	Yellow Bishop	<i>Euplectes capensis</i>		
Bokmakierie	Bokmakierie	<i>Telophorus zeylonus</i>		
Bulbul, Cape	Cape Bulbul	<i>Pycnonotus capensis</i>		E
Bunting, Cape	Cape Bunting	<i>Emberiza capensis</i>		
Bunting, Lark-like	Lark-like Bunting	<i>Emberiza impetuani</i>		
Bustard, Ludwig's	Ludwig's Bustard	<i>Neotis ludwigii</i>	EN, EN	
Buzzard, Jackal	Jackal Buzzard	<i>Buteo rufofuscus</i>		NE
Canary, Black-headed	Black-headed Canary	<i>Serinus alario</i>		NE
Canary, White-throated	White-throated Canary	<i>Crithagra albogularis</i>		
Canary, Yellow	Yellow Canary	<i>Crithagra flaviventris</i>		
Chat, Ant-eating	Ant-eating Chat	<i>Myrmecocichla formicivora</i>		
Chat, Familiar	Familiar Chat	<i>Oenathe familiaris</i>		
Chat, Karoo	Karoo Chat	<i>Emarginata schlegelii</i>		
Chat, Tractrac	Tractrac Chat	<i>Emarginata tractrac</i>		
Cisticola, Grey-backed	Grey-backed Cisticola	<i>Cisticola subruficapilla</i>		
Crow, Pied	Pied Crow	<i>Corvus albus</i>		
Dove, Cape Turtle (Ring-necked)	Cape Turtle (Ring-necked) Dove	<i>Streptopelia capicola</i>		
Eagle, Verreaux's	Verreaux's Eagle	<i>Aquila verreauxii</i>	VU, LC	
Fiscal, Southern (Common)	Southern (Common) Fiscal	<i>Lanius collaris</i>		

Alphabetical name	Full name	Scientific name	Red data status	Endemism
Guineafowl, Helmeted	Helmeted Guineafowl	<i>Numida meleagris</i>		
Lapwing, Blacksmith	Blacksmith Lapwing	<i>Vanellus armatus</i>		
Lark, Cape Clapper	Cape Clapper Lark	<i>Mirafrapa apiata</i>		NE
Lark, Grey-backed Sparrow	Grey-backed Sparrow-lark	<i>Eremopterix verticalis</i>		
Lark, Karoo	Karoo Lark	<i>Calendulauda albescens</i>		NE
Lark, Large-billed	Large-billed Lark	<i>Galerida magnirostris</i>		NE
Lark, Red-capped	Red-capped Lark	<i>Calandrella cinerea</i>		
Lark, Spike-heeled	Spike-heeled Lark	<i>Chersomanes albofasciata</i>		
Martin, Rock	Rock Martin	<i>Ptyonoprogne fuligula</i>		
Mousebird, White-backed	White-backed Mousebird	<i>Colius colius</i>		
Pigeon, Speckled	Speckled Pigeon	<i>Columba guinea</i>		
Pipit, Long-billed	Long-billed Pipit	<i>Anthus similis</i>		
Prinia, Karoo	Karoo Prinia	<i>Prinia maculosa</i>		NE
Robin, Karoo Scrub	Karoo Scrub Robin	<i>Cercotrichas coryphoeus</i>		
Shelduck, South African	South African Shelduck	<i>Tadorna cana</i>		
Sparrow, Cape	Cape Sparrow	<i>Passer melanurus</i>		
Starling, Cape Glossy (Cape)	Cape Glossy (Cape) Starling	<i>Lamprotornis nitens</i>		
Stonechat, African	African Stonechat	<i>Saxicola torquatus</i>		
Sunbird, Dusky	Dusky Sunbird	<i>Cinnyris fuscus</i>		
Sunbird, Malachite	Malachite Sunbird	<i>Nectarinia famosa</i>		
Sunbird, Southern Double-collared	Southern Double-collared Sunbird	<i>Cinnyris chalybeus</i>		NE
Tit, Grey	Grey Tit	<i>Melaniparus afer</i>		NE
Warbler, Cinnamon-breasted	Cinnamon-breasted Warbler	<i>Euryptila subcinnamomea</i>		NE
Warbler, Rufous-eared	Rufous-eared Warbler	<i>Malcorus pectoralis</i>		
Weaver, Southern Masked	Southern Masked Weaver	<i>Ploceus velatus</i>		
Wheatear, Capped	Capped Wheatear	<i>Oenanthe pileata</i>		
Wheatear, Mountain	Mountain Wheatear	<i>Oenanthe monticola</i>		