



Richtersveld National Park

Park Management Plan

For the period
2018 - 2028





Acknowledgement

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Photo by: Jacques Marais

Section 1: Authorisation

This management plan is hereby internally accepted and authorised as required for managing the RNP in terms of Sections 39 and 41 of the National Environmental Management: Protected Areas Act No 57 of 2003 (NEM: PAA).



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Date: 30 April 2018



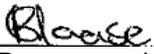
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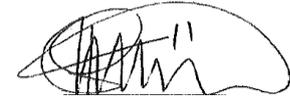
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Glossary

Ag land type	Ag land type – refers to red-yellow apedal freely drained soils, with the g referring to soils with a red, high base status, deeper than 0.3m.
Ah land type	Ah land type – refers to red-yellow apedal freely drained soils, with the h referring to high base soils which covers more than 10% of the area, with single or occasional occurrences of dunes
Aircraft	Means an airborne craft of any type whatsoever, whether self-propelled or not, and includes hovercraft and drones.
Desired state	The park desired state is based on a collectively developed vision and set of objectives of the desired future conditions (that are necessarily varying, across the full V-STHEP range) that stakeholders desire.
Dynamic pricing	Dynamic pricing, also called “real-time” pricing, is a pricing strategy in which businesses set highly flexible prices for products or services based on current market demands. The goal of dynamic pricing is to allow a company that sells goods or services over the Internet to adjust “prices” on the fly “in response to market demands”.
Extra-limital	Those species occurring outside their historical distribution range.
Fc land type	Fc land type - refer to pedologically young landscapes that are not predominantly rock and not predominantly alluvial or Aeolian. Dominant soil forming processes have been rock weathering. The c refers to land where lime occurs regularly in the upland and valley bottom soils.
la land type	la land type – refers to a land types with a soil pattern difficult to accommodate elsewhere, at least 60% of which comprises pedologically youthful, deep (> 1.0m) unconsolidated deposits.
lb land type	lb land type –refers to a land type with exposed rock covering 60 – 80% of the area.
lc land type	lc land type – refers to land types with exposed rock covering more than 80% of the area. The numbers are individual numbers for the lc land type in South Africa.
Interpretation	Interpretation is the communication of information about, or the explanation of, the nature, origin, and purpose of historical, natural, or cultural resources, objects, sites and phenomena using personal or non-personal methods.
Land type	A land type denotes an area that can be shown at 1:250 000 scale and that displays a marked degree of uniformity with respect to terrain form, soil pattern and climate.”
MICE	Meetings, Incentives, Conferences and Events. Used to refer to all function types available.
Mission	An articulation of the Vision that describes why the park exists and its overall philosophy on how to achieve its Vision.
MODIS satellite imagery	The moderate-resolution imaging spectroradiometer (MODIS) is a payload scientific instrument. The instrument capture data in 36 spectral bands ranging in wavelength from 0.4 µm to 14.4 µm and at varying spatial resolutions (2 bands at 250 m, 5 bands at 500 m and 29 bands at 1 km).
Narrow endemic	Those species that occur in one or a few small populations and are, therefore, confined to a single location.



Objectives hierarchy	The objectives for a park, with the most important, high-level objectives at the top, cascading down to objectives at finer levels of detail, and eventually to operational actions at the lowest level.
Responsible tourism	Tourism that maximises benefits to local communities, minimises negative social or environmental impacts, and helps local people conserve fragile cultures, habitats and species.
Servitude	A “servitude” shows a registered right that an entity / person has over the immovable property of another. It allows the holder of the servitude to do something with the other person’s property, which may infringe upon the rights of the owner of that property.
Stakeholder	A person, an organ of state or a community contemplated in section 82(1)(a); or an indigenous community contemplated in section 82(1)(b) of the National Environmental Management: Biodiversity Act No 10 of 2004 (NEM: BA).
SPOT5 imagery	SPOT (French: <i>Satellite Pour l’Observation de la Terre</i>) is a commercial high-resolution optical imaging Earth observation satellite system operating from space.
Universal access	Refers to the design of products, devices, services, or environments to cater for people with disabilities.
Vision	A word ‘picture’ of the future, or what the stakeholders see as the future for the park.
Vital attributes	Unique or special characteristics of the park, the determinants of which management should strive to protect, and the threats towards which management should strive to minimise.
V-STHEP	The values (social, technological, heritage, economic, and political), used to understand, with stakeholders, the social, economic and ecological context of the system to be managed, and the principles / values that guide management. These are used to develop a broadly acceptable vision for the future.

Acronyms and abbreviations

1	AMSL	Above Mean Sea Level
2	APO	Annual Plan of Operations
3	ARTP	/Ai/Ais-Richtersveld Transfrontier Park
4	BSP	Biodiversity Social Projects
5	CAPS	Curriculum Assessment Policy Statement
6	CBD	Convention on Biological Diversity
7	CDF	Conservation Development Framework
8	CDW	Community Development Worker
9	CPF	Co-ordinated Policy Framework
10	CRMF	Corporate Risk Management Framework
11	CSD	Conservation Services Division
13	DEA	Department of Environmental Affairs
14	DEAT	Department of Environment Affairs and Tourism
15	DENC	Northern Cape Department of Nature Conservation
16	EIA	Environmental Impact Assessment
17	EMP	Environmental Management Plan
18	EPWP	Expanded Public Works Programme
19	FEPA	Freshwater Ecosystem Priority Area
20	FPA	Fire Protection Association
21	GEF	Global Environment Facility
22	GHG	Green House Gas
23	ha	Hectare
24	HIL	High Intensity Leisure
25	IAS	Invasive and Alien Species
26	IDP	Integrated Development Plan
27	ISO	International Organisation for Standardisation
28	IUCN	International Union for Conservation of Nature
29	JMP	Joint Management Plan
30	JOS	Joint Operational Strategy
31	l	Litre
32	LIL	Low Intensity Leisure
33	LLP	Lower Level Plan
34	m	Metre
35	METT	Management Effectiveness Tracking Tool
36	mm	Millimetre
37	MoU	Memorandum of Understanding
38	NDM	Namaqua District Municipality
39	NEMA	National Environmental Management Act (Act no 107 of 1998)
40	NEM: BA	National Environmental Management: Biodiversity Act (Act no 10 of 2004)
41	NEM: PAA	National Environmental Management: Protected Areas Act (Act no 57 of 2003)
42	NHRA	National Heritage Resources Act (Act no 25 of 1999)
46	NPAES	National Protected Areas Expansion Strategy
47	NPTSA	National Parks Trust of South Africa
48	OHS	Occupational Health and Safety
49	PDI	Previously Disadvantaged Individual
50	PM	Park Management
51	PMC	Park Management Committee
53	RBA	Risk Benefit Analyses
54	RCMC	Richtersveld Combined Management Committee
55	RNP	Richtersveld National Park
56	RT	Responsible Tourism
57	SAEON	South African Environmental Observation Network
58	SAHRA	South African Heritage Resources Agency



59	SAM	Strategic Adaptive Management
60	SANBI	South African National Biodiversity Institute
61	SANParks	South African National Parks
62	SANS	South African National Standard
63	SAPS	South African Police Service
64	SCM	Supply Chain Management
65	SDF	Spatial Development Framework
66	SHEQ	Safety, Health, Environment and Quality
67	SMF	Science Management Forum
68	SMO	Special Management Overlay
69	SMME	Small, Medium and Micro Enterprise
70	SoBME	State of Biodiversity Management Effectiveness
71	SPOT5	Satellite Pour l'Observation de la Terre
72	Spp.	Species
73	SSC	Species of Special Concern
74	TPC	Threshold of Potential Concern
75	UA	Universal access
76	V-STHEP	Values - Social, Technological, Heritage, Economic and Political
77	WfW	Working for Water
78	WMC	Wildlife Management Committee

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Executive summary

In compliance with the NEM: PAA, SANParks is required to develop a management plan for each of its protected areas. In developing the management plan for this park, SANParks has reviewed the biodiversity conservation, Responsible Tourism (RT) and constituency building components that make up its core business, whilst ensuring continual learning and compliance.

According to the original (1991) agreement between the former National Parks Board (NPB) (currently SANParks) and the Richtersveld Community, the compilation of a management plan for the park is the responsibility of the Richtersveld Combined Management Committee (RCMC). This Management Plan is thus presented by the RCMC. It is also the second edition of the official management plan as required by NEM: PAA.

An important objective for SANParks is to promote responsible opportunities for visitors to appreciate and value national parks. Additional to the priority for the conservation of biodiversity the park is recognised as a unique nature-based tourism destination of choice, thereby constituting an economically and culturally valuable asset to the region in which it occurs.

The desired state of the park is based on a vision, mission, vital attributes and objectives. It encompasses the characteristic Richtersveld biodiversity components, including ecological patterns and processes, as well as associated cultural, historical and scenic resources while facilitating benefits to the neighbouring communities by creating job opportunities and other forms of income generation, while remaining informed and constrained by its biodiversity values. Programmes to achieve the desired state, fall within five categories, *i.e.* integrated management; biodiversity; RT; constituency building and benefit sharing; and effective park management.

The first management plan for the park was submitted to, and approved by the Department of Environment Affairs and Tourism (DEAT) in 2008. This first review builds on the foundation of the first plan and addresses its inadequacies. The layout of the plan follows the format provided in the guideline drawn up by the Department of Environmental Affairs (DEA) (Cowan and Mpongoma 2010) while also incorporating the adaptive planning process adopted by SANParks. Local and district municipalities and other organs of state, as well as other stakeholders were consulted as required (Appendix 2).

Introduction

The plan serves as a reference to the management and development of the park in its current and envisaged future form with information on the background, biophysical context, desired state, programmes at strategic and operational levels and costing.

This management plan will come into effect following the approval by the Minister in terms of sections 39 and 41 of NEM: PAA. It is intended for a timeframe of 10 years after commencement unless it is replaced earlier by a newly approved plan. SANParks will review this plan no later than 10 years after the commencement date.

The plan contains the following sections:

- **Section 1** - provides for the required authorisation;
- **Section 2** - provides a record of the legal status of the park, descriptions of its context as well as relevant local, regional, national and international agreements;
- **Section 3** - sets out the framework of legislation, national policies, SANParks structures, policies, guidelines and practices regarding management;
- **Section 4** - describes the consultation process followed in the preparation of this plan;
- **Section 5** - presents the vision, purpose, values, principles and attributes considered in developing a desired state for the park and provides the high-level objectives as basis for the management programmes contained in Section 10 of the plan;
- **Section 6** - outlines the zoning plan;
- **Section 7** - describes access and facilities;
- **Section 8** - summarises the expansion and consolidation strategy;
- **Section 9** - sets out the concept development plan;
- **Section 10** - provides a strategic plan with programmes, objectives and activities with cost estimates. Monitoring and evaluation are integrated into the actions;
- **Section 11** - contains detailed costing of the programmes;
- **Appendices** to this plan contain further details such as declarations, stakeholder participation report, park development framework, internal rules and maps.



Section 2: Legal status

2.1 Name of the area

The RNP was initially declared in 1991 (Government Notice 1969 / Government Gazette 13457 dated 16 August 1991). A full list of the declarations appears in Appendix 1.

2.2 Location

The park is situated within the Northern Cape Province approximately 90 km northeast of Alexander Bay, with the Orange River forming the north / north-eastern boundary which is also the border between South Africa and Namibia (Appendix 5, Map 1).

2.3 History of establishment

The park has a long history of negotiations. In the 1970s uneasiness about the protection of the Richtersveld ecosystem started growing. In 1972 the northern parts of the Richtersveld was described as 'an especially attractive arid landscape and unique endemic flora that is endangered by collectors and developers' and it was proposed that it should be declared as a conservation area (Botha, 1986). The development of the idea was, however, impeded by interdepartmental bureaucratic tension. Most of the local residents had no idea about these developments until the concept of the contractual national park for the Richtersveld was developed and the legislation for the proclamation of the park was presented in the 1980s. At this stage, it was argued that the environment had to be protected against the background of the local people and the national park was justified on aesthetic, moral and scientific grounds. Notwithstanding strong opposition, negotiations with government departments during this period was characterised by the categorical exclusion of local communities. By 1989 a total about-turn in the thinking process led to the inclusion of the local communities and the newly created Community Committee rejected the one sided approach used by the Management Committee (the local government grouping that was negotiating with SANParks) and legal support was sought. On 19 March 1989, one day before the contract for the new park was due for signature, representatives of the Community Committee obtained an urgent court interdict from the Cape Supreme Court preventing the parties involved from signing the contract. Negotiations over the next 18 months led to a new dramatically changed contract. The new contract prohibited forced removals or eviction of any of the local community from any portion of the land and the local stock farmers had the right to continue farming, keeping to the capacity of the area. During a ceremony held on 20 July 1991 the new contract was officially signed and a ceremonial Nama wedding celebration between one of the local woman and the Chief Director of SANParks was held in a Nama hut. All the parties were allowed to sign the contract on 14 August 1991 and the park was officially proclaimed.

The Richtersveld Community Trust, represented by elected members, into which all the proceeds of land rentals could be paid, was officially formed in 1993. The trustees are independent and respectable people and not from the Richtersveld. Funds raised are used for community developmental projects but are currently mainly channelled towards education in the form of bursaries and the transport of learners going to school.

Since the conception of the agreement, the pasture in the Richtersveld was used and managed communally. Today part of it is managed as the park. This is unique in that it is the only national park in Southern Africa that is managed on a totally contractual basis. Other communal pastures are managed by the Richtersveld Local Municipality (RLM) but SANParks manage the park as a communal pasture on a contractual basis. The Richtersveld Combined Management Committee (RCMC) manages all land use in the park and the combined managerial decisions taken are passed down to the park management for implementation. The Park Manager is, however, responsible for the day-to-day management activities of the park and interaction between park management and the stock farmers occurs continuously. Although the pastures in the Richtersveld are regarded as communal local resources, where any of the

farmers may have access to the land, the park has a predetermined border. Only the 26 registered stock farmers are allowed to graze a total of 6,600 head of small stock (determined by the carrying capacity of the land) in the park.

2.4 Contractual agreements

One of the options available to landowners to participate in the advancement of the ecological presence of a park is through contractual agreements. In the past, conservation strategies in South Africa were characterised by the fencing of protected areas (Gleuf, 1987). Although this curbed contact between animals and humans, it diminished the opportunities for local communities to participate in the management of natural assets (Hanekom & Liebenberg, 1994). The advantages of conservation, therefore, only reached a minority of the total population, resulting in the South African people (and most areas affected by colonial regimes) historically clashing over natural resources (Fourie, 1994). The South African government, however, proclaimed a policy of land restitution during the mid-1990s, whereby communities that were deprived of land could regain ownership of that land. This led to growing concern about the expectations for protected areas that might be affected in this process (Band, 1999). SANParks have since recognised the need to integrate human needs and the national parks system as a prerequisite for effective nature conservation (Ledger, 1998). This recognition led to the formation of the contractual agreement system and thus to the possibility for the establishment of this park. Table 1 below provides a summary of the privately owned land that was contractually included into the park.

Table 1. Private land included, by declaration, into the park.

Title deed	Farm name	Portion No	Extent (Ha)	Owner	Government Gazette	Proclamation date	Period
	Farm 18	0	148,795	Richtersveld Community Property Association	13457	1991/08/16	30 years
	Farm 18	1	260		13457	1991/08/16	
	Farm 18	2	29		13457	1991/08/16	
	Farm 11	0	11,987		13457	1991/08/16	
T29431/1997	Oograbies Wes 153	0	7,928	National Park Trust South Africa	38844	2015/06/05	In perpetuity

2.5 Co-management agreements

Since its proclamation, the park has been co-managed by SANParks and representatives of the local communities through a Management Plan Committee, which was substituted with the RCMC when the new Management Plan for the park was signed in 2008. The duties of the RCMC comprise: (1) discussions and resolutions on the Management Plan of the park; (2) oversight over the implementation of the Management Plan; (3) control over and revision of changes in the Management Plan; (4) implementation of local community participation; and (5) safeguarding of the interests of the local community (Anon., 1995). The RCMC meets quarterly for combined strategic decision making.

2.6 Total area

The park is currently 181,270 ha in size of which 170,373 ha are declared while 10,897 ha are in the process of being declared (Appendix 5, Map 3).

2.7 Highest point

The highest point in the park is the Vandersterrberg at 1,337 m (4,385 feet) above mean sea level (AMSL). The latter is of note as this determines the park's restricted airspace (2,500 feet above the highest point, thus 6,885 feet AMSL) above the park (Appendix 5, Map 2).

2.8 Municipalities in which the park falls

The park is situated within the following local and district authority boundaries:

- RLM; and



- Namaqua District Municipality (NDM).

2.9 Land claims

There is currently (2018) no land claim registered against any portion of land within the park. However, the land claims process has been re-opened until 30 June 2019.

2.10 International, national and provincial listings

In August 2003, an International Treaty was signed between the Presidents of Namibia and South Africa to establish and form the /Ai/Ais-Richtersveld Transfrontier Park (ARTP).

2.11 Environmental authorisations

No environmental authorisation had been issued when this document was approved.

2.12 Biophysical description

2.12.1 Climate

2.12.1.1 Historic

The climate is dominated by the southern subtropical high-pressure belt which causes the aridity of the region. The RNP is the only national park that falls within the summer and winter rainfall belt. The warm temperate winter rainfall region stretches from the southern mountain range westwards (Noemeesberg, Vandersterrberg and Koeboesberg), whereas a rain shadow in the interior region of the park results in a non-seasonal rainfall pattern in this drier area. The subtropical summer rainfall region stretches to the east with higher temperatures and low humidity (Hendricks *et al.*, 2004). The mean annual rainfall varies across the park due to the area falling within the summer and winter rainfall belt. Rainfall gauges are spread out across the park to record this variation in the rainfall.

The mean annual rainfall for the south-western mountainous area (Paradyskloof) of the park was 114 mm from 2000 - 2016, with a range of 58 mm – 275 mm, whereas in the interior (Tatasberg) the mean annual rainfall for the same period was 38 mm, with a range of 0 mm – 163 mm. The highest total annual rainfall recorded for the park was 275 mm in the south-western mountains (Paradyskloof) in 2006.

The majority of the park receives winter rainfall (usually from May to September) which is usually soft rain spread out over the mountainous area, while summer rainfall (October - April) is not uncommon with rain often falling in intensive thunderstorms which can be very patchy and localised. Furthermore, moisture is brought in by the western fog, known locally as the Malmokkie, rolling in from the cold Atlantic Ocean seaboard which is cooled by the Benguela Current. The fog, as a source of moisture for plant growth along the West Coast, is more reliable in terms of frequency and predictability of occurrence than rainfall. The warmer easterly winds, usually around August, dry out the veld and can destroy the annual plants, which are crucial fodder for livestock.

In general, the park is experiencing warmer temperatures during the day than at night, and the difference in these temperatures can be quite drastic. The minimum and maximum temperatures are recorded daily at Sendelingsdrift and the mean minimum and maximum temperatures for the past nine years (2008 - 2016) were 14 °C and 29 °C respectively. Temperatures can easily rise above 50 °C in the summer months and plunge to freezing point on winter nights. The mean maximum temperature rapidly declines from April to June followed by a gradual increase to a maximum in February. The decline in maximum temperatures could possibly be a result of the

influence that the wind has as it could carry advective heat from warmer areas or because of adiabatically heated air in the form of bergwinds. The Richtersveld is characterised by relatively high wind speeds, overall ranging from an average of 7km.hr⁻¹ in January to 4km.hr⁻¹ in June (Hendricks *et al.*, 2004).

2.12.1.2 Future

Dramatic temperature changes have been observed in the Richtersveld area, with significant increases in average minimum and maximum temperatures of 1.1 °C to 1.2 °C in just 20 years at the Henkries weather station (van Wilgen *et al.*, 2016). The 1 degree of change that has already taken place has resulted in a sharp increase in the number of very hot days, especially in summer. Predictions of future climate change include further increases in annual average temperature of between 1.4 °C and 2.4 °C by 2050 (DEA, 2013; Driver *et al.*, 2012; Holness & Bradshaw, pers. comm.), which will result in unbearably hot temperatures throughout significant portions of the year. More than a third of the days in the year already have daytime temperatures in excess of 35 °C.

Changes in rainfall are less obvious (based on analysis of 58 years of data from Vioolsdrift), although rainfall events appeared to decrease slightly over time. Smaller rain events will evaporate very quickly, meaning the area would become even drier, with less water available for plants and animals. The impact of grazing will also be exacerbated under these conditions. Although the role of fog, which is an important water source for the environment, especially in coastal areas, requires further investigation, the dramatic temperature increases observed in the region make it likely that aridification impacts will begin to be evident. Future scenarios of rainfall range from a substantial increase to a very dramatic decrease, with the driest scenario predicting that the area will almost cease to receive any rainfall at all (DEA, 2013; Driver *et al.*, 2012; Holness & Bradshaw, pers. comm.). Although it is not yet clear which of the future scenarios are the most likely, most models favour the drier scenarios in this part of the country. Generic climate change predictions also include more erratic rainfall (high in some years, low in others, or more infrequent but heavier rainfall downpours instead of lighter steadier rain events). If the more extreme predicted warming and drying changes do occur, it is expected that the Richtersveld area would be more desert-like with much less of the Succulent Karoo characteristics than are currently present.

The impacts of climate change are already being observed in some places. Quiver trees *Aloidendron dichotomum* are dying out in areas with increased evapotranspiration (*i.e.* in places where rising temperatures cause increased water to evaporate off the earth's surface and from plants). While the West Coast of South Africa in general is expected to become drier, the Orange River could experience increased rainfall in its catchment area, making the river mouth one of few stable West Coast estuaries and an important refuge for estuarine species.

2.12.2 Topography

The park consists mostly of extremely mountainous terrain with large altitudinal changes over very short distances. The highest point in the park is in the Vandersterrberg at 1,337 m AMSL while the areas adjacent to the Orange River lie below the 300 m contour. The park covers labyrinths of deep gorges and ravines that peter out into dry riverbeds, which in most cases eventually meanders toward the Orange River.

2.12.3.1 Geology and geomorphology

Geologically speaking the Richtersveld is one of the most interesting regions in southern Africa. The rocks that occur here cover a timespan of 2 billion years in the geological history of the earth and constitute a wide variety of rock types, including volcanic, igneous and sedimentary rocks as well as their metamorphic equivalents (Beukes, 2004; Williamson, 1995; Minnaar, 2006).

The oldest rocks of the Richtersveld are the ± 2,000 million year old volcanic-sedimentary rocks of the Orange River Group, which are subdivided into two major geological units in the Richtersveld area: the basal De Hoop Subgroup, which represents the remains of an ancient northwest to southeast trending belt of island volcanoes, comprises large, irregular bodies of volcanics and gives rise to the scenic mountains in the east and northeast of the park. The other major geological unit is the much younger Rosyntjieberg Formation, which is overlain by the De Hoop Subgroup, comprising mainly metasedimentary rocks. The latter forms the 1,100 m high, prominent mountain range in the south of the park, and forms part of the northwest trending backbone of the Richtersveld.

The De Hoop Subgroup (± 2,000 million years old) which mainly consists of metamorphosed volcanic rocks is subdivided into five different formations:



- The Abiekwa River Formation, which can be followed for more than 40 km in a northwesterly direction from the Tatasberg, through the Abiekwa River valley, after which it was named, to the northern bend of the Orange River and continues for tens of km's into Namibia;
- The Kook River Formation, which overlies the Abiekwa River Formation, can be followed from east of the Tatasberg to north-west of the Kook River. The type locality is the Kook River valley at the foot of the Rooiberg;
- The Kuams River Formation, which overlies the Kook River and Abiekwa River Formations, extends from Nabasberg, east of the Tatasberg, to the Kuams River area in the north of the park, and continuing into Namibia;
- The Klipneus Formation comprises the greatest variety of rock types of all the volcanic formations. It originates in the southeast of the park in the Oudannisiep River region and is bounded by the Rosyntjieberg quartzites in the south and Kwaggarug as its western boundary; and
- The Paradys River Formation, which forms the upper portion of the De Hoop Subgroup, consists of volcanics, similar to the Abiekwa River Formation, as well as subordinate fan conglomerates, indicating reworked material. The formation extends from west of Kodaspiek in the northwest via the Paradys River to Kwaggarug in the southeast where it overlies the Klipneus Formation.

The Rosyntjieberg Formation ($\pm 1,950$ million years old) overlies all volcanic formations of the De Hoop Subgroup of the northeast Richtersveld and can be followed for more than 40 km between the Orange River and Paradyskloof. The Rosyntjieberg Formation gives rise to the very prominent mountain range, forming the east-west section of the 1,100 m high backbone of the Richtersveld, turning northwest to join the continuation of the backbone mountain range in the form of the much younger Stinkfontein Group. The Rosyntjieberg Formation includes well-known names like Oemsberg, Rosyntjieberg, Seven Sisters, Mt. Terror, Devil's Tooth, Gorgon's Head and others (Beukes, 2004; Williamson, 1995; Minnaar, 2006).

The Orange River Group metavolcanics and metasediments were intruded by the Vioolsdrif Intrusive Suite as gigantic masses of molten granodiorite and granite during two distinctly different periods of intrusion (1,900 and 1,730 million years old respectively). These rocks form large outcrops across the whole central and southern portion of the park. The prominent north-south trending, dark-coloured dolerite dyke swarm of the Gannakouriep Suite, originated from upwelling magma which intruded fractures of the existing rocks over a considerable period of time, ranging from approximately 870 to 540 million years ago. The name for these dykes was derived from the Gannakouriep River, where the main Gannakouriep dyke, at places almost 1.5 km in width and nearly 100 km in length, has developed (Beukes, 2004; Williamson, 1995; Minnaar, 2006).

Rocks of the Orange River Group and the Vioolsdrif Intrusive Suite are overlain by a belt of mainly sedimentary rocks of the Gariep Supergroup ranging in age between 660 and 500 million years and extend from the Atlantic coast to the western border of the park. The earlier mentioned Stinkfontein Group, (± 660 million years old), consisting of mainly quartzites and conglomerates, forms the basal part of the Gariep Supergroup and is overlain by the Hilda Group (mainly dolomitic limestone and phyllites) and the upper Numees Group (± 580 million years old). The latter occurs on the western side of the park as a north-south trending belt of low hills, from Annisfontein in the south, passing Remhoogte towards Jakkalsberg in the north and consists mainly of massive diamictite (poorly sorted sedimentary rock of variable composition and particle sizes that was deposited from melting glaciers during a major glacial period about 580 million years ago (Beukes, 2004; Williamson, 1995; Minnaar, 2006).

The prominent Stinkfontein mountains includes the greater part of the 1,100 m high, northwest trending backbone of the Richtersveld, extending from Numeesberg in the northwest, running

in a southeast direction towards Eksteenfontein, where it forms the prominent Stinkfonteinberge. This range includes well-known names like Numeesberg, Vandersterrberg (1,366 m) and Cornellsberg (1,377 m), the highest point in the Richtersveld.

Upwelling molten magma of the Kuboos Complex intruded the deformed rocks of the Gariep Supergroup about 530 million years ago, forming the impressive granite batholith of Kuboos, which rises to over 1,000 m high to the southwest of the park. Other similar granite plutons that belong to the Kuboos Complex comprise the Swartbank pluton (to the southwest of the Kuboos pluton) and its associated satellite pluton, Tatasberg, to the north of the Springbokvlakte in the park.

The younger Karoo Supergroup occurs to the east of the Springbokvlakte near Grasdrif, where it is represented by glacial rocks of the Dwyka Group. These rocks were deposited approximately 270 million years ago on the periphery of a glacial lake, known as the Nabas basin in the Richtersveld. Fine examples of glacial striations in sand made by floating glaciers, and also sand flow structures caused by water-saturated sands, may be seen here.

The youngest rocks in the area consist of marine sediments along the Atlantic Coast and fluvial paleo-terrace gravel deposits at different levels along the Orange River that were deposited during lateral migration of the river over the past 2 million years during Pleistocene times. These terraces along the lower Orange River in the park are at present being explored and mined on a small scale for alluvial diamonds at Klipneus, Grasdrif, Oena, Swartpoort, Acee and Reuning, amongst others, whereas the terraces outside the park at Baken, Bloeddrif and Jakkalsberg are being exploited on a commercial scale (Beukes, 2004; Williamson, 1995; Minnaar, 2006).

2.12.3.2 Geomorphology and soil

Landscape units were identified making use of the land type map for the region. The delineation of land types at 1:250,000 scale is such that each land type displays a marked degree of uniformity with regard to terrain form, soil pattern and climate (Land Type Survey Staff, 1987). There is a remarkable association between the major plant communities and the different land types of the park (Bezuidenhout, 1993). Four landscape units were identified in the park and are discussed below:

- The Orange River and adjacent floodplains: Two major land types occur in this landscape, Fc and Ia. It is mainly along the northern and eastern boundary of the park, adjacent to the Orange River. The soils of this landscape comprise of pedologically youthful, deep (> 1.2 m) unconsolidated deposits (> 60 %) with a low clay-content (> 10 %). The dominant soil forms are Dundee, Oakleaf and Hutton (Soil Classification Working Group, 1991).
- Gently undulating plains: The central area of the park is mainly characterised by gently undulating plains where the two land types, Ag and Ah, occur. The soils of this landscape are yellow and red, apedal, freely drained soils with a low clay-content (> 15 %). The dominant soil forms include Hutton and Clovelly. The depth of the soil varies from 0.3 m to 1.0 m (Land Type Survey Staff, 1987).
- Rolling hills: The largest part of the park comprises of the Ic 143 and Ib land types in this rolling landscape. The soil refer to land types with exposed rock (exposed country rock, stones or boulders) covering more than 80 % of the area. The soil-rock complex is similar to that of the rugged mountainous landscape. However, the weathering of this landscape is different due to the different geology and this is the main reason for a more rolling landscape. Isolated mountains such as Rooiberg and Richtersberg occur in this landscape. Shallow soil (< 0.2 m) with a low clay-content (> 10 %) occur on the crest and midslopes. The dominant soil forms are Mispah and Glenrosa. In the drainage lines, the soil is deeper (0.3 m - 0.8 m) with a low clay-content (> 10 %). The dominant soil form in this terrain unit is Dundee (Soil Classification Working Group, 1991).
- Rugged mountains: The rugged mountains landscape forms the western and southern boundaries of the park, comprising the Vandersterrberg and the Rosyntjieberg Mountains. The major land types, Ic 141 and 142, occur in this landscape. The soil refer to land types with exposed rock (exposed country rock, stones or boulders) covering more than 80 % of the area. The soil-rock complex is similar to that of the rolling hill landscape. However, the weathering of this landscape is different, which is the reason for a more rugged landscape. The quartzite is more weather resistant than the granite. Shallow soil (< 0.2 m) with a low clay-content (> 10 %) occurs in the landscape. The dominant soil form is Mispah. In the drainage lines the soil is



deeper (0.3 m - 0.8 m) with a low clay-content (> 10 %). The dominant soil forms in the drainage lines are Oakleaf and Dundee (Bezuidenhout, 2004).

2.12.4 Freshwater ecosystem

The park has several water sources namely, borehole, wind pumps, seasonal fountains, rock reservoirs, seepage and the Oranje River. The park is drained by the perennial Orange River which falls within the Lower Orange Water Management Area and in the Orange sub-catchment. The Orange River forms part of the international border between Namibia and South Africa. There are several ephemeral streams in the park that only flow after high rainfall events. The known natural fountains are mostly located in the high mountainous areas, and are found at Kwaggasfontein, Rosyntjefontein, Koperfontein, the Gannakouriep seepage, Hakiesdoringhoekfontein, Zebrafontein, Koeskop, upstream of Koeskop, Leliehoekfontein, Klein Koeskop, Armmanshoekfontein, Paradysklooffontein and Windpomp in the upper reaches of the Abikwa River, Abikwarivier seepage, Numeesmyn 1, Numeesmyn 2 en Kodasmyn.

There are eight river ecosystem types in the park of which 97 % of river length are classified as a “Category AB” (Largely natural). The remaining 3 % are in “Category C” (moderately modified). 8 % of the rivers and streams are classified as Freshwater Ecosystem Priority Areas (FEPAs) (Nel *et al.*, 2011), furthermore 38 % of the rivers also act as an important fish corridor bordering / inside the park. There are four wetland ecosystem types in the park of which 4 % are in “Good” condition and 96 % are “Moderately Modified”. There are no wetland FEPAs assigned to the park.

According to Toens *et al.*, 1995 a diverse assemblage of igneous, sedimentary and metamorphic rocks, as well as unconsolidated sediments deposited over a timespan of more than 2,000 million years, occur within the borders of the park. The most important litho-stratigraphic units include, the Namaqualand Metamorphic Province, which consists of volcanic and sedimentary rocks, the volcanic rocks of the Vioolsdrift Suite and the quartzite and carbonate rocks of the Gariiep Complex. Smaller portions in the northeast are underlain by the Nama Group and Karoo Supergroup. The aquifer systems are fractured aquifers composed mainly of crystalline material (igneous and metamorphic rocks) characterised by a complex arrangement of interconnected fracture systems. Alluvial aquifers, where alluvial material overlies or replaces the weathered overburden, are found along the drainage systems. Groundwater levels range between 30 m – 50 m below ground level, with the deepest levels found towards the east. Groundwater recharge is estimated to be less than 1 mm per annum with maximum recharge taking place during major flooding events. The groundwater quality is largely brackish to saline with electrical conductivity (EC) ranges of 325 mS/cm to 640 mS/cm, which are unacceptable for human consumption, although adequate for livestock and wildlife use (Toens *et al.*, 1995).

2.12.5 Terrestrial flora

The flora of the park is unique as nowhere else do two neighbouring plant kingdoms, in this case the Greater Cape Flora and the Palaeotropical Flora meet and show such a steep transition. In many locations, *e.g.* near the Rooiberg, in the middle Abikwa River reaches and in the upper Gannakouriep River, it takes less than 5 km to find a complete turnover of species that either form part of the Greater Cape Floristic Region or the Zambezi Region of the Palaeotropis (Jurgens, 1991; 1997; 2017).

There is even more diversity at high hierarchical scale: The Greater Cape Floristic Region is composed of the Succulent Karoo Region and – at higher altitudes – the northernmost large unit of Fynbos. Similarly, the “tropical” part, that mainly forms part of the Desert biome, is diverse and composed of a coastal unit (West Gariiep Centre) and a hot inland unit (East Gariiep Centre). This setting of extreme biological diversity within a small geographical space is enhanced by the

roughness of the mountain topography and the incision of the Orange River valley that forms a gateway for coastal fog and sometimes extreme inland heat. This allowed evolution and survival of extraordinary species richness, especially of taxa of the Succulent Karoo Biome, during periods of drastic climatic oscillations. A good example is the “vygies”, the highest density of genera of Aizoaceae is found in the Richtersveld with up to 53 (of a possible 130) genera (Jurgens, 2001; 2017).

The park is a very good example of one of the most interesting mega-ecosystems in the world, the Succulent Karoo. This ecosystem is of highest interest on a global scale. There is no desert flora on the planet, possessing similar species richness and individuality. On a surface area of one square km, more than 360 flowering plant species (angiosperms) are found, while the average rainfall for that particular site is only 68 mm per year. This level of species richness is not only unique, but of the highest interest for our understanding of the maintenance of species richness (Jurgens, 1997).

The Richtersveld region forms a very old centre of evolution, in which survival and evolution over long periods have resulted in a high number of plant species. The existence of a number of life forms and adaptations that are unique on a worldwide scale, underline this specific evolutionary history. One outstanding example of such unique life forms is the psammophorous plants, *i.e.* plant species fixing a layer of sand to their surface in order to build a protective shelter against the force of sand storms and related sand blasting (Jurgens, 2001; Van Jaarsveld, 1981).

The Richtersveld is an extremely important centre of diversity, species richness and endemism with respect to southern African flora. Detailed analysis of the areas of distribution of the flora of the arid regions of South Africa resulted in the observation that the Richtersveld involves two floristic kingdoms and both kingdoms have developed a centre of endemism and diversity in the Richtersveld. The Richtersveld houses a magnificent variety of dwarf shrubs with water-storing leaves, belonging to the Succulent Karoo Region of the Greater Cape Flora, while its western portion forms part of the East Gariep Centre, the most important phytogeographical centre of the Nama Karoo Region of the Palaeotropis. This is because the Richtersveld is simply divided into two units belonging to two major climatic systems, the temperate winter rainfall region with its high air humidity, and the inland region with higher temperatures, important summer rains and low humidity, respectively. Only a narrow transition zone of about 10 km - 20 km separates these units (Jurgens, 2001; 2004).

The ecosystem is delicately balanced and a number of the endemic plant species only occur in small colonies on the highest mountain peaks. About 30 % of the total floristic composition is endemic to the park. Apart from the *Mesembryanthemaceae* family, which has a number of endemic plant species in it, other families such as the *Euphorbiaceae*, *Asclepiadiaceae* and *Liliaceae*, are also represented (Van Jaarsveld, 1981; van der Walt, 1991; Williamson, 1990).

The very close juxtaposition of the winter- and summer rainfall regions has also formed the ecological basis for the traditional migratory land use system, shifting small stock farming seasonally along the longitudinal and altitudinal gradient. The resulting mobility patterns of grazing pressure probably contributed to the survival of the rich botanical biodiversity possible even during times of human land use (Jurgens, 1997; 2001; 2017).

The vegetation of the park falls within three Biomes namely Fynbos, Succulent Karoo and Desert (Appendix 5, Map 8). It also has an azonal vegetation type, namely Lower Gariep Alluvial Vegetation (Jurgens, 2004; Mucina & Rutherford, 2006). The various biomes and vegetation types occurring in the respective biomes are listed below:

1. Fynbos Biome

- **Stinkfonteinberge Quartzite Fynbos (FFq1)**

Altitudes above 1,000 m are presently insufficiently studied. The Stinkfonteinberge Quartzite Fynbos consists of a variety of low to tall open to dense shrub lands with Fynbos and Renosterveld character (Mucina & Rutherford, 2006). In terms of conservation management these high altitudes are experiencing very little (but not zero) impact from human activities and therefore could be assigned a least concern category (Jurgens, 2017).

2. Succulent Biome

- **Central Richtersveld Mountain Shrubland (SKr1)**

This unit represents about 20 % - 30 % of the landscapes that park visitors travel through and it is of similar importance when the number of plant species that need conservation



management is taken into consideration. This unit also contributes a major part of the biomass that is consumed by small livestock. Within this unit (similarly in SKr8), the altitudinal gradient is of high importance.

- **Northern Richtersveld Scorpionstailveld (SKr7)**

This unit covers only 10 % of the area of SKr1. However, it covers a large proportion of the valley bottoms and loamy plains above 330 m altitude. Therefore this unit is also of great relevance in terms of the impression visitors take home. It has attracted the stock farmers and especially larger plains of this unit like the Koeroegab Vlake, showed the highest density of livestock posts and livestock in the park. Unfortunately, this unit is very vulnerable to topsoil erosion and even moderate overgrazing and trampling trigger sheet erosion and gully formation.

- **Rosyntjieberg Succulent Shrubland (SKr8)**

A similar situation exists as for SKr1, however, along a west-east gradient SKr8 is more arid shows steeper and less vegetated slopes and rocks. Therefore, this unit is also less attractive for and less impacted by land use. It is also further away from tourism hotspots.

- **Tatasberg Succulent Shrubland (SKr9)**

This unit is dominated by huge granite domes and streams of large granite boulders. The vegetation is therefore well protected from land use impact (Jurgens, 2017).

3. Desert Biome

- **Western Gariiep Hills Desert (Dn5)**

This unit is predominantly associated with the winter rainfall region and frost is less than at the coast, but it still receives an estimated 40 - 50 fog days per year. The unit has a high conservation value due to its endemic and other localised plant species. According to Mucina & Rutherford (2006), the broad unit falls within the Desert Biome, although single outcrops at higher altitudes show transition to the adjacent Succulent Karoo Biome units.

- **Noms Mountain Desert (Dg1)**

The rainfall for this unit varies between winter and summer. Fog is infrequent, particularly in the eastern part of this unit. The unit has a high conservation value due to large concentrations of endemic plant taxa. The unit contains one of the largest populations of the endangered "halfmens" *Pachypodium namaquanum* (Mucina & Rutherford, 2006).

- **Richtersberg Mountain Desert (Dg2)**

The rainfall for this unit is related to the summer rainfall season, which is very erratic and variable. Near Claim Peak (inside the park), 47.1 mm rain has been recorded over a six year period. This unit has a high conservation value due to its concentration of endemic plant species and sensitive habitat (Mucina & Rutherford, 2006).

- **Richtersveld Sheet Wash Desert (Dg3)**

The rainfall for this unit is associated with the summer rainfall season. Over a six-year period, 55 mm has been recorded at Tatasberg. In this unit, rare thunderstorms are the most important source of rainfall. The occurrence of one large *Euphorbia gregaria* population in the Springbokvlakte between Tatasberg and Grasdrif is an important bio-geographical feature of this unit (Mucina & Rutherford, 2006).

- **Kwaggarug Mountain Desert (Dg4)**

The rainfall for this unit is also variable and closely associated with scattered thunderstorms. Mucina & Rutherford (2006) stated that this unit shares many of the endemic plant species of the East Gariep Centre because of its association with the steep aridity gradient off the border with the Succulent Karoo, through rich Nama-Karoo flora on the higher mountain areas to the species-poor flora in the hyper-arid vicinity of the Orange River.

4. Inland Azonal Vegetation

- **Lower Gariep Alluvial Vegetation (AZa3)**

This unit is characterised by relatively flat alluvial terraces and riverine islands supporting a complex of riparian thickets, reed beds and occasionally flooded grassland and forbland populating sand banks and terraces within and along the Orange River (Mucina & Rutherford, 2006). This unit is at risk from alien plant species, alluvial diamond mining and agricultural activities.

Broadly, the landscape units of the park are strongly related to the four main landscapes (Van Jaarsveld 1981, Willis 1992). These are:

1. The Orange River and adjacent floodplains

The Orange River not only provides water as a life necessity but also provides the stock farmers (“veeboere”) with good fodder for their goats, sheep and cattle during the long summer months with very little rainfall (< 40 mm per year) and thereby gives the inland vegetation time to rest. This closed Woodland along the river is mostly dominated by “rosyntjieboom” *Rhus pendulina*, sweet thorn *Vachellia karoo*, Buffalo thorn *Ziziphus mucronata* and tamarix *Tamarix usneoides* trees. The adjacent floodplains and bigger drainage plains are dominated by perennial grasses - withaargras *Leucophrys mesocoma* and short bushman grass *Stipagrostis obtusa* - as well as the trees black ebony *Euclea pseudebenus* and shepherd tree *Boscia albitrunca*. The trees not only provide fodder, shelter and shade to humans and animals but also provide fuel wood for fire to prepare food and provide heat. The common reed *Phragmites australis*, mat sedge *Scirpus* species and matjiesgoed *Cyperus* species, are commonly used for building material such as traditional Nama beehive huts and sleeping mats. It is also the most disturbed vegetation because of mining and grazing. Unfortunately, this habitat is prone to invasion of declared exotic and invader plant species such as the honey mesquite *Prosopis glandulosa*, wild tobacco *Nicotiana glauca* and castor oil *Ricinus communis*. The Orange River sometimes floods its banks and this can then change the course of the River.

Fountains occur in all the mayor landscapes in the park. Witkaree *Rhus pendulina*, bloubos *Diospyros lycioides* and common ghwarrie *Euclea undulata* are the prominent trees and shrubs around the fountains. The fountains in the rugged mountains are extremely picturesque with the white arum lilly *Zantedeschia aethiopica* as well as the two fig species Namaqua fig *Ficus cordata* and the laurel fig *Ficus ilicina* found in these areas (Van Jaarsveld, 1981).

2. Gently undulating plains

The gently undulating plains experience summer / all year round rainfall. The dominant plant species are a mixture of perennial and annual species. Geophytes of the families Iridaceae, Amaryllidaceae and Liliaceae are abundant, especially after a good downpour (Van der Walt, 1991; Williamson, 1990).



3. Rolling hills

The *Euphorbia virosa*, *Tylecodon hallii* and *Commiphora* spp. occur in the warmest and driest part of the Richtersveld. This vegetation unit is found in the northeastern section of the park, which is associated with high temperatures and sparse to no vegetation. The endangered endemic halfmens *Pachypodium namaquanum*, bastard quiver tree *Aloe pillansii* as well as the conspicuous botterboom *Cotyledon paniculata* occur in this vegetation unit (Williamson, 1990).

4. Rugged mountains

The most important mountain range in this rugged mountainous landscape is the Rosyntjieberg Mountain. It consists mainly of quartzite, which is resistant to weathering. Most of *Mesembryanthemaceae* plant species occur in this rugged landscape (Van der Walt, 1991).

2.12.6 Terrestrial fauna

The park is exceptionally rich in fauna for an arid region, with a diversity of animals including insects, fish, amphibians, birds, reptiles and mammals. The varied climatic and vegetation zones in the park create various habitats for a diverse array of large and small animals. The majority of the large mammals were hunted to extinction in this region in the early 1900s (Skead, 2011) and when SANParks took over the management of the park in 1991 very few herbivore species were still present in the park. Species such as the common duiker *Sylvicapra grimmia*, greater kudu *Tragelaphus strepsiceros*, grey rhebok *Pelea capreolus*, steenbok *Raphicerus campestris* and klipspringer *Oreotragus oreotragus* were recorded in the park at the time. However, due to continued hunting and domestic dogs present in the park the status of some of these species (e.g. common duiker, steenbok and grey rhebok) is unknown as there have been no sightings recorded of these species for a number of years. Further research is therefore needed to determine whether these species are still present in the park. The following species were re-introduced into the park between 2008 and 2016: gemsbok *Oryx gazelle*, springbok *Antidorcas marsupialis*, red hartebeest *Alcelaphus buselaphus* and Hartmann's mountain zebra *Equus zebra hartmannae*. Sixteen carnivore species have been recorded in the park including threatened species such as leopard *Panthera pardus*, brown hyaena *Parahyaena brunnea* and cape clawless otter *Aonyx capensis*.

The park has a bird species list of approximately 202 species, which is high for an arid area, however this is due to access to the Orange River and the close proximity of the sea and the Orange River mouth wetlands. Eleven of these species are threatened and these include species such as the martial eagle *Polemaetus bellicosus*, African marsh harrier *Circus ranivorus*, lanner falcon *Falco biarmicus*, Ludwig's bustard *Neotis ludwigii* and the white-backed night heron *Gorsachius leuconotus* (Taylor *et al.*, 2015).

The park also has a rich reptile fauna, with 62 species known to occur in the park (Smid *et al.*, 2016). Lizards make up two thirds of this number and nearly half of these are geckos. For its size, the Richtersveld area has one of the richest gecko faunas in the world (Hendricks *et al.*, 2004). Intensive reptile surveys in the park have revealed new species, as well as, extended distribution ranges for some species that have not previously been recorded in the park (Bauer *et al.*, 1996; Smid *et al.*, 2016). Due to the extreme aridity of the park, only a few amphibian species occur here. Eight species of frogs have been recorded in the park with a new species, paradise toad, *Bufo robinsoni* found in the small springs seeping from the ground in the Vandersterrberg in the 1990s (Branch & Braack, 1995). Other species, yet unknown to science, may still be found in the hidden canyons and outcrops of this harsh, yet beautiful wilderness (Hendricks *et al.*, 2004).

Twelve fish species are located in the Orange River section of the park and all these species are indigenous (Russell 2011). Insects play an important role in the park ecosystem as they are responsible for pollinating many of the plants and contribute to the diet of larger species. Several narrow endemics have a mutualistic relationship with narrowly endemic plants and are uniquely adapted to “fit” these flowers (Hendricks *et al.*, 2004). Some of the most unique southern African butterfly species are also found in this arid region, such as the Namaqua arrowhead *Phasis clavum* and the warrior silverspotted copper *Argyraspodes argyraspis* (Mecenero, 2013). Furthermore, a new genus of terricolous weevils, with four new species have been discovered in the park (Borovec & Meregalli, 2013). Remarkably, these four species of the new genus were found less than 10 km apart in a small area of the park.

The park has a rich fauna of arachnids that are well adapted to survive in this arid region. The spider species are mainly ground dwellers living in burrows, as seen in the trapdoor spiders or buckspoor spiders - *Seothyra* spp., or they are able to dive beneath the soil surface, as seen in the termite-eating spiders - *Ammoxenus* spp. or use their legs to disappear below the soil surface, such as the six-eyed sand spiders - *Sicarius* spp. (Hendricks *et al.*, 2004). Five sun-spider species - Solifugae have been recorded in the park with four of these being South African endemics (Dippenaar-Schoeman & Gonzalez Reyes, 2006). Surveys conducted in the park as part of South African National Survey of Arachnida have collected 46 spider species in the park, with the Salticidae family being the most diverse (five spp.) (Dippenaar-Schoeman *et al.*, 2016). The scorpions include several species of the more venomous thick-tailed *Parabuthus* genus as well as species of the genera *Karasbergia*, *Hadogenes*, *Uroplectus* and *Opisthophthalmus*. The majority of these scorpions are nocturnal, resting in burrows or shallow holes during the day and moving around at night in search of prey.

2.13 Archaeology and cultural heritage

The park has significant geological and palaeontological, natural, archaeological and architectural heritage. The palaeontology of the park has not been sufficiently studied. The park does have potential to yield palaeontological species such as Ediacaran shelly invertebrates, trace fossils, calcified algae, agglutinated tubes, early metazoans (possible sponges *etc.*), organic-walled microfossils, vendotaenid ‘algal strings’, stromatolites and other structures (EcoAfrica, 2013).

The park also has some interesting natural features of cultural significance. These natural features have been given cultural meaning by human beings. Among the natural features of cultural significance are the “Hand van God”, a rock formation of about 2 meters high near Sendelingsdrift that looks like a “godly” handprint and the “Die Toon”, an isolated Tatasberg pluton, or granitic intrusion that resembles a toe (EcoAfrica, 2013).

The area also has a substantial and complex historical and cultural heritage. Fully mobilised, this heritage would add substantial value to tourism in the park and assist local people with the development and protection of their culture. The tourism potential of the park as a whole could be expanded by fully unlocking the tourism potential of all heritage categories in the park.

The Nama cultural heritage is central to the park. It is closely linked to other important characteristics of the cultural landscape such as the historic presence of the San and the Afrikaans linguistic heritage of the region, particularly that of Khoe-Afrikaans. Also important is the colonial layers of the cultural landscape, which includes early and later farmers and important historical events relating to German colonialism, the South African Wars (Anglo-Boer) and the First World War.

The cultural heritage of the park would be enhanced through greater co-operation and harmonisation of activities with the nearby Richtersveld Cultural and Botanical Landscape World Heritage Site.

2.14 Socio-economic context

The park is situated in the Northern Cape within the NDM, which includes the Local Municipalities of Hantam, Khai-Ma, Kamiesberg, Karoo Hoogland, Nama Khoi and Richtersveld (Namakwa District Municipality, 2016). The RLM incorporates the towns of Alexander Bay, Eksteenfontein, Kuboes, Lekkersing, Port Nolloth and Sanddrift. Although the RLM is the largest (spatially) in the NDM, it has the smallest population. The Northern Cape Province had the lowest number of inhabitants in 2016, with a total of 1,193,780 persons, which constituted only 2.1 % of the total South African population (Stats SA, 2016). It was estimated that about 12.6 % or 14,513 of the people living in the NDM — with a total population of 115,488 — resides within the RLM (Richtersveld Local Municipality, 2017).



Unemployment in the RLM is moderately high around 26 %, and an estimated 48 % of the population of the district receives social grants, a major challenge for the local municipality. These statistics poses a challenge for all living in the RLM, both the authorities and the inhabitants. In addition, the geographical separation of its inhabitants contributes to the difficulty experienced by local government in delivering proper services to all of its constituents. The three main challenges for local residents in the RLM is the availability of job opportunities, relatively poor condition of the road network and the quality and availability of drinking water. Both the local and district municipalities have Integrated Development Plans (IDPs) and Spatial Development Frameworks (SDFs) that incorporate the park.

The park itself is mainly surrounded by private livestock (mainly goats and sheep) farms that focuss on meat production. The main economic sectors are: mining, agriculture, fishing and tourism. The area along the Orange River as well as the stretch of coast between Alexander Bay and Port Nolloth is well known for its alluvial diamond deposits, which have attracted mining to the area. Although mining has the potential for considerable job opportunities, it could conflict with the park's conservation objectives due to the proximity of the prospecting / mining areas.

The Richtersveld has the potential to become the destination of choice for tourists to the Northern Cape and South Africa. Currently the tourism sector in the RLM contributes a small percentage to the economy of the area. The park plays a significant role as an economic contributor in the region.

2.15 Tourism

This beautiful park lures the more adventurous visitor and the primary tourist attractions are the awesome and rugged landscapes, the remoteness and the unique biodiversity. It also boasts a staggering assortment of arid plant life, in particular the endemic succulents. Due to the topography, the road network is limited and rugged and 4x4 vehicles are required.

There are various small camps along the Orange River. The largest of these is Sendelingsdrift, with 10 self-catering chalets (28 beds), 12 camp sites, shop, fuel station and a swimming pool. There are wilderness camps at Tatasberg and Gannakouriep, each offering 4 x 2-bed self-catering units with showers, 12 volt lighting system, fridges and gas stoves. The four day Vensterville Hiking Trail can be undertaken from Hakiesdoring Wilderness Camp. Furthermore, there are four camp sites across the park; De Hoop (12 sites), Kokerboomkloof (8 sites), Potjiespram (18 sites) and Richtersberg (6 sites).

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Section 3: Policy framework

3.1 Introduction

SANParks, like all protected area management authorities, is subject to the Constitution, international agreements, legislation, national policies and government priorities. Section 41 of the NEM: PAA requires that management plans be nested within the context of a Co-ordinated Policy Framework (CPF). The CPF can be downloaded from the SANParks website using the following link http://www.sanparks.org/conservation/park_man/.

The CPF provides the organisational guidance required by the DEA guideline for management plans (Cowan and Mpongoma 2010). This document will summarise the institutional, ecological, economic and social environment for park management and includes:

- An introduction to the management plan requirements of the NEM: PAA, what it means for stakeholders, and the corporate provisions SANParks has made to comply with NEM: PAA;
- SANParks as an organisation: including its organisational structure, vision, mission, biodiversity values and performance management system (by means of the balanced scorecard), and its approach to strategic adaptive management; and
- Policies and guiding principles:
 - Finances and commercialisation;
 - Tourism;
 - Zoning system in parks;
 - Stakeholder relationships;
 - Management to maintain biodiversity and ecosystem processes;
 - Risk management;
 - Safety and security;
 - Cultural heritage resources;
 - Resource use; and
 - Research.

SANParks policies are guided by its vision and mission statements. As a public entity, SANParks is committed to act in pursuit of transformation of South Africa's society in support of entrenching South Africa's democracy. As such, this policy framework is available to stakeholders.

The relationship between the park-specific adaptive management planning cycles and the SANParks CPF is outlined in Figure 1, where the planning cycle for management plans in SANParks is 10 years. The programmes and costing could be revised at shorter time intervals, as required.

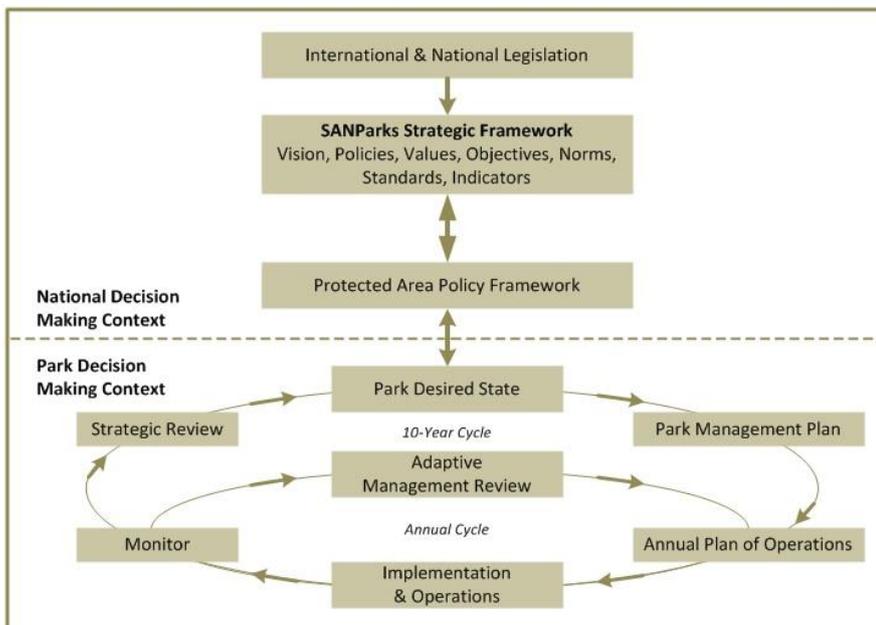


Figure 1. SANParks protected area planning framework.

3.2 Strategic adaptive management

Protected areas are increasingly viewed as complex social-ecological systems. The social-ecological coupling acknowledges multiple interactions that take place between people and natural landscapes – even fenced-off protected areas are influenced by external social issues. These systems are regarded as complex because the results of interactions between the social and ecological components, as well as between components within each of these sub-systems, are often unpredictable. A further complication in the management of protected areas is that the suite of stakeholders may have widely varying or even conflicting expectations, based on different worldviews and values. Under these conditions of divergent stakeholder interests and limited predictability, it might be impossible to agree on an optimal solution and similarly it may be unrealistic to expect certainty in terms of management outcomes. Strategic Adaptive Management (SAM) has emerged as the SANParks approach of choice to deal with the complexity and multi-stakeholder tensions that characterise park management decisions (Figure 2). SAM is designed to be strategic (facilitate action with foresight and purpose), adaptive (facilitate learning whilst we are doing) and participatory (facilitate engagement and co-learning with stakeholders) (Grant *et al.*, 2008).

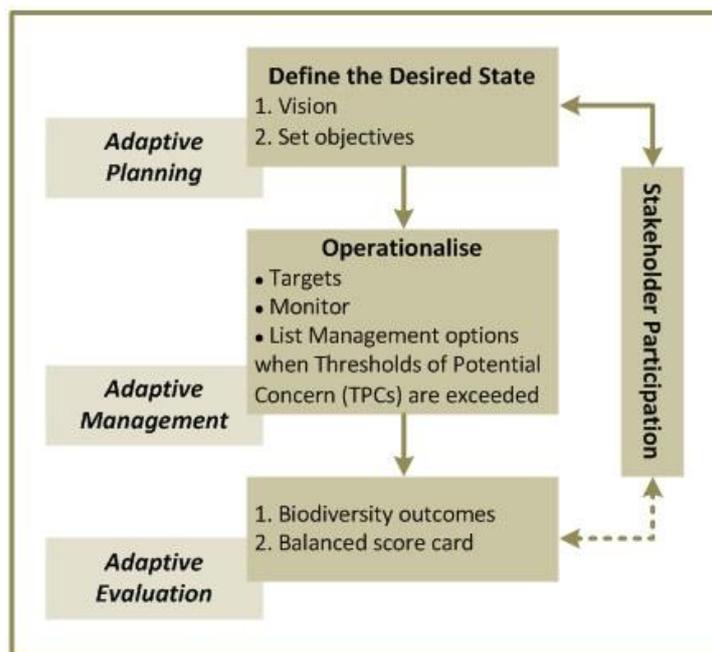


Figure 2. Steps in the adaptive management cycle as used by SANParks.



SAM begins with determining the desired future state of a particular social-ecological system (Figure 3). The aim of this step is to build a sense of common purpose among all relevant stakeholders and to develop a collective roadmap for moving from a current reality to a more desirable social-ecological system. This desired state or vision needs to be described within the context of associated stakeholders and their respective values, as well as social, technological, environmental, economic and political (V-STHEP) influences. Description of the future state is further enriched by deliberating the distinctive and special features (called vital attributes) of the park.

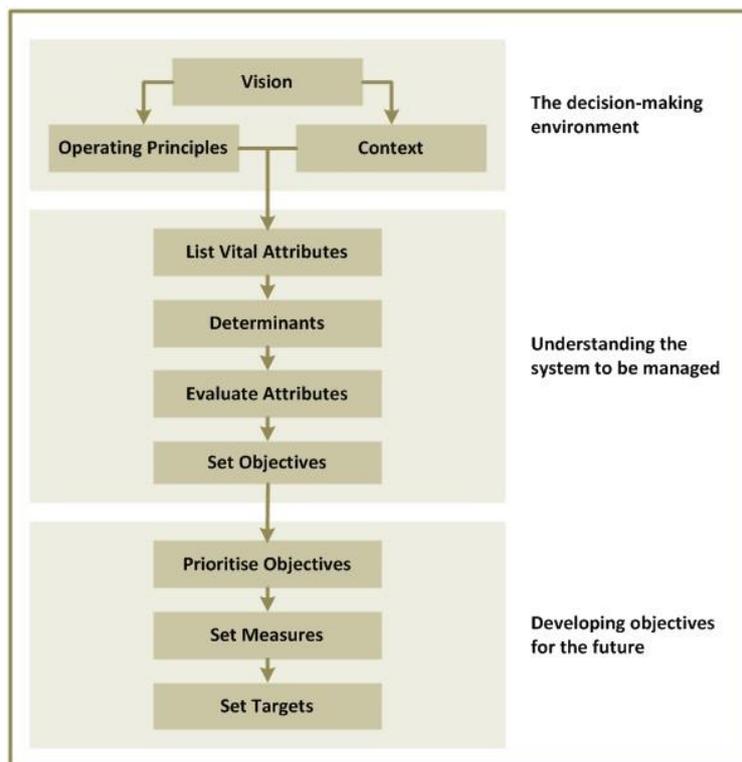


Figure 3. The adaptive planning process as used by SANParks.

The mission, together with the vital attributes of the system to be managed, informs the setting of objectives. A nested hierarchy of objectives starts with high-level objectives that are deconstructed into a series of lower-level objectives and, ultimately, management options for achieving those objectives. Alternative management options are considered by looking at resources, constraints, potential threats and risks associated with a particular management option, while anticipating likely results. From these options, the most appropriate is selected, followed by a planning stage and implementation.

A critical component of SAM is to monitor and evaluate the consequences of management decisions. Constant scrutiny of emerging results and evaluation against objectives are essential to allow strategy and methodology to be adjusted as new understanding and knowledge emerges (see section 10.7). Of critical importance is the participation and engagement of all relevant stakeholders.

3.3 Park-specific framework

All park managers (except for Kruger National Park) report to the Managing Executive: Parks through a Regional General Manager. In the case of RNP, reporting is done via the Regional

General Manager for the Arid Cluster. The park's summarised organogram (Figure 4) sets out the reporting structure in the park.

3.4 Park regulations and internal rules

In addition to the regulations for the proper administration of special nature reserves, national parks and world heritage sites, as gazetted on 28 October 2005 in GG 28181, the park has also drafted applicable internal rules in terms of Section 52 of the NEM: PAA, (Appendix 4).

3.5 Support to the park

Park management is primarily supported by head office, providing human resource, financial, marketing, review and auditing services. The regional operations office assists the park with line management support. The park also receives support from functions such as park planning and development, veterinary wildlife service, scientific services *etc.*

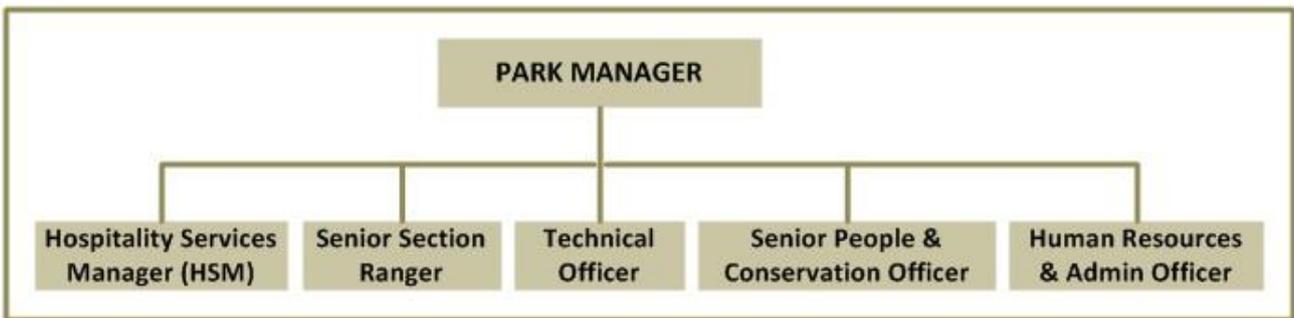


Figure 4. Richtersveld National Park organogram.



Section 4: Consultation

SANParks recognises that parks must serve societal values and that parks need to be part of and interrelate with the broader landscape and socio-economic context within which they are situated. The goal of the park within the public participation process is to work directly with stakeholders to ensure that the stakeholder concerns and aspirations are consistently understood and considered (Spies & Symonds, 2011). Therefore, stakeholders both interested and affected, were included in the revision process of the park management plan by notifying them of participation processes through mechanisms suitable for the different stakeholder groups. These processes provided the opportunity for input from all stakeholders within reasonable timeframes, with the emphasis on sharing of information and joint learning. Processes also aim to recognise all knowledge, indigenous, ordinary and expert, as well as the diversity of values and opinions that exist between stakeholders. The commitment to the incorporation of public opinion into this plan is rooted in the park's management activities and is therefore geared towards promoting conservation values (and society's connection with those values, as also outlined in the NEM: PAA) and promoting this goal in part, by engaging the broader context in which the park is situated. The adaptive planning process that was followed was designed to (i) help stakeholders express opinions and values in a structured way, (ii) to use the opinions and expressed values to formulate a vision for the park, (iii) to translate the vision into management objectives that reflect the values as expressed by stakeholders and (iv) comment on the draft park management plan.

The objectives of the stakeholder participation process are to:

- Create a channel for the accurate and timely dissemination of information to interested and affected stakeholders;
- Create the opportunity for communication between SANParks and the public;
- Promote opportunities for the building of understanding between parties;
- Provide the opportunity for stakeholders to give meaningful input into the decision-making processes that drive the development of the park management plan.

The approach to the stakeholder participation process is based on the principles embodied in the following legal framework, namely:

- The Constitution of the Republic of South Africa Act No. 108 of 1996;
- The National Environmental Management Act No. 107 of 1998 (NEMA); and
- The NEM: PAA as amended.

In addition to the above legal framework, the stakeholder process was developed with the guiding principles for SANParks stakeholder participation in mind. SANParks thus undertakes to:

- Seek to notify stakeholders of participation processes through appropriate mechanisms;
- Ensure that the process provides the opportunity for input from all stakeholders within reasonable timeframes, emphasising the sharing of information, joint-learning and capacity building;
- Promote participation by stakeholders through timeous and full disclosure of all relevant and appropriate information;
- Provide feedback on the outcome of the process to stakeholders and demonstrate how their inputs have been considered in the decision making process;
- Ensure that methodologies accommodate the context of the issue at hand and the availability of resources (people, time, money) and do not conflict with these guiding principles; and
- Give particular attention to ensuring participation by marginalised communities, communities with specific concerns, or communities that have contractual rights in the national park.

The stakeholder participation process followed during the revision process of this management plan is depicted in Figure 5 below.

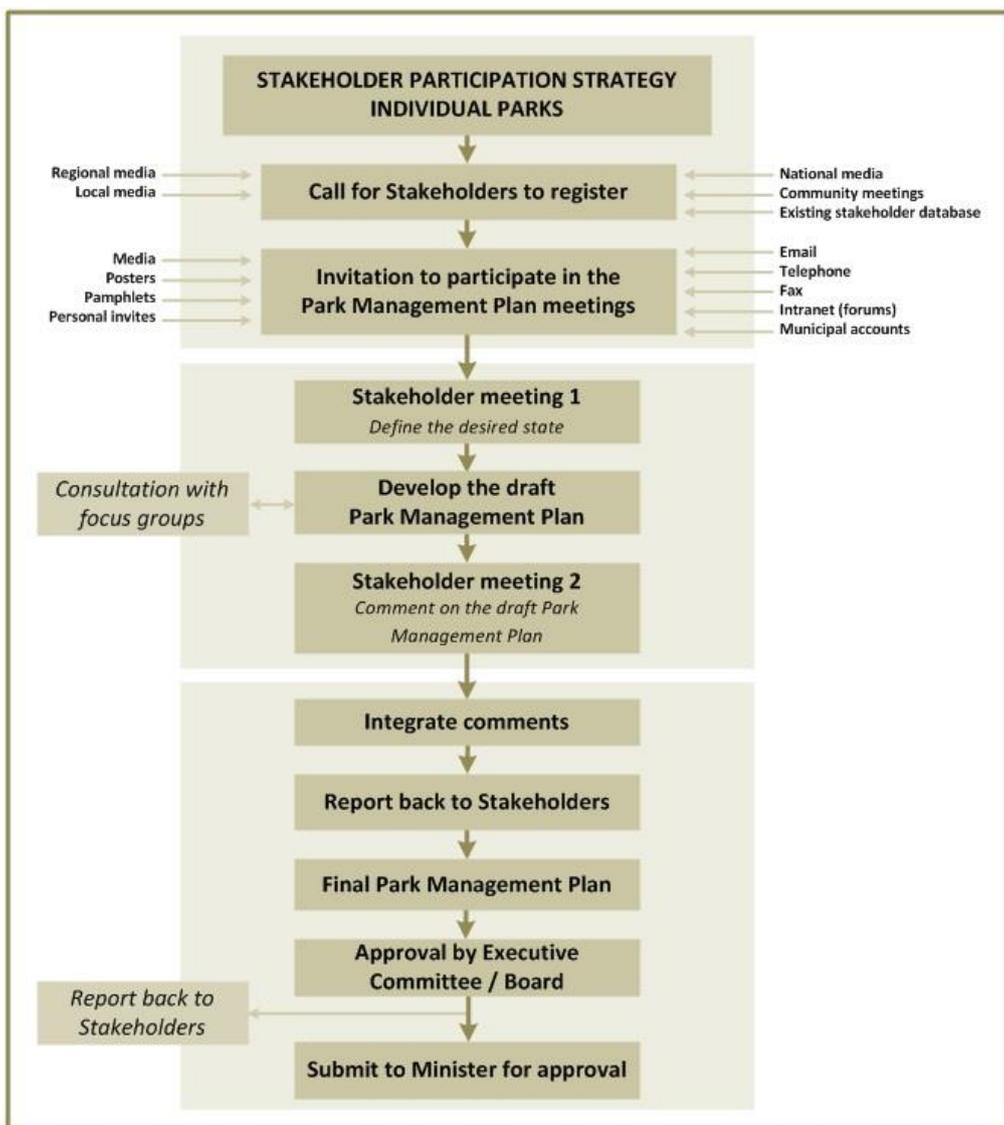


Figure 5. SANParks stakeholder participation process.

Details regarding the stakeholder process that was followed are outlined in Appendix 2.



Section 5: Purpose and vision

5.1 Purpose of the park

The NEM: PAA requires that the park be managed in accordance with the purpose for which it was declared. The original purpose of the park was not officially specified, in neither the first gazetted declaration nor any subsequent addition. However, the initial motivation for establishing a park in the Richtersveld could be attributed to the requirement to preserve a representative sample of the Succulent Karoo. SANParks will manage the park firstly in accordance with its organisational vision and secondly in accordance with the mission and objectives hierarchy that were derived through consultation with stakeholders, as set out in this section.

5.2 Desired state for the park

In order for the current and future extent of the park to be protected and managed effectively, a desired state for the park has been developed through an adaptive planning process to guide park management in its daily operations. To formulate this desired state, focus was placed on the mission, park context, operating principles and, vital attributes that make this park unique, or at least very special in its class. Each attribute was discussed along with important factors determining / strengthening or threatening / eroding these attributes. Using this information helped focus the exact formulation of the park objectives, which aim to strengthen positive determinants and weaken or remove negative ones so that objectives are appropriate to the uniqueness and special nature of this park. In this way, the management plan is customised according to its local context, without detracting from some of its more generic functions along with certain other parks. This framework forms a bridge between the CPF and its vision for the park, and the medium term (10 years) priorities to attain the vision and mission in co-operation with its stakeholders.

5.2.1 Vision and mission

The vision is an inspirational statement designed to provide a picture of the envisaged future for the park. It answers the question of 'where do we want to go?'. SANParks' corporate vision, which holds for all national parks including RNP, is as follows:

VISION

"A sustainable national park system connecting society".

The mission defines the fundamental purpose of the park, succinctly describing why it exists and what it does to achieve its vision. The following mission was developed after consultation with stakeholders at a workshop on 09 May 2017:

MISSION

"Maintain the unique biodiversity, geology and spectacular landscapes typical of Succulent Karoo and mountain deserts, as well as cultural values of the local community through integrated governance of conservation, cross border and world heritage sites that maintain and create socio-economic development and tourism opportunities, manage negative impacts and practices, and promote sustainability".

5.2.2 SANParks corporate vision of the desired state

Examined from the perspective of the entire system of national parks, SANParks has identified a broad vision and strategic direction for each individual park. This corporate strategic direction is intended to complement the role of other parks in adding overall value to South Africa's national

park system in terms of biodiversity conservation, recreational opportunities and regional socio-economic contribution.

Thus, the following strategic direction for the park has also informed the programmes of implementation (Section 10) of this management plan:

Richtersveld has outstanding scenic, biodiversity and cultural heritage value. It is an important bank of rare and endemic species. The role of the park as a socio-economic catalyst will be strengthened through job creation. Environmental education will be improved. There is little prospect of producing surplus income but the deficit will be reduced. There is an anticipated increase in biodiversity risks to the park over the next 20 years because of global environmental change. Biodiversity risks are relatively low, one of the most important being invasive alien species.

5.2.3 Operating principles or values

SANParks has adopted eleven corporate values that serve as guiding principles around which all employee behaviour and actions are governed and shaped. Stakeholders recognised and endorsed the SANParks corporate and conservation values as outlined in the CPF. These corporate principles or values are:

1. Show **leadership** in all we do.
2. Be guided by **environmental ethics** in all we do.
3. Promote **transformation** within, and outside of the organisation.
4. Strive for **scientific** and **service excellence** at all times.
5. Act with **professionalism** at all times.
6. Adopt, and encourage **initiative** and innovation by all.
7. Treat all our stakeholders with equity and **justice**
8. Exercise **discipline** at all times.
9. Show **respect** to all.
10. Act with **honesty** and **integrity**.
11. Strive for **transparency** and open **communication** at all times.

In addition to the above, SANParks has also adopted biodiversity values as set out below:

1. We adopt a **complex systems view** of the world while striving to ensure the **natural functioning** and **long-term persistence** of the **ecosystems** under our care.
2. We aim at persistent achievement of **biodiversity representivity** and **complementarity** to promote **resilience** and ensure **ecosystem integrity**.
3. We can **intervene in ecosystems responsibly and sustainably**, but we focus management on **complementing natural processes** under a "**minimum interference**" philosophy.
4. We accept with humility the **mandate of custodianship** of biodiversity **for future generations** while recognising that both natural and social systems change over time.

At the workshop that took place on 09 May 2017, the participants suggested adding additional values. SANParks agreed to adopt the following:

1. Acknowledge the relevance of indigenous knowledge; and
2. Exhibit a sincere belief that people (internal and external) add value.

5.2.4 Park context

The context refers to the current circumstances and the conditions that determine these circumstances. The context is therefore important as a set of agreed-upon realities that will influence the setting of management objectives. The context is summarised under sections 2.1 to 2.15.

5.2.5 Vital attributes

The vital attributes of the park are the important characteristics and / or properties of the park that concisely describe the key features of the park. The park identified 13 attributes that are vital to the approach by which it is managed. The key attributes are:

1. Perennial near-pristine Gariep / Orange River and riparian vegetation in a desert, playing a key role supporting biodiversity and a range of economic activities;



2. Unique established and potential eco-, geo-, cultural and adventure tourism opportunities associated with remote desert and river experiences across a coastal-inland gradient;
3. Existing legacy of co-operative, joint and integrated management as part of the contractual and transfrontier park agreements and direct beneficiation of local communities;
4. Important diverse tangible and non-tangible living cultural Richtersveld landscape and its people, past and present;
5. Diverse and unique old to young geological, geomorphological and mineral features in mythical spectacular landscapes, extreme climatic conditions and varying topographies;
6. Interface of the Succulent Karoo and Desert biomes where unique endemic and special arid adapted species live in diverse habitats of varying landscapes and threatened riparian vegetation; and
7. An important contributor to short- and medium-term sustainable socio-economic development opportunities within the greater Richtersveld region.

5.2.6 Determinants and risks to the vital attributes

A major component of management's responsibility is to ensure the maintenance of the determinants or strengths of the vital attributes and to limit the influence of threats to the system.

The boxes below reflect the vital attributes, determinants and threats.

1. Perennial near-pristine Gariep / Orange River and riparian vegetation in a desert, playing a key role supporting biodiversity and a range of economic activities.	
Determinants: Constant water flow, water quality, rainfall in distant catchments, river flow management – international treaties, geomorphological variety.	
Threats	
<ul style="list-style-type: none"> • Local agricultural developments – vineyards on Namibian side • Leaching of agricultural chemicals • Riparian grazing by livestock • Local water use and extraction • Distant water usage – including dams and water extraction • Invasive aquatic species 	<ul style="list-style-type: none"> • Climate change – changes in natural flooding regimes • Mining – water use, but also terrestrial impact • Inadequate implementations of treaty and policies • Pollution • Alien species • Poaching – fish
2. Unique established and potential eco-, geo-, cultural and adventure tourism opportunities associated with remote desert and river experiences across a coastal-inland gradient.	
Determinants: Working pontoon, geological heritage and special features like natural points of interest, wilderness experience, diversity of existing activities – 4x4, mountain bike, trail run, hiking, kayaking, fishing, natural splendour, Nama cultural experience, cultural landscape, existence of a Transfrontier Park, suitable and variety of accommodation.	
Threats	
<ul style="list-style-type: none"> • Bad state of the access route to the park • Abnormal high and low levels of the river affecting the pontoon • Inappropriate distribution of livestock close to tourist attractions • Mining legacy close to tourist facilities • Potential visual impacts of developments like vineyards <i>etc.</i> 	<ul style="list-style-type: none"> • Limited accommodation (certain markets like overland experiences) • Limited access for sedan vehicles • Isolation from major traveling and tourist routes • Vandalism of tangible heritage like rock engravings • Off-roading 4x4

3. Existing legacy of co-operative, joint and integrated management as part of the contractual and transfrontier park agreements and direct beneficiation of local communities.	
Determinants: Good established relationship with Richtersveld community, Functional ARTP, existing contractual agreements, mutual benefits, mutual sense of accountability, potential of interactions to develop with the World Heritage Site, existing interest from external funders including GEF, opportunities to expand across terrestrial and marine habitats.	
Threats	
<ul style="list-style-type: none"> • Open areas between properties – carnivore conflict with livestock • Breakdown in relationship with Richtersveld community 	<ul style="list-style-type: none"> • Reprioritise funding allocation • Extreme contrasting land-use objectives / priorities

4. Important diverse tangible and non-tangible living cultural Richtersveld landscape and its people, past and present.	
Determinants: Existence of nomadic stock-farming practice, indigenous knowledge, various indigenous cultures, archaeological heritage, rock engravings and San paintings, Matjies huise, oral and recorded history, specific geological features of cultural significance, traditional medicine and plant uses, potential to re-connect divided people with ARTP initiatives.	
Threats	
<ul style="list-style-type: none"> • Vandalism • Lack of active cultural heritage management • Natural weathering • Invasive cultural modernisation 	<ul style="list-style-type: none"> • Oral history loss • Loss of practicing nomadic stock farmers • Localised unmanaged development (mining legacies)

5. Diverse and unique old to young geological, geomorphological and mineral features in mythical spectacular landscapes, extreme climatic conditions and varying topographies.	
Determinants: Weathering, arid climate interspersed with occasional thunderstorms, uplift and erosion (water or wind), sand deposits from Namibia, sedimentation and river dynamics, overlap of two super-groups (geological formations).	
Threats	
<ul style="list-style-type: none"> • Mining (but can lead to discovery) 	<ul style="list-style-type: none"> • Climate change

6. Interface of the Succulent Karoo and Desert biomes where unique endemic and special arid adapted species live in diverse habitats of varying landscapes and threatened riparian vegetation.	
Determinants: Climate – erratic rainfall and extreme range of temperatures, two rainfall regimes, and malmokkie as a source of precipitation in an arid environment, geology and soil diversity, microhabitats in different landscapes, high levels of endemism usually associated with special adaptations.	
Threats	
<ul style="list-style-type: none"> • Inappropriate development • Climate change • Impacts of inappropriate livestock practises – overgrazing, trampling • Water provisioning • Poaching, illegal collecting of plants • Feral dog impacts secondary as part of nomadic herding practices 	<ul style="list-style-type: none"> • Inappropriate land rehabilitation – Biodiversity Social Projects (BSP) • Invasive species • Pollution and littering, waste management • Flooding and natural disasters • Human-induced fires in riparian vegetation • Release of pets • Off-road driving



7. An important contributor to short- and medium-term sustainable socio-economic development opportunities within the greater Richtersveld region.

Determinants: Existing external funding interest, requirements to do ecological management by SANParks, generate alternative opportunities to historical practices such as farming or mining, relatively concentrated settlements in sparsely populated landscapes, existing structures of conservation-related community beneficiation, the strategic focal change of SANParks to focus on social aspects.

Threats	
<ul style="list-style-type: none"> • A deterioration of relationships (between SANParks and other government institutions) • The uncertain political changes and priorities 	<ul style="list-style-type: none"> • Lack of funding – reliance on external inputs • Relationship with Richtersveld community breaking down and contract ending

5.2.7 High-level objectives

While the Mission sets out the “Where do we want to go”, high-level objectives act as the roadmap to achieve the Mission. These high-level objectives tend to flow naturally from the vital attributes. The desired state is achieved by means of a hierarchy of objectives (Figure 6), starting with an overall objective aligned with SANParks’ organisational structure and the park’s Vision and Mission statements, then broad, high-level objectives (this Section) and then to more detailed levels, ending with specific operational or management actions (Section 10). Discussions at the stakeholder meeting gave rise to an initial set of high-level objectives. These were refined to reflect the following:

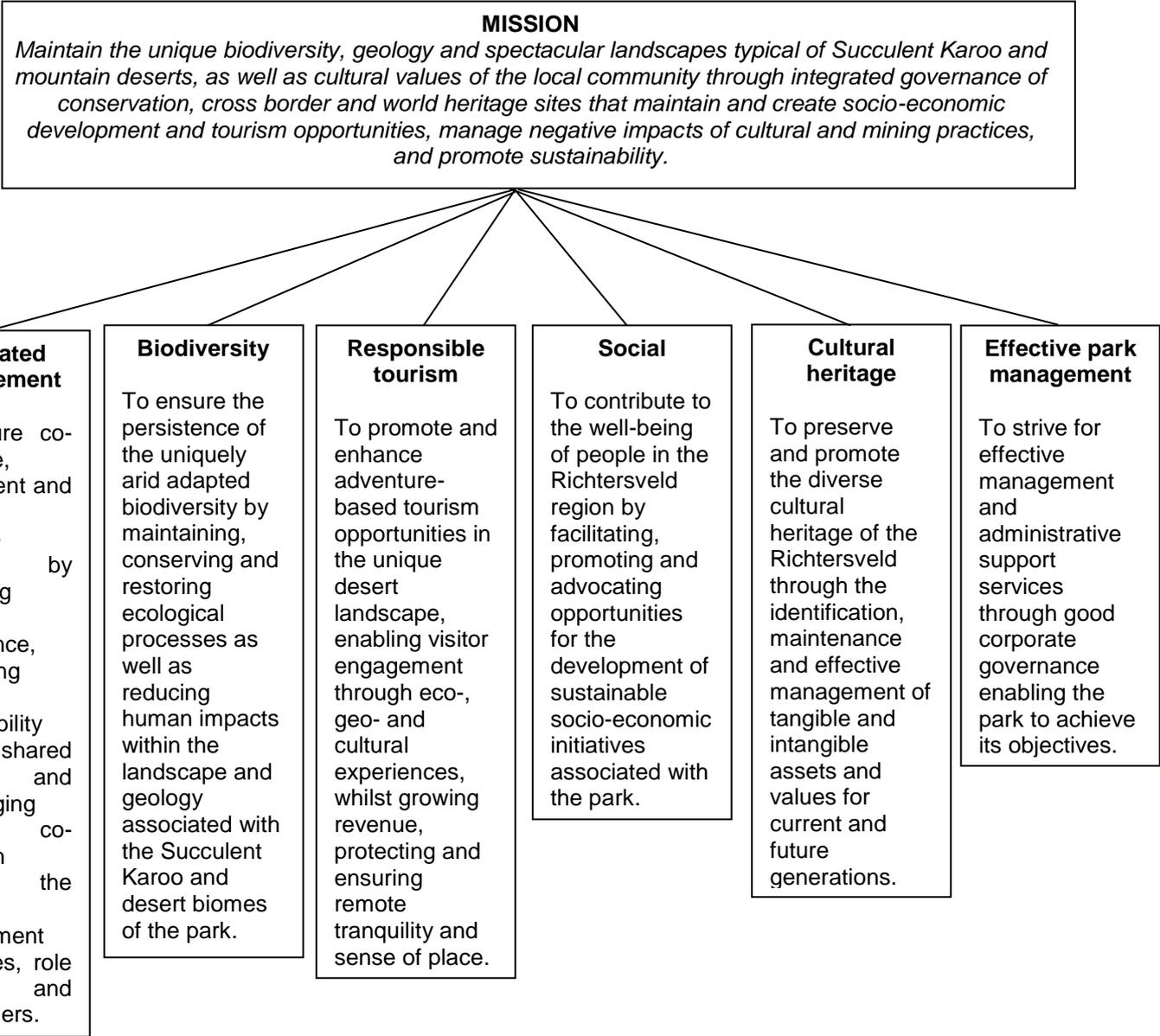


Figure 6. Park high-level objectives.

5.2.8 Unpacking the high-level objectives

The high-level objectives listed above are progressively being disaggregated through a series of "objectives" of increasing focus. These are set out in Figures 7 – 12 below.



1. Integrated management high-level objective: To ensure co-operative, transparent and inclusive decision-making by promoting sound governance, advocating mutual responsibility and shared benefits, and encouraging close co-operation between the multiple management authorities, role players and landowners.

1.1 Contractual park objective: To co-manage the Richtersveld Contractual Park through implementing the Contractual Agreement and adhering to the terms of reference of the RCMC.

1.2 Transfrontier park objective: To enhance regional conservation and benefits to the people of the Richtersveld region by implementing the /Ais/Ais-Richtersveld Transfrontier Park contractual agreement.

1.3 Co-operative management objective: To enhance regional co-operation by encouraging and developing relationships with local authorities, landowners and industry within the expansion footprint and buffer zone of the park.

1.4 Park consolidation objective: To advance a coast-to-inland representation of Richtersveld biodiversity and landscapes by identifying and defining areas, and including such via different mechanisms in close co-operation with relevant stakeholders.

Figure 7. Integrated management high-level objective and supporting objectives.

2. Biodiversity high-level objective: To ensure the persistence of the uniquely arid adapted biodiversity by maintaining, conserving and restoring ecological processes as well as reducing human impacts within the landscape and geology associated with the Succulent Karoo and Desert biomes of the park.

2.1 Vegetation objective: To determine potential change of plant species composition, vegetation structure and functionality and its consequences to ecological processes by monitoring, data analysis and evaluating results.

2.2 Managing disturbance (i.e. fire, invasive alien species, herbivore / reintroduction, disease, fresh water) objective: To manage minor disturbance by developing effective monitoring progress and where applicable minimise, control or prevent the impacts.

2.3 Species of Special Concern objective: To ensure persistence of species and plant communities of special concern by identifying threatened and rare species, plant communities and threats, and where applicable, develop and implement management responses.

2.4 Reintroduction objective: To re-establish ecological patterns and processes by reintroducing and / or supplementing faunal and / or floral species that historically occurred in the park.

2.5 Managing disturbance out of SANParks control (climate change) objective: To mitigate potential impacts of climate change on park biodiversity by actively participating in the national climate initiatives.

2.6 Information objective: To define biodiversity assets and identify threats by collating existing information and facilitating co-operative research.

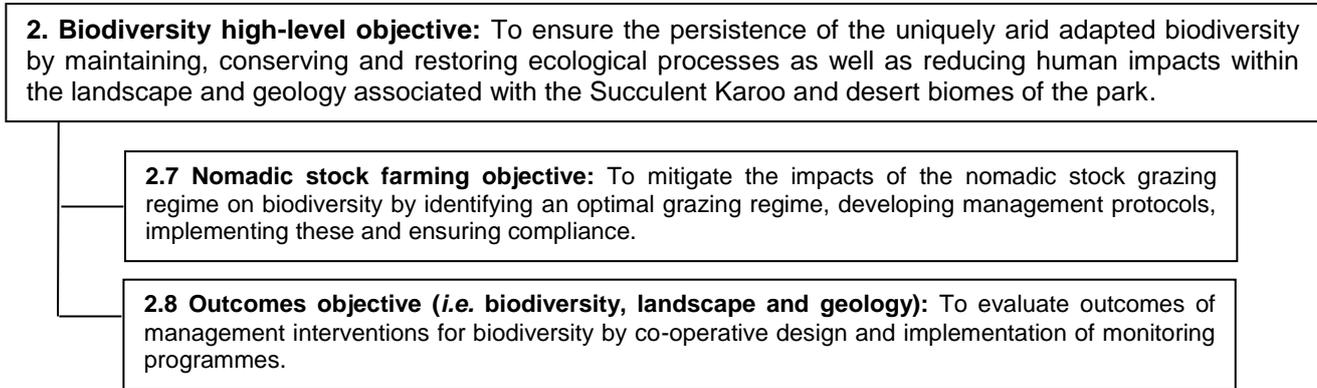


Figure 8. Biodiversity high-level objective and supporting objectives.

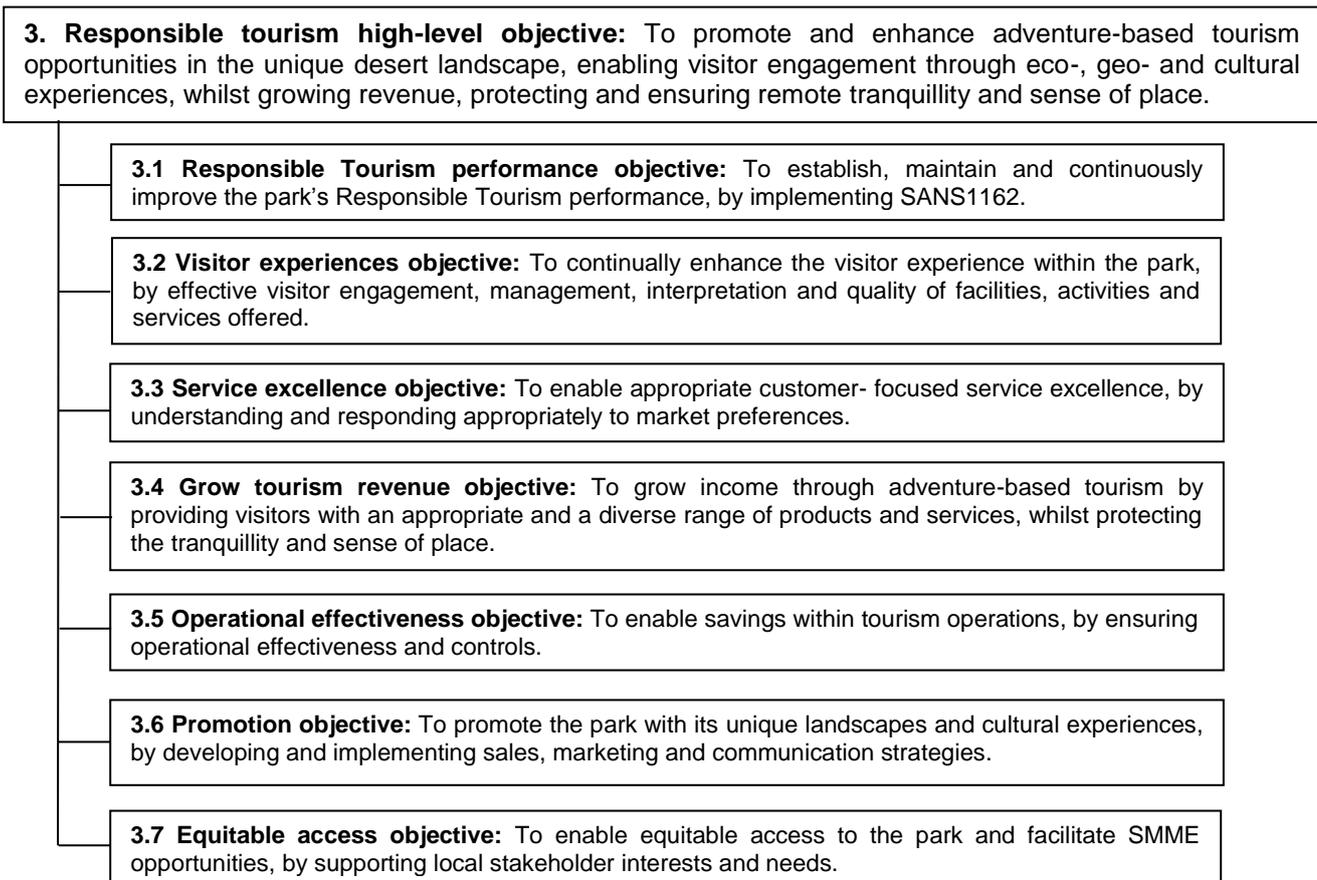


Figure 9. Responsible tourism high-level objective and supporting objectives.



Figure 10. Social high-level objective and supporting objectives.



5. Cultural heritage high-level objective: To preserve and promote the diverse cultural heritage of the Richtersveld through the identification, maintenance and effective management of tangible and intangible assets and values for current and future generations.

5.1 Inventory objective: To identify and document cultural tangible and intangible assets and values in order to update, maintain and disseminate the park's cultural heritage inventory.

5.2 Conservation objective: To conserve the tangible and intangible cultural heritage assets and values through effective management and where relevant sustainable utilisation.

5.3 Interpretation and awareness objective: To improve the cultural knowledge and awareness of local communities and visitors to the park through the interpretation and education of various programmes.

5.4 Outcomes objective: To evaluate outcomes of management interventions for cultural heritage by co-operative design and implementation of monitoring programmes.

Figure 11. Cultural heritage high-level objective and supporting objectives.

6. Effective park management high-level objective: To strive for effective management and administrative support services through good corporate governance enabling the park to achieve its objectives.

6.1 Environmental management objective: To strive for best practise and ensure compliance with environmental legislation through improved governance and environmental risk management.

6.2 Risk management objective: To establish and maintain effective, efficient and transparent risk management systems by creating an enabling environment for the management of risk.

6.3 Financial management and administration objective: To ensure sound financial management and administration through proficient budget management, effective internal controls and compliance to corporate governance prescripts.

6.4 Human capital development objective: To ensure sufficient and effective staff capacity to achieve management objectives by adhering to legislation, corporate human resource policies and guidelines.

6.5 Information and records management objective: To achieve best practice in the field of information and records management by complying to the Records Management Legislative framework and policies, thereby ensuring care of all vital records in SANParks.

6.6 Infrastructure objective: To maintain, upgrade and develop new park infrastructure through proper planning and efficient management.

6.7 Safety and security objective: To provide a safe and secure environment for both visitors and SANParks employees and to ensure that the integrity of the natural and cultural resources and assets is secured.

6. Effective park management high-level objective: To strive for effective management and administrative support services through good corporate governance enabling the park to achieve its objectives.

6.8 Safety health, environment and quality objective: To continuously reduce the disabling injury frequency rate through the implementation of an efficient and effective Occupational Health and Safety management system.

Figure 12. Effective park management high-level objective and supporting objectives.



Section 6: Zoning

6.1 Introduction

The primary objective of a park zonation plan is to establish a coherent spatial framework in and around a park to guide and co-ordinate conservation, tourism and visitor experience initiatives, and minimise conflict between these sometimes, differing activities. A zoning plan is also a legislated requirement of the NEM: PAA, which stipulates that the management plan, which is to be approved by the Minister, must contain “a zoning of the area indicating what activities may take place in different sections of the park and the conservation objectives of those sections”.

The zoning of the park was based on an analysis and mapping of the sensitivity and value of the park’s biophysical, heritage and scenic resources (SANParks, 2005a); an assessment of the regional context; and an assessment of the park’s current and planned infrastructure and tourist routes / products – all interpreted in the context of the park objectives. This was undertaken in an iterative and consultative process. This section – which is guided by the Conservation Development Framework (CDF) planning manual (SANParks, 2005b) – sets out the rationale for use zones, describes the zones, and provides management guidelines for each of the zones. The use zoning of the park is shown in Appendix 5, Map 4, and summarised in Table 2 below.

6.2 Synopsis of updates to the 2008 zonation

Changes included the updating of place names, roads, airstrips, incorporation of new infrastructure and the inclusion of the Wilderness zone in the northern, western and south eastern parts of the park. Zonation changes from remote to primitive were made in the western part of the park, to allow tourism access into the park.

6.3 Guiding principles underpinning the zonation

The principles underpinning park zonation, as listed below, were informed by the SANParks CDF planning manual, the Guidelines for Strategic Environmental Assessment in South Africa, Integrated Environmental Management and the National Environmental Management Act (NEMA). Accordingly, the zonation:

- Is the foundation of all planning and development within a park, with the aim of ensuring its long-term sustainability;
- Accommodates strategic, flexible and iterative planning procedures;
- Is a “framework for planning” not a “plan for implementation” (i.e. implementation is dealt with through lower level plans and programmes);
- Is risk-averse and promotes a cautious approach, which takes into account the limits of current knowledge about the consequences of decisions and actions;
- Recognises that the mandate of SANParks is to conserve biodiversity and heritage resources of national and international significance, in terms of both the NEM: PAA and the National Heritage Resources Act;
- Ensures the integrity of the park’s scenic quality by limiting human intrusions into the landscape;
- Accommodates a wide range of unique opportunities for experiences of solitude and nature-based recreation which do not conflict with the desired social and environmental states;
- Confines development within the park to areas that are robust enough to tolerate transformation and without detracting from the “sense of place”;
- Rationalises and channels access into the park and internal movement through it;
- Sets the limits of acceptable change to minimise the loss of biodiversity and to reduce conflict between different park uses;
- Recognises that park boundaries are not static in time and that there are factors beyond the current or future boundaries that can positively or negatively influence the park; and

- Recognises that the park cannot exist in isolation and that planning needs to ensure that the park is integrated with the surrounding landscapes as well as the economic and social structures at local and regional scales.

6.4 Rationale for use zones

The primary function of a protected area is to conserve biodiversity. Other functions such as the need to ensure that visitors have access to the park, and that adjoining communities and local economies derive benefits from the park, could potentially conflict with and compromise this primary function. Use zoning is the primary tool to ensure that visitors could have a wide range of quality experiences without comprising the integrity of the environment.

Furthermore, the expectations and recreational objectives of individuals that visit the park may differ. Some individuals visit the park purely to see the wildlife and natural landscapes. Other individuals wish to experience the intangible attributes such as and not limited to solitude, remoteness, wildness and serenity (which can be grouped as wilderness qualities), whilst some visit to engage in a range of nature-based recreational activities, or to socialise in a rest camp. Different people have different accommodation requirements ranging from extreme “roughing it up” to luxury catered accommodation. There is often conflict between the requirements of different users and different activities. Appropriate use zoning serves to minimise conflicts between different users of a park by separating potentially conflicting activities – such as game viewing and day-visitor picnic areas – whilst ensuring that activities which do not negatively impact on the park’s vital attributes and objectives (especially the conservation of the protected area’s natural systems and its biodiversity) can continue in appropriate areas. Use zones serve to ensure that high intensity facilities and activities are placed in areas that are robust enough to tolerate intensive use, as well as to protect more sensitive areas of the park from over-utilisation.

6.5 The zoning system

SANParks has adopted a multiple zoning system for its parks. The system comprises of:

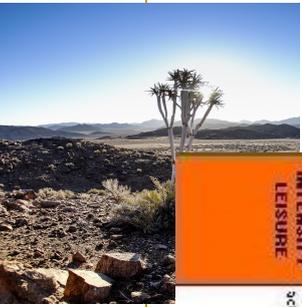
- Use zones encompasses the entire park;
- Special management overlays; and
- A buffer zone surrounding the park.

6.5.1 The zoning process and its linkage to the underlying environmental analysis

The zoning for the park was underpinned by an analysis and mapping of the sensitivity and value of its biophysical, heritage and scenic resources. This analysis examined the park’s biophysical characteristics including: habitat value (in particular the contribution to national conservation objectives) and vegetation vulnerability to physical disturbance; special habitat value (the value of the area based on rare and endangered species); hydrological sensitivity (areas vulnerable to disruption of hydrological processes such as floodplains and wetlands); topographic sensitivity (steep slopes); and soil sensitivity (soils that are vulnerable to erosion). In addition, the heritage value and sensitivity of the sites were examined (mostly archaeological and cultural aspects). The visual sensitivity of the landscape was also surveyed in order to identify sites where infrastructure development could have a strong aesthetic impact. This analysis was used to inform users of the appropriate use of the different areas of the park, as well as assisted in defining the boundaries between zones. The zoning was also informed by the park’s current infrastructure and tourism products as well as the regional context (especially linkages to neighbouring areas and impacts from activities outside the park). Planned infrastructure and tourism products were also accommodated where these were compatible with the environmental informants. These were all interpreted in the context of the park’s objectives and undertaken in an iterative and consultative process.

Table 2. Use zones and use zone characteristics for the park.

Zone	General characteristics	Experiential qualities	Interaction between users	Type of access	Type of activities	Type of facilities	Limits of acceptable change: biophysical	Limits of acceptable change: aesthetics and recreational	Guide infrastructure
WILDERNESS	Retains an intrinsically wild appearance and character (no infrastructure), or capable of being restored to such. Conform to definition and section 22 of	Solitude and awe inspiring natural characteristics.	None to very low.	Controlled access, non-motorized.	Hiking in small groups.	Established footpaths where erosion may be a problem. Essentially undeveloped and roadless.	Deviation from a natural/pristine state should be minimized, and existing impacts should be reduced.	Activities which impact on the intrinsically wild appearance and character of the area will not be tolerated.	No management / tourism infrastructure, but temporary infrastructure may be present only to limit biodiversity loss.
REMOTE	Retains an intrinsically wild appearance and character (essentially no infrastructure), or capable of being restored to such.	Solitude and awe inspiring natural characteristics.	None to very low	Controlled access and non-motorized.	Guided hiking in small groups.	Established footpaths where erosion may be a problem. Essentially undeveloped and roadless.	Deviation from a natural/pristine state should be minimized and existing impacts should be reduced.	Activities which impact on the intrinsically wild appearance and character of the area will not be tolerated.	Ideally there should be no management infrastructure but temporary infrastructure may be present only to limit biodiversity loss.
PRIMITIVE	Generally retains wilderness qualities, but with basic self-catering facilities. Access is controlled, or limited to 4x4 vehicles. Provides access to the remote zone and can serve as a buffer.	Experience wilderness qualities.	Low	Controlled access. Accompanied or unaccompanied. Foot and 4x4 vehicles.	Hiking, 4x4 drives and game viewing.	Small, basic, self-catering, distributed to avoid contact between users; or limited concessions with limited numbers; 4x4 trails and hiking trails.	Deviation from a natural/pristine state should be small and limited to restricted impact footprints. Existing impacts should be reduced.	Activities which impact on the intrinsically wild appearance and character of the area should be restricted, and impacts limited to the site of the facility.	Small, isolated permanent but low spec (usually dirt road) infrastructure may be present. This may be to help manage biodiversity, or service tourist facilities.
LOW INTENSITY LEISURE	The underlying characteristic of this zone is motorised self-drive access with basic self-catering facilities. The numbers of visitors are higher than in the remote and primitive zones. Camps are without large commercial facilities such as shops and restaurants.	Comfortable facilities in a relatively natural environment.	Moderate to high	Motorised self-drive access.	Motorised self-drive game viewing, picnicking, guided walking or hiking.	Facilities limited to basic self-catering picnic sites; ablution facilities; information/education centre and parking areas. Small self-catering (incl. camping) rest camps with ablution facilities. May contain small or seasonal convenience stores or tea gardens. Low spec access roads to provide a more wild experience.	Deviation from a 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.	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 a relatively natural outdoor experience.	Where this is the highest usage, some anticipated in a park, management infrastructure should be concentrated here as far as is feasible, allowing make use of existing high volume infrastructure. To limit impacts, management infrastructure should be placed close to the park boundary.
HIGH INTENSITY LEISURE	The main characteristic is that of high density tourist development node, with commercial amenities, where more concentrated human activities are allowed.	Comfortable and sophisticated facilities while retaining a natural ambience.	High	Accessible by motorised transport (car/bus) on high volume transport routes, including delivery vehicles.	As stated above, additional sophisticated infrastructure. Larger, organized adventure activities. Dining at restaurants.	High density tourist camps with commercial amenities. Footpaths; transport systems; accommodation; restaurants; curio and refreshment stalls; and information/education centres. High volume roads.	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.	Although it is inevitable that the high visitor numbers, 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 generally still provides a relatively natural outdoor experience appropriate for a national park.	Where this is the highest usage zone in a park, management infrastructure should be concentrated here as far as is feasible, allowing management to efficiently make use of existing high volume infrastructure. To limit impacts, management infrastructure should be placed close to the park boundary.



The sensitivity map (Appendix 5, Map 5) shows the relationship between the use zoning and the summary of the biodiversity and landscape sensitivity-value analysis. This indicates that in general it was possible to include most of the environmentally sensitive and valuable areas into zones that are strongly orientated towards conservation rather than tourist use. In addition, in numerous cases the boundaries between zones are based on changes in environmental sensitivity. Table 3 summarises the percentage area of the park covered by each zone, as well as the percentage of the highly environmentally sensitive and valuable areas (defined as areas with values in the top quartile of the sensitivity-value analysis) that are within each zone. This indicates that nearly 85.48 % of the park is covered by zones that are strongly conservation orientated in terms of their objectives (i.e. wilderness, remote and primitive). The table demonstrates a good correlation between the spatial distribution of environmentally sensitive areas and conservation-orientated zones, with 85.61 % of highly sensitive areas in the conservation orientated zones. Conversely, the tourism-orientated zones cover nearly 14.52 % of the park yet contain approximately 14.38 % of sensitive areas.

Table 3. Park percentage area summary covered by each zone, as well as the percentages of the highly environmentally sensitive and valuable areas (defined as areas with values in the top quartile of the sensitivity value-analysis) that are within each zone.

Zone emphasis	Use zone	Zone as a % of park area	% of highly sensitive areas that are in a zone
Conservation orientated	Wilderness	37.39	37.63
	Remote	21.39	21.28
	Primitive	26.70	26.70
Tourism orientated	Low intensity leisure	14.48	14.35
	High intensity leisure	0.04	0.03

6.5.2 Wilderness zone

Objective

The objective of this conservation orientated zone is to protect areas of the park that are un-impacted by human developments to provide an experience aimed at intangible attributes such as solitude, remoteness, wildness, and serenity (wilderness qualities). As such, they are areas where the sights and sounds of human activities are infrequent or that have high scenic or natural qualities allowing for an experience of isolation. The main accent of management is biodiversity conservation and the conservation of the wildness for the appreciation by future generations.

Characteristics

Retains an intrinsically wild appearance and character (no infrastructure), or capable of being restored to such. Conform to the definition and section 22 of NEM: PAA. There are no permanent improvements or any form of human habitation. The Wilderness zone provides outstanding opportunities for solitude with awe-inspiring natural characteristics. Sight and sound of human habitation and activities are barely discernible and at a far distance.

Visitor activities and experience

Activities: Access is strictly controlled and non-motorised. Groups must be small and can be either accompanied by a guide or unaccompanied. Few groups may be in an area at the same time, but if necessary densities and routes must be defined so that groups are unaware of each other. The principle of “Pack it in Pack it out” must be applied.

Interaction with other users: None to very low interaction between groups.

Limits of acceptable change

Biophysical environment: Deviation from a natural / pristine state should be avoided, else minimised and where unavoidable, existing impacts must be reduced.



Aesthetics and recreational environment: 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.*) is not allowed.

Facilities

Type and size: No facilities are provided. Should overnight facilities be required to serve this zone, these must be placed in the adjoining zones.

Sophistication of facilities: Except for self-carried portable tents, no other facilities are permitted. Guidelines for washing, ablution and cooking must be defined according to the “Pack it in Pack it out” principles. Camping is allowed only at designated sites.

Audible equipment and communication structures: None.

Access and roads: Public access is non-motorised. Vehicular access and parking is provided in the adjoining zones. Established footpaths may be provided where erosion risks occur. Limited low specification management tracks (*i.e.* not built up roads) are acceptable within this zone, though these tracks should be rationalised, and eventually removed.

Location in park

Wilderness areas were designated in the plains, mid-altitude plateau and mountainous areas with high environmental sensitivity and value that occur in the northern, western and south-eastern parts of the park.

Guidelines on management infrastructure and utilisation

There should be no management infrastructure, and natural processes must be allowed to function. Management intervention is allowed under prescribed conditions.

6.5.3 Remote zone

Objective

The objective of this conservation-orientated zone is to protect sensitive environments from almost all development impacts and tourism pressures.

Characteristics

This is an area retaining an intrinsically wild appearance and character, or capable of being restored to such and which is essentially undeveloped and roadless. There are no permanent improvements or any form of human habitation. The remote zone provides outstanding opportunities for solitude with awe-inspiring natural characteristics. Sight and sound of human habitation and activities are barely discernible and at a far distance.

Visitor activities and experience

Activities: Access is strictly controlled and non-motorised. Groups must be small and can be either accompanied by a guide or unaccompanied. Several groups may be in an area at the same time, but if necessary densities and routes must be defined so that groups are unaware of each other. The principle of “Pack it in Pack it out” must be applied. Specially arranged once-off events such as an adventure race may involve higher visitor numbers for a brief limited period, but these events are not the norm.

Interaction with other users: There is no interaction between groups. The number of groups within the area will be determined by the ability to ensure that there is no interaction between groups.

Limits of acceptable change

Biophysical environment: Deviation from a natural / pristine state should be avoided, else minimised and where unavoidable, existing impacts must be reduced.

Aesthetics and recreational environment: 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.*) is not allowed.

Facilities

Type and size: No facilities are provided. Should overnight facilities be required to serve this zone, these must be placed in the adjoining zones.

Sophistication of facilities: Except for self-carried portable tents, no other facilities are permitted. Guidelines for washing, ablution and cooking must be defined according to the “Pack it in Pack it out” principles. Camping is allowed only at designated sites.

Audible equipment and communication structures: None.

Access and roads: Public access is non-motorised. Vehicular access and parking is provided in the adjoining zones. Established footpaths may be provided where erosion risks occur. Limited low specification management tracks (*i.e.* not built up roads) are acceptable within this zone, though these tracks should be rationalised, and eventually removed.

Location in park

Remote areas were designated in the plains, mid-altitude plateau and mountainous areas to include most landscapes with high environmental sensitivity and value, especially those areas with high concentrations of rare and endemic species.

Guidelines on management infrastructure and utilisation

Ideally, there should be no management infrastructure, and natural processes must be allowed to function without management intervention. However, in reality, most parks are too small to allow ecological processes (fire, fecundity – particularly of large predators) to continue without management intervention, which would eventually impact biodiversity negatively. Furthermore, in young or expanding parks, farm management infrastructure might still be apparent. For this reason, concessions are made on management infrastructure in this zone, principally to prevent loss of biodiversity or restoration. Infrastructure might include footpaths where erosion might be a problem or identified (barely) traversable management 4x4 routes for fire management or ensuring area integrity. Temporary management infrastructure, as might be used for game capture or anti-poaching activities, such as temporary bomas or helicopter landing sites would be permissible, as would vehicular access by staff for specific management interventions, although this must be exercised circumspectly.

6.5.4 Primitive zone

Objective

The objective of this conservation-orientated zone is to protect sensitive environments from development impacts by limiting the size, number and sophistication of infrastructure, and by reducing tourism pressure through controlled access and visitor numbers.

Characteristics

The primary characteristic of this zone is the experience of wilderness qualities with the emphasis on controlled access. Access is controlled in terms of numbers, frequency and group sizes. The zone shares the wilderness qualities of wilderness areas and the remote zone, but with the provision of small basic self-catering facilities with controlled access. It also provides access to areas zoned as remote or wilderness. Views of human activities and development outside of the park may be visible from this zone.



This zone serves to protect sensitive environments from high levels of development, and acts as a buffer between conservation-orientated and tourist-orientated zones, e.g. remote (or wilderness areas) and low intensity leisure respectively. The primitive zone may contain concession sites and other facilities where impacts are managed through strict control of the movement and numbers of tourists, for example if all tourists are in concession safari vehicles.

Visitor activities and experience

Activities: Access is controlled in terms of the number, frequency and group sizes. Activities include hiking, 4x4 drives and game viewing. In the park, access control is mostly passive, with 4x4 trails marked as restricted to 4x4 vehicles only, thus limiting visitor numbers on these routes. Access may also be controlled either through only allowing access to those with bookings for specific facilities, or alternatively through a specific booking or permit for a hiking trail or 4x4 route in more sensitive areas. Several groups may be in the area at the same time, but access should be managed to minimise interaction between groups if necessary.

Interaction with other users: Interaction between groups of users is low, and care must be taken in determining the number and nature of facilities located in the area to minimise these interactions.

Limits of acceptable change

Biophysical environment: Deviation from a natural / pristine state must be small and limited to restricted impact footprints. Existing impacts must 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 must be designed to limit impacts.

Aesthetics and recreational environment: 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.) must be restricted and impacts limited to the site of the facility. Ideally, visitors must only be aware of the facility or infrastructure that they are utilising, and this infrastructure / facility must be designed to fit in with the environment within which it is located in order to avoid aesthetic impacts.

Facilities

Type and size: Facilities are small, often basic and are distributed to avoid contact between users. To achieve this, camp development must be limited to 15 beds, alternatively facilities can be designed for high levels of luxury, but with limited visitor numbers (e.g. controlled access camps or concession sites).

Sophistication of facilities: Generally, facilities are small, basic and self-catering, though concession facilities may be significantly more sophisticated.

Audible equipment and communication structures: None.

Access and roads: Vehicular accesses to facilities are mostly limited to low-spec roads, often 4x4 only. Tourist and game viewing roads are usually suitable for 4x4 vehicles only. Established footpaths are provided to avoid erosion and braiding.

Location in park

Primitive areas were designated to buffer remote areas and to protect most of the remaining sensitive areas from high levels of tourist activity. The small controlled access accommodation facilities at Hakiesdoring, De Hoop, Gannakoeriep, Kokerboomkloof, Potjiespram, Richtersberg,

Sendelingsdrift and Tatasberg and the trail basecamp (as well as the access roads to these sites) were also included in this zone. Most of the lowland areas utilised by livestock farmers were included into this zone. In areas where the remote zone borders on the park boundary, a 100 m wide primitive zone was designated to allow park management access to boundaries.

Guidelines on management infrastructure and utilisation

Permanent management infrastructure is permissible in this zone, but these should be relatively small and isolated. Park operations staff may need to service tourist facilities in this zone. Examples may include “twee spoor” management tracks, permanent bomas for wildlife, ranger camps and outposts, and possibly even permanent helipads. The responsibility is on park management to coordinate the tourist road network usage in such a way that tourists do not encounter management infrastructure in this zone, such as by using of no entry signs. Low volume access gates or entrances to access 4x4 routes could be accommodated in this zone.

In the park, Primitive areas were designated along the current main access routes and to include facilities at Potjiespram and camping sites along the Orange River. The edges of the low intensity leisure zones were defined in terms of landscape sensitivity and value (as well as topographic) constraints, with most high sensitivity landscapes being excluded from this zone. In areas where the existing access routes go through areas of high environmental sensitivity (such as the mountain passes), the zoning was designed to prevent any expansion of facilities in these areas. In addition, these areas were also included within a special conservation overlay to mitigate any ongoing impacts associated with these unavoidable access routes.

6.5.5 Low intensity leisure zone

Objective

The objective of the tourist-orientated zone is to provide infrastructure for day and overnight visitors in a natural environment. While game viewing areas may be zoned Low Intensity Leisure (LIL) to allow for flexibility of the game viewing road network, in reality, development footprints must be localised, with some areas having more of a primitive or even remote zone “feel.” Impacts must be mitigated by using infrastructure to direct and manage the movement of park visitors away from the more sensitive areas that may occur within this zone.

Characteristics

The underlying characteristic of this zone is motorised self-drive access, with basic self-catering facilities. Small or seasonal commercial or catered facilities can be accommodated; however, these facilities must be small and aligned to the general ambiance of the zone. Numbers of visitors are higher in the low intensity leisure zone as compared to the remote and primitive zones. Relatively comfortable facilities are positioned in the landscape retaining an inherent natural and visual quality, which enhances the visitor experience of a more natural and mostly self-providing experience. Access roads are low key, preferably gravel roads and / or tracks to provide a more natural experience, however higher volume roads may be tarred. Facilities along roads are generally limited to basic self-catering picnic sites with toilet facilities. Large busses and open safari vehicles may be permitted subject to certain conditions.

Visitor activities and experience

Activities: Self-drive motorised game viewing, guided game drives, picnicking, walking, cycling, rock climbing, hiking and adventure activities.

Interaction with other users: Moderate to high.

Limits of acceptable change

Biophysical environment: Deviation from a natural / pristine state must be minimised 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.

Aesthetics and recreational environment: Although it is inevitable that the activities and facilities will impact on wild appearance and reduce wilderness characteristics of the area (solitude, remoteness, wildness, etc.), these activities and facilities must be managed and limited to ensure that the area still provides a relatively natural outdoor experience.



Facilities

Type and size: Picnic sites, view sites, information centres, ablution facilities, parking areas, education centres, *etc.* Small self-catering camps (including camping and caravanning) of low to medium density (up to 50 beds). Additional facilities can include swimming pools. Trails for 4x4 vehicles can also be provided. Small or seasonal (facilities are only open as required or during peak season) commercial facilities can be provided, such as kiosks, small tourist convenience stores, or tea gardens. However, these facilities must still fall within the general ambiance of the zone– and as such may make use of converted or restored farmhouses. Larger commercial facilities and larger concessional operators (*e.g.* Cattle Barons and Mug & Bean), must be placed in the High Intensity Leisure (HIL) zone. Day visitor sites are not placed within the camps, and must be compliant with the general self-catering or smaller-scale catered characteristics of the zone.

Sophistication of facilities: Mostly self-contained self-catering accommodation units with bathroom facilities. Camp sites mostly include ablution and kitchen facilities. Tourist facilities may include modern commercial facilities such as shops, kiosks, tea gardens and small tourist convenience stores, as long as these are small.

Audible equipment and communication structures: Cell phone coverage in vicinity of camps. Code of use for cell phones and radios required to retain relative level of solitude.

Access and roads: Motorised self-drive access (traditional game viewing) on designated routes, which are preferably gravel roads. Large busses and open safari vehicles are restricted to high volume roads designed to accommodate them, and indicated as such. Roads may be tarred, secondary gravel tourist roads, or minor game viewing roads.

Location in park

Low intensity leisure areas were designated in the current game viewing areas, along planned access routes and in the high-altitude plateau, where these areas did not conflict with the underlying landscape sensitivity and value analysis.

Guidelines on management infrastructure and utilisation

The placement of permanent management infrastructure is encouraged in this zone, particularly when it is the highest-level use zone within the park. Where HIL already exists, attempts must be made to concentrate the development of park management and operational infrastructure in the highest usage zone of the park, where feasible, and especially when this is situated close to the boundary of the park. Where it may be preferable to include non-industrial components of management infrastructure on the periphery of the park, these can be accommodated in LIL. Examples may include moderate to high volume access or main entrance gates, park reception, or park management / administration offices (which may wish to be close to park reception facilities). This will allow management and operations to make use of high volume access routes, which will be built to accommodate high traffic volume, and if positioned close to the boundary of the park, will involve shorter commuting distances, limiting disturbance to both wildlife and tourists, and limiting wear and tear to roads.

6.5.6 High intensity leisure zone

Objective

The main objective of this tourist-orientated zone is the concentration and containment of commercial, tourism, managerial, operational and industrial park activities within a restricted and designated area, which is robust enough to tolerate development, and where these diverse

activities can share multi-use infrastructure (roads, plumbing, power), thus reducing their overall footprint. As impacts and particularly cumulative impacts are higher, where possible the HIL zone must be placed in areas that have low sensitivity values and are sufficiently robust to tolerate development, and ideally be close to the periphery of the park. Staff not directly associated with tourism facilities must be accommodated outside of the park if and where possible. When inside a park, all industrial type facilities such as laundries, abattoirs, maintenance depots and workshops, must be ideally located nearby to the park boundary or, if and where possible, outside of the park but within municipally suitably zoned adjoining urban or rural areas.

Characteristics

The main characteristic is that of a high-density tourist development node with modern commercial amenities such as restaurants and shops. This is the zone where more concentrated human activities are allowed. High intensity leisure is accessible by motorised transport (car / bus) on high volume transport routes. More concentrated and commercialised (concessional) activities occur here than in than LIL areas.

Visitor activities and experience

Activities: Traditional game viewing routes with associated more sophisticated infrastructure, sightseeing at tourist destinations, picnicking, walking, cycling, rock climbing, hiking and activities associated with amenities such as dining in larger or concessional restaurants.

Interaction with other users: High

Limits of acceptable change

Biophysical environment: 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, care must be taken to ensure that the zone retains a level of ecological integrity consistent with a protected area.

Aesthetics and recreational environment: Although it is inevitable that high visitor numbers, activities and facilities will impact on wild appearance and reduce wilderness characteristics of the area (solitude, remoteness, wildness, *etc.*), these must be managed and limited to ensure that the area generally still provides a relatively natural outdoor experience.

Facilities

Type and size: High-density camps providing tourist accommodation with diverse modern amenities. Restaurants, shops, education / information centres, view sights, ablution facilities, parking areas and botanical gardens. Day visitor sites are provided outside of rest camps. Day visitor sites or picnic sites may provide catered facilities and kiosks. Where it may be necessary to provide high-density recreational sites with a wide range of intensive activities, an attempt must be made to concentrate these sites close to the periphery of the park. Staff villages and administrative centres must be restricted to core staff. Non-essential staff housing, administration and industrial infrastructure must, where possible, be positioned outside of or close to the periphery of the park.

Sophistication of facilities: Moderate to high-density facilities. Self-catering and catered. Camps often have diverse modern facilities such as shops and restaurants, which may be concessional.

Audible equipment and communication structures: Cell phone coverage in vicinity of camps. Code of use for cell phones and radios required to retain relative level of solitude.

Access and roads: The zone is highly motorised, including busses and delivery vehicles on designated routes, which are often tarred. Care must be taken to distinguish between roads that serve as high access delivery routes to camps, link roads between camps, and game viewing roads, to minimise conflict between users.

Location in park

High intensity leisure areas were designated to the entrance gate and Sendelingsdrift area, inclusive of the rest camp, camping site and administrative area.



Guidelines on management infrastructure and utilisation

Management guidelines that apply to LIL apply to HIL zone as well. Generally, the presence of HIL in a park indicates higher or more intense utilisation or development, with a higher diversity and concentration of facilities, and thus may require additional management or operational facilities. As HIL is by definition a high use area, and must be located in an area of low sensitivity, the development of management and operations infrastructure in this zone must be favoured. In the park, most operations and administration infrastructure are situated in existing and well-established HIL tourist node at the rest camp.

6.6 Overview of the special management overlays

Two special management overlays, which designate specific areas of the park that require special management interventions, were identified (Appendix 5, Map 4):

Rehabilitation areas – Mine protection: Areas along the Orange River where current mining activities are occurring, or where mining occurred previously, were identified for eventual rehabilitation before they can be incorporated into the underlying tourist use zone

Special conservation areas – Endangered, rare and endemic species: Areas with concentrations of endangered, rare and endemic species, as well as areas with high overall environmental sensitivity and value were designated as special conservation areas. These areas are subject to stricter environmental controls with regards to tourism and resource use impacts.

6.7 The park buffer zone

The buffer zone shows areas outside the park within which land use changes can affect the park. The buffer zone in combination with guidelines will serve as a basis for: (i) identifying focus areas in which park management and scientists must respond to Environmental Impacts Assessment's (EIAs), (ii) helping to identify types of impacts that will be important at a particular site, and most importantly (iii) integrating long term protection of the park into the SDFs of municipalities and other local authorities. The park will interact with all spheres of government, whether local, provincial, or national, as required, to achieve a positive conservation outcome in the buffer zone. In terms of EIA responses, the buffer zone serves largely to raise red flags and does not remove the need for carefully considering the exact impact of a proposed development. In particular, it does not address activities with broad regional aesthetic or biodiversity impacts e.g. renewable energy development projects.

In the park's case, there are four categories within the park buffer zone, the priority natural area, catchment protection, view shed protection area and critical biodiversity area and ecological support areas (Appendix 5, Map 6).

6.7.1 Priority natural areas

This zone aims to ensure the long-term persistence of biodiversity, within and around the park, by identifying the key areas on which the long-term survival of the park depends. This includes areas important to both biodiversity pattern (especially reasonably intact high priority natural habitats) and processes (ecological linkages, catchments, intact hydrological systems, etc.). This does not imply any loss of existing rights (e.g. current agricultural activities or legal extractive biodiversity use such as fishing), but rather aims to ensure the park's survival in a living landscape.

Priority natural areas include areas identified for future park expansion as well as reasonably natural areas of high biodiversity value, which are critical for the long-term persistence of

biodiversity within the park. These include adjacent natural areas (especially high priority habitats), which function as an ecologically integrated unit with the park, as well as areas critical for maintaining ecological links and connectivity with the broader landscape.

Development guidelines: Inappropriate developments and negative land use changes (such as additional ploughing permits for natural veld, development beyond existing transformation footprints, urban expansion, intensification of land use through golf estates, *etc.*) must be opposed within this area. Developments with site-specific impacts (*e.g.* a lodge on a game farm) must be favourably viewed if they contribute to ensuring conservation friendly land use within a broader area. Guidelines applicable for the Catchment Protection Section will also apply to these areas.

6.7.2 Catchment protection

These are areas important for maintaining key hydrological processes (surface and groundwater) within the park.

Development guidelines: Within these areas, inappropriate development such as dam construction, loss of riparian vegetation and excessive aquifer exploitation must be opposed. In addition, the control of alien vegetation, control of soil erosion, and appropriate land care (*e.g.* appropriate stocking rates) must be promoted.

6.7.3 View shed protection

These are areas where developments can impact on the aesthetic quality of a visitor's experience in a park. This zone is particularly concerned with visual impacts (both day and night), but can also include sound pollution.

Development guidelines: Within these areas, any development proposals must be carefully screened to ensure that they do not impact excessively on the aesthetics of the park. The areas identified are only broadly indicative of sensitive areas, as at a fine scale many areas within this zone will be perfectly suited for development. Further, invasive developments outside this zone will also have to be considered.

6.7.4 Critical biodiversity area and ecological support area

Critical biodiversity areas are areas required to meet biodiversity targets for ecosystems, species and ecological processes, as identified in a systematic biodiversity plan. Ecological support areas are not only critical for meeting biodiversity targets but play a key role in supporting the ecological functioning of critical biodiversity areas and/or in delivering ecosystem services.

Critical biodiversity areas and ecological support areas may be terrestrial or aquatic. The principal objective of critical biodiversity areas and ecological support areas is to guide decision-making about where best to locate development, informing land-use planning, environmental assessment and authorisations, and natural resource management, by a range of sectors whose policies and decisions impact on biodiversity.

6.8 Future improvements

The newly identified Wilderness zone (Appendix 5, Map 4) and described in section 6.5.2 must still be designated in terms of section 22 of NEM: PAA. A formal process will be initiated in 2018 / 2019 to apply for designation of the Wilderness areas.



Section 7: Access and facilities

7.1 Public access and control

Visitors driving from Johannesburg can travel via the N14 through Upington towards Springbok and those travelling from Cape Town via the N7 through Springbok. The Upington airport is the nearest airport to the park and has car-hiring facilities. The road to Sendelingsdrift from Alexander Bay is a poorly maintained gravel road of approximately 80 km. Alternative options are to access the park via Alexander Bay / Oranjemund towards Rosh Pinah and then cross the pontoon into the park. Alternatively visitors can enter Namibia via Violsdrift / Noordower from Springbok and travel to the park via Aussenkehr / Rosh Pinah and then cross the pontoon into the park.

7.2 Areas with restricted access

The park has two access points. A tourist access gate is located at Hellsberg, which is manned by SANParks officials during park operating hours. The gate opening hours are from 07h00 to 19h00 (late arrivals and early departures need to be arranged in advance). The pontoon operating hours are strictly from 08:00 to 16:30. No afterhours arrivals / departures will be accommodated by South African Immigrations. No night driving is permitted.

The entire park is unfenced with the Orange River forming the north / northwestern boundary between South Africa and Namibia with the Vandersterrberg mountain range forming the south, southeastern boundary. The Klein Duin / Oograbies Wes section is completely fenced.

Due to diamond mining within the park, access to certain areas is strictly prohibited; these areas include Aace plant, Grasdrift, Jakkalsberg, Oena and Reuning.

7.3 Airfields and flight corridors

There are four landing strips inside the park located at:

Grasdrift - S28°23'27.066", E017°24'19.074";
 Oena - S28°03'43.590", E017°01'27.959";
 Sendelingsdrift - S28°6'28.37", E016°53'37.69"; and
 Springbokvlakte - S28°21'55.728", E017°14'3.384";

There is also a helipad located at Oena mine (S28°03'59.525", E017°01'06.786). The helipad is exclusively used by mine management. No need has been identified to establish flight corridors through the park's airspace as allowed for in section 47 of NEM: PAA.

7.4 Administration and other facilities

The facilities listed below in Table 4 are utilised for operational purposes enabling the park to fulfil its' legal mandate. Map 7 in Appendix 5 shows all the infrastructure in the park.

Table 4. Current administrative infrastructure in the park.

Infrastructure	Current status	Zone
Klein Duin section		
Boundary fence 76 km	Operational	LIL
Management roads		

Infrastructure	Current status	Zone	
Sendelingsdrift section			
Administration building (including reception area)	Operational	HIL	
Fuel filling station			
Laundry facility		HIL	
Management roads (various)			Various
Nursery			
Parking area (in front of administration building)			
Research facility and accommodation			
SAPS border control / immigrations			
Staff housing			
Storage facility			
Technical services workshop			

7.5 Visitor facilities

Visitor facilities including all non-commercial facilities and points of interest available to visitors are set out in Table 5 below.

Table 5. Visitor facilities and points of interest in the park.

Infrastructure / visitor sites	Current status	Zone	
Klein Duin section			
“Vyftien Myl se Berge”	Operational	Remote	
Oorgrabies Wes gorge			
Sendelingsdrift section			
Akkedis -, Domrogh -, Helskloof passes	Operational	LIL	
Die Toon (geological feature)			
Hand of God (geological feature)			
Kokerboomkloof view point			
Pontoon river crossing		HIL	
Swimming pool			
Venstervalle hiking trail 34 km			Various
Tatasberg, rock formation			Primitive
Tourist roads (4x4 recommended)			Various

7.6 Commercial activities

For the purposes of this management plan, commercial activities include all income-generating facilities, products and services offered.



7.6.1 Accommodation

Accommodation facilities in the park are currently limited. Existing facilities include those listed in Table 6, below.

Table 6. Accommodation facilities available in the park.

Infrastructure	No of units	Current status	Zone
Sendelingsdrift section			
De Hoop			
Camp site	12	Camping - budget accommodation - power	LIL
Gannakouriep			
2 Bed huts	4	Self-catering - serviced - economy accommodation	LIL
Hakiesdoring			
8 Bed hiking camp	1	Self-catering – limited service - economy accommodation	LIL
Kokerboomkloof			
Camp site	8	Camping - budget accommodation - power	Primitive
Potjiespram			
Camp site	18	Camping - budget accommodation - power	LIL
Richtersberg			
Camp site	6	Camping - budget accommodation - power	LIL
Sendelingsdrift			
2 Bed Chalets	6	Self-catering - serviced - economy accommodation	HIL
4 Bed Chalets	4	Self-catering - serviced - economy accommodation	
Camp site	12	Camping - budget accommodation - power	
Tatasberg			
2 Bed huts	4	Self-catering - serviced - economy accommodation	Primitive

7.6.2 Concessions

There are no concessions in the park.

7.6.3 Retail and other facilities

A fuel filling station owned by Total and operated by SANParks is located at Sendelingsdrift.

7.6.4 Activities

There are currently (2018) no traditional activities, such as guided game drives, guided walks) on offer in the park. However, as part of the ARTP the following activities are hosted:

- The biannual Desert Knight multi-stage mountain bike tour; and

- The biennial Wildrun, a multi-stage cross-country run, operated by Wildrunner.

7.7 Cultural heritage sites

A number of sites and living culture, as listed in Table 7 below, are accessible to visitors.

Table 7. Cultural heritage sites and living culture in the park open to the public.

Sites	Current status	Zone
Sendelingsdrift section		
Nomadic stock farmer stock posts throughout the park	Operational	Various
Rock engravings around Sendelingsdrift		HIL

7.8 Community use

The entire park is utilised by the stock farmers for grazing and browsing by their livestock. Wood, plant material and other natural resources are all used by the local stock farmers in their daily routine.

There are a number of gravesites throughout the park. However only one near De Koei is accessible by tourist roads and is demarcated and fenced off.

7.9 Mining

The Minister of Mineral and Energy Affairs gave permission in terms of Section 2B (1)(a) of the National Parks Act No. of 1976 for the proclamation of the park, however the following conditions were set:

- Existing exploration and mining rights must continue to exist and not be affected by the proclamation of the national park; and
- Future applications for exploration and mining in the park after the proclamation will be considered on merit.

Diamond mining currently takes place in the park at Aace plant, Grasdrift, Jakkalsberg, Oena and Sendelingsdrift.

The current mining activities will be managed according to section 48 of NEM: PAA.

The old mine dumps act as a gravel source, which is used for maintenance purposes.

7.10 Servitudes

An Eskom servitude traverses the Klein Duin section.



Section 8: Expansion strategy

The expansion and consolidation of the park remains a national priority for SANParks given its recognised biodiversity, landscape interface and regional social-economic importance. The expansion of the park also addresses national objective SO1.1 of the National Biodiversity Strategy and Action Plan. The expansion programme is informed by SANParks' policy regarding land inclusion (SANParks, 2015b; Knight *et al.*, 2009), the protected areas expansion strategy for the Northern Cape (Balfour & Holness, 2017) and the National Protected Areas Expansion Strategy (NPAES) (DEA 2016), the National Biodiversity Assessment (Driver *et al.*, 2012) as well as the 3-year rolling land acquisition plan. It is important to note that this 3-year plan can change due to the availability of funds, willing-buyer-willing-seller concept and the negotiation process.

The park expansion programme aims to contribute to NPAES that recommends expansion towards 12 % of the terrestrial area and 25 % of the marine inshore. Effectively engaging with relevant stakeholders through collaborative interventions would contribute towards achieving cooperative management within the park's buffer zone. Expansion of the park can be achieved through direct acquisition by means of own (SANParks) funding, government funding or donation from a private or Non-Governmental Organisation donor. In the case of SANParks or state funding the acquired land becomes state land and is declared as national park (Clause 20 (2) of the NEM: PAA and its Amendment No 31 of 2004). In some cases, a private entity may acquire the land for national park purposes, but retains ownership (such as World Wide Fund for Nature; National Parks Trust of South Africa) with the land declared Clause 20 (3) of the NEM: PAA. Land can also be included via contractual park agreements which refer to cases where private or communal land is incorporated into the park (and declared under the same Clause 20 (3) of NEM: PAA under agreement between the parties but they retain ownership. A further option is to establish Memorandums of Understanding (MoUs) with local authorities and industry.

The main section and separate Klein Duin / Oograbies Wes sections of the park have 14 identified vegetation units and eight ecosystems, respectively, falling within the current park boundaries. This includes representation of the Desert and Succulent Karoo biomes and azonal types. Importantly, the two sections of the park complement each other, as their ecosystems are unique to these two sections. In addition, within the planning domain that includes the buffer and expansion footprints, there are a further 12 ecosystems unique to this area. Thus, collectively the park with its two sections and the buffer (inclusive of the expansion footprint) include 34 different ecosystems making it one of the most botanically diverse parks in the SANParks fold (DEA 2015; Mucina & Rutherford 2011). In addition, its topographically and scenically diverse landscape units include: the Orange River and adjacent floodplains; gentle undulating plains (distributed in the summer / all year round rainfall area); rolling hills; rugged mountains; dune fields and isolated inselbergs (Rubin & Palmer 1996). The approximately 1,500 m altitudinal diversity from the Klein Duin / Oograbies-Wes on the coastal plain section to the main park area would provide the park with the rainfall and topographical gradients required to allow species to develop survival strategies to mitigate the effects of global climatic change. The park's expansion objective is to pursue a coast-to-inland representation of Richtersveld features. This has given the organisation greater focus especially in the coastal area of the park. The advent of the Global Environment Facility Phase 5 (GEF5) funding has helped fuel this focus of the project.

The approach that SANParks will follow can be found in section 10.2.4 on page 72.

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Section 9: Concept development plan

9.1 Long term development plan

Development is not considered lightly and is only embarked on in order to fulfil a real operational need or tourism opportunity. The park is not financially sustainable, however, it has the potential to improve its occupancy and to offer additional products to visitors in future. The current development plan focuses on ways to attract additional visitors to the park. The focus will be to develop and implement mountain bike and hiking trails throughout the park to attract a different clientele. Transfrontier events including the biannual Desert Knights as well as other events will have a definite impact on the establishment of local products that SANParks can offer.

Caution will be exercised when considering any development. The zonation of the park will dictate the placement of any development and the implementation of identified projects is dependent on the availability of funds.

9.2 Development nodes

The primary development node remains the Sendelingsdrift rest camp, with limited expansion in the other areas.

9.3 Communication routes

Communication needs to be improved in the park, including telephone, data network, free and metered Wi-Fi and cellular access. No target dates for the completion of the projects in this section are available at this stage (2018), because the allocation of funding has not been finalised.

9.4 Service supply routes

The main service route to the park is a provincial gravel road from Alexander Bay which is approximately 80 km in length. The condition of this road affects access to the park and requires regular maintenance. If this road could be tarred, it would significantly improve the access to the park and Namibia. Existing bulk services are currently being provided by the mining company Transhex, however, the park plans to take over the provision of bulk services (water provision and sewerage) in the future.

9.5 Infrastructure development proposals

All infrastructure development proposals, including activity development, are presented in Tables 8 - 12 below. No target dates for the completion of the projects in this section are available at this stage (2018), because the allocation of funding has not been finalised.

9.5.1 Administration and other facilities

The identified facilities set out in Table 8 below will be utilised for operational purposes.

Table 8. Proposed administrative infrastructure development in the park.

Infrastructure	Current status	Zone	Probability
Sendelingsdrift section			
Back-up generator	New development	HIL	Medium
Kokerboomkloof water pipeline	New development	LIL	Medium
Landfill site	Upgrade	HIL	Low

Infrastructure	Current status	Zone	Probability
Sendelingsdrift section			
Laundry	Upgrade of existing infrastructure	HIL	Medium
Fuel station	Upgrade of existing infrastructure		Medium
Sewerage system	New development		Medium
Store rooms	New development		Medium
Water purification plant	Upgrade of existing system		High
Workshops	New development		High

9.5.2 Visitor facilities

Visitor facilities include all non-commercial facilities and points of interest available to visitors and are set out in Table 9 below.

Table 9. Proposed non-commercial facilities and points of interest development in the park.

Infrastructure / visitor sites	Current status	Zone	Probability
Klein Duin section			
Lookout point	Non-existent	Primitive	Medium
Tourist road network	Existing roads	To be decided	High
Sendelingsdrift			
Desert Botanical Garden / Nursery	Non-existent	HIL	High

9.5.3 Commercial facilities and activities

There are a limited number of commercial activities and / or products that could be developed in the park, or currently in operational that could be expanded / upgraded, in order to improve the tourism experience. All proposed opportunities will be individually investigated and the priority determined based on feasibility and income potential. There may be opportunities for development that are excluded, as they are considered unlikely to be developed within the term of this plan. However, should the market change or a third party present an opportunity, products may be considered based on the agreed terms and locations, as per the park product development framework (Appendix 3).

9.5.3.1 Accommodation

The new accommodation infrastructure that is envisaged for the park is set out in Table 10 below.

Table 10. Proposed accommodation development in the park.

Infrastructure / visitor sites	Current status	Zone	Probability
Klein Duin section			
Eco-camping sites (rustic)	Non-existent	Primitive	Low

9.5.3.2 Concessions

No concession development is currently planned.

9.5.3.3 Retail and other facilities

No retail development is currently planned. There is currently a small company shop, which is managed by Transhex as part of their infrastructure set-up. Basic curios will be made available at the reception area.



9.5.3.4 Activities

Leisure activities provide a mechanism for income generation, with the potential for community development and without the high capital investment required for accommodation. Key challenges regarding provision of leisure activities in future will be diversity of offering, customer demand and increasing the 'adventure' element of activities in order to engage the younger markets and markets with a high disposable income. Activity development will need to take the visual impact of each activity into account, in order to ensure the unique selling proposition of remoteness of the park is maintained. Certain activities will also need to cater for different product grades and visitor experience levels. Additional activities have been identified (Table 11) for possible development.

Table 11. Proposed activity development in the park.

Activities	Current status	Zone	Probability
Sendelingsdrift section			
ARTP Desert kayak trail	Non-existent	Various	Medium
Hiking routes	Non-existent		High
Fishing tours	Non-existent		Medium
Fundraising groups	Non-existent		Medium
Kayaking	Non-existent		High
Mountain bike trails	Non-existent		High

9.5.4 Cultural heritage sites

There is a need to enhance the interpretation of the cultural heritage sites in the park. Additional sites have been identified (Table 12) for possible interpretation.

Table 12. Proposed cultural heritage product development in the park.

Sites	Current status	Zone	Probability
Sendelingsdrift section			
Upgrade identified stock posts for tourist interpretation	Existing heritage	Various	High
Sendelingsdrift petroglyph trail and interpretation	Existing heritage	HIL	High

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Section 10: Strategic plan

10.1 Introduction

Sections 3, 4 and 5 of this plan outlined the policy framework, the consultation process and vision, mission and high-level objectives for the park. In this section the high-level objectives of the park are unpacked into lower level objectives and sub-objectives and finally into operational actions. In this way, decision-making, even at the operational level, can be linked back with the core values and inputs from stakeholders on which they have been based. This approach conforms to the requirements of the NEM: PAA and the NEM: BA, SANParks policy and ratified international conventions.

Programmes of implementation, developed as outlined above, form the strategic plan for this planning cycle, and are arranged under the following headings:

- Integrated management;
- Biodiversity;
- Responsible Tourism;
- Constituency building and benefit sharing; and
- Effective park management.

Each programme is presented as follows:

- **Programme name:** A name describing the programme.
- **Background:** Overview of intent, guiding principles, description, outcome, research and monitoring and risk (all where applicable);
- **Tables:** Outline of objectives, initiatives and management actions within the scope of the objective with an indication if the programme is once off, continuing or conditional on the availability of resources. These tables have the following headings:
 - **Objectives** The various objectives derived from the hierarchy of objectives, which make up each programme;
 - **Actions:** The actions necessary to achieve the objective;
 - **Responsibility:** The SANParks person, section, department, division or unit responsible for implementing the action;
 - **Portfolio of evidence (POE):** Proof whereby the achievement of the objective can be evaluated;
 - **Timeframe:** An indication of when the action is likely to be completed (indicated by year in the planning cycle); and
 - **References:** References to relevant programmes, lower level plans (LLPs) or other documents.

The commitments outlined in the various programmes under section 10 are aligned with the performance management system of the operational staff. This is revised annually to ensure all the actions will be implemented.

10.2 Integrated management

The purpose of the integrated management objective is to conserve systems and processes within and around the park through collaborative and joint management structures to ensure a positive conservation outcome in the park and buffer zone, by influencing developmental processes in the buffer zone and by adding key parcels of land to the protected area. The park recognises that partnerships could be developed with other likeminded organisations to maintain the faunal and floral assemblages and ecological processes representative of the area for the long-term beneficiation of the region and country. It aims to collaborate with relevant international, national, provincial and local government structures; non-governmental organisations and landowner groups.

10.2.1 Contractual park programme

The purpose of this programme is to ensure that park operations are aligned with the signed agreement and thereby acknowledge that the park is an important contributor towards the conservation of natural resources, directly responsible for socio-economic development within the Richtersveld as well as providing opportunities for sustainable resource use by current and future Richtersveld generations. The park will continue to exist for a period of 30 years from the date of signature of the contract, however, any Party could give 24 month written notice to cancel the contract. The management approach in the park is that of the SAM as directed by the RCMC. According to this Agreement SANParks will supply the necessary personnel for the conservation management of the park in accordance with the aims and policy declaration contained in this management plan. The broader policy aims thus becomes:

- Fixed and approved in co-operation with the RCMC;
- Emphatically set out in the management plan; and
- Achieved through the implementation of essential management actions as described in the different programmes as directed, led and monitored by the RCMC.

The Responsibilities of the RCMC

The responsibilities of this committee are:

- To study the contents of the agreement and management plan and to acquaint themselves with it;
- To identify training and capacity building needs of members of the RCMC that are necessary for the effective operation of the RCMC;
- To ensure and monitor the implementation of the management plan;
- To ensure the revision and correction of the management plan;
- To ensure community involvement through regular and comprehensive feedback;
- To protect community interests;
- To appoint and manage personnel in accordance with relevant labour legislation;
- To ensure that the personnel policy of the park is set on the circumstances of the park as a contractual park; and
- To ensure that the Richtersveld community benefits from all targeted and annual training and capacity building opportunities.

In general the RCMC is thus responsible for the formulation of policy, in other words for compiling the framework and rules in accordance to which the park is managed. The day-to-day execution of the policy is the responsibility of Park Management, and to do this the Park Manager must have the confidence to make decisions within the framework of the management plan. The Park Manager must also report to the RCMC on a regular basis and the RCMC must ensure that management inputs are within the limits as set out in the Management Plan.

Election of the representatives of the Richtersveld community

The membership of the RCMC is as follows:

- One chosen representative from each of the four towns Eksteenfontein, Kuboes, Lekkersing and Sanddrift;
- A representative of the stock farmers; and
- Four representatives of SANParks.



Election of town representatives

The representatives will be elected by the communities through a process of nomination, seconding and, when more than one nomination is received, through secret ballot, in accordance with the rules and regulations of the Independent Electoral Commission. The nomination that received the most votes will be announced at a community meeting. The chosen community and stock farmer representative cannot be an employee of the RNP. Elections must be held at least every four years. In order to ensure continuity of RCMC members, as from the second election, the election will be staggered in the different towns. The RCMC will identify two towns to hold their election in the third year and the other two will hold theirs in the fourth year. Elections will then be held every fourth year.

Feedback and responsibility of representatives

It is the responsibility of the elected representatives to give regular feedback to their communities. In order to ensure regular feedback representatives must give feedback to their communities within two weeks of every RCMC meeting. Notice of these meetings must be given two weeks before the due date. Issues discussed during the feedback meetings must also be tabled by the representatives at the next RCMC meeting. The representatives must also be available to discuss issues related to the park with members of the community.

Termination of RCMC membership

If a community is convinced that an elected RCMC representative is not fulfilling his / her duties, a motion of no confidence may be brought against the representative. The procedure is as follows:

- At least 20 members from the respective town of the representative and 10 representative stock farmers from within the park have to request the RCMC in writing to call a meeting where a motion of no confidence could be served;
- Both the 20 members from the respective town and the 10 stock farmers who requested that the meeting should take place, must attend the meeting to present their case; and
- Two authorised members of the RCMC (of which one must be a SANParks member) must chair the meeting to ensure the validity of any actions taken.

Should a motion of no confidence against an elected RCMC representative be passed after investigation, a new representative should be elected as per the election process described above at such a meeting.

Chairmanship

A chairperson of the RCMC will be appointed from the members of the RCMC. The chairpersonship will rotate annually between a member appointed by the Richtersveld representatives and a member appointed by SANParks. If the appointed chairperson cannot attend a meeting, the members present will elect one of the members present to chair that meeting.

Approval

All decisions of the RCMC are reached on consensus.

Quorum

A quorum at all meetings will be made up of five members, of which two must be elected by the communities, one by the stock farmers and two nominated by SANParks. If a quorum is not reached within 30 minutes, the meeting will be adjourned until a next predetermined date. The next meeting should not take place earlier than five days or later than 15 days from the date of the adjourned meeting.

The RCMC will, unless otherwise agreed upon by the parties:

- Meet at least four times per year; and
- Meet if a party requests a meeting whilst giving ten (10) working days notice of the meeting to the other party (excluding the day of the notice).

The parties agree that members of the Richtersveld community may attend any RCMC meeting as observers. These visiting members may not partake in the meeting or vote on any matter.

Technical Advisors

Members of the RCMC may invite technical advisors to attend meetings and to advise the meeting on technical issues deemed necessary by the members.

Minutes

The RCMC secretary must send a copy of all corroboratory documents (including the minutes of the previous meeting) to all RCMC members at least five working days before a RCMC meeting. The secretary must also send a copy of the minutes of the meeting to all RCMC members within 14 working days after any meeting. The secretary must also notify all RCMC members of RCMC meetings, including the date, time and venue, at least 14 working days before the date of the meeting.

Operational costs

All costs involved in running the RCMC activities must be calculated yearly and must form part of the SANParks budget. Elected RCMC members representing the Richtersveld community must receive an attendance subsidy for attending the RCMC meetings. The attendance subsidy must be pre-determined on a yearly basis according to a formula and must be supported by both the community and SANParks. The attendance subsidy must be budgeted for and paid by SANParks.

Dispute

If no consensus could be reached on any issue during a RCMC meeting, the issue should be referred to a mediator that was approved by both parties. If mediation still does not solve the issue, an arbitrator that was approved by both parties should be appointed. The decision of an arbitrator is binding on all parties.

This programme links with high level objective 1 and objective 1.1 on page 40. To achieve the purpose of this programme, the actions listed in the table below will be implemented.

CONTRACTUAL PARK PROGRAMME					
High-level Objective: To ensure co-operative, transparent and inclusive decision-making by promoting sound governance, advocating mutual responsibility and shared benefits, and encouraging close cooperation between the multiple management authorities, role players and landowners.					
Objective: To co-manage the Richtersveld Contractual Park through implementing the Contractual Agreement and adhering to the terms of reference of the RCMC.					
Sub-objective	Actions	Responsibility	POE	Timeframe	Reference
To contribute to economic development within the Richtersveld by identifying opportunities and facilitating skills development programmes.	Implimentation of the management plan.	PM, RCMC	Reports	Ongoing	
	Attend quarterly RCMC meetings and give feedback.	PM, RCMC		Monthly	
	Identify training and capacity building needs of the community and staff and implement as required.	PM, RCMC		Annually	
	Evaluate the implementation of the management plan.	PM, RCMC		Year 5, 10	



10.2.2 Transfrontier park programme

The purpose of this programme is to ensure that park operations are aligned with the agreed treaty, bilateral agreement, MoU and protocols, so that the ARTP is retained as far as possible in its natural state, for the benefit of biodiversity conservation, research, tourism and to protect and preserve the natural and cultural resources of the ARTP.

The ARTP is recognised as a significant conservation initiative with the aim to establish a large conservation and wildlife area not only through the integration of vast landscapes and re-connecting ecological systems, but also through development of cross-border tourism linkages. The ARTP will be managed in accordance with the following objectives of the treaty:

- To foster trans-national collaborations and co-operation between Parties which will facilitate effective ecosystem management in the area comprising the ARTP;
- To promote alliance in the management of natural and cultural resources by encouraging social, economic, responsible tourism and other partnerships between the Parties, including the private sector, local communities and non-governmental organisations;
- To enhance ecosystem integrity and natural ecological processes by harmonising environmental management procedures across international boundaries and striving to remove artificial barriers impeding the natural movement of wildlife;
- Facilitate the establishment and maintenance of a sustainable sub-regional economic base through appropriate development frameworks, strategies and work plans;
- To develop trans-border eco-tourism as a means of fostering regional socio-economic development; and
- To establish mechanisms to facilitate the exchange of technical, scientific, economic and legal information for the joint management of the ecosystem.

A Joint Management Plan (JMP) serves as the strategic guiding framework, which is made up of each Parties' Management Plan, which is implemented and periodically revised for the governance, management and decision-making relating to the development and management of the ARTP. The JMP will be operationalised through the Joint Operational Strategy (JOS) and Annual Plan of Operations. Together these will guide the activities of the institutional structures of the ARTP.

Senior management from all parties, meet on a regular basis to discuss operational issues. The Park Management Committee (PMC) meetings form the basis for joint operations and ultimately ensure that a co-ordinated approach is followed. A Joint Management Board (JMB) oversees the programme and the PMC reports biannually to the JMB regarding the implementation of the JMP and JOS.

This programme links with high-level objective 1 and objective 1.2 on page 40. To achieve the purpose of this programme the actions listed in the table below will be implemented.

TRANSFRONTIER PARK PROGRAMME					
High-level objective: To ensure co-operative, transparent and inclusive decision-making by promoting sound governance, advocating mutual responsibility and shared benefits, and encouraging close co-operation between the multiple management authorities, role players and landowners.					
Objective: To enhance regional conservation and benefits to the people of the Richtersveld region by implementing the /Ais/Ais-Richtersveld Transfrontier Area Contractual Agreement.					
Sub-objective	Actions	Responsibility	POE	Timeframe	Reference
To ensure efficient, effective and functional institutional arrangements.	Participate in PMC meetings.	PM	Minutes of meetings	Quarterly	
	Participate in the JMB meetings.		Minutes of meetings	Biannually	
	Implement the ARTP Joint Park Management Plan and JOS.		Minutes of meetings, audit reports	Ongoing	ARTP JOS
	Participate in the revision of the JMP and JOS.	CSD, PM	Updated documents	Year 5, 10	

10.2.3 Co-operative management programme

The purpose of this programme is to engage and interact with local and district municipalities, non-governmental organisations, neighbours, surrounding communities *etc.* bordering and within the park to ensure that biodiversity considerations are taken into account, as far as possible and as appropriate, into all developmental decisions.

The RLM is sparsely inhabited with a population of ± 14,125 that reside in 6 urban nodes as well as a few rural areas. Agriculture, mining, fishing and tourism forms the backbone of the economy in the RLM and these sectors provide the most employment opportunities. The regional economy also recognises the major eco-tourism and conservation initiatives around the Kgalagadi Transfrontier Park, the ARTP, the Bushmanland Conservation Initiative, and the expanded Namaqua National Park and proposed Marine Protected Area. Since the inception of the ARTP, tourism to the area has increased (Richtersveld Municipality Rural Spatial Development Framework 2010). The greater Richtersveld region and communal land is primarily used for small-stock farming. The Richtersveld area is very rich in minerals, particularly diamonds. Diamond mining takes place both offshore and along the coastline as well as along the banks of the Orange River. Mining has been the dominant industry within the municipality and many of the poorer communities have been dependant on a family member gaining income from this industry.

The park aims to oppose or minimise the negative impacts of poor conservation strategies and unwanted development along its borders, through proactive engagement with stakeholders and surrounding landowners, regional planners and scientists. The primary mechanism to address these concerns is through the park's buffer zone, in accordance with the gazetted DEA Strategy on Buffer Zones. The buffer zone serves as a guide to indicate areas within which land use changes could affect the park, and where park management and scientists should assess, and where required, respond to EIAs as an interested and affected party. SANParks may also respond to developments with broader regional impacts, even if these occur outside the buffer zone, but are deemed to have an impact on the park. Ultimately, the park and its buffer zone should be integrated into the IDPs and SDFs of local and district municipalities.

The achievement of the park's aspirations depends on understanding the relationships and inter-dependencies between various strategic planning processes and partnerships in the region. The park will co-operate with the relevant national, provincial and local government structures insofar as these affect the park, and keep track of issues affecting the park and region to ensure functional ecosystems are protected. Through education about the importance of biodiversity, the park intends to raise awareness of people and communities, in the park and its buffer zone, to the plight of conservation in the region. By building positive relationships with landowners and providing a central point for conservation ideas and examples, the park can achieve the objective of this programme.

This programme links with high-level objective 1 and objective 1.3 on page 40. To achieve the purpose of this programme, the actions listed in the table below will be implemented.



CO-OPERATIVE MANAGEMENT PROGRAMME

High-level objective: To ensure co-operative, transparent and inclusive decision-making by promoting sound governance, advocating mutual responsibility and shared benefits, and encouraging close co-operation between the multiple management authorities, role players and landowners.

Objective	Actions	Responsibility	POE	Timeframe	Reference
To enhance regional co-operation by encouraging and developing relationships with local authorities, landowners and industry within the expansion footprint and buffer zone of the park.	Identify land use and transformation trends in the park buffer zone, and how these may affect the park.	PM, CSD	Report	Year 2, ongoing	
	Update land use planning databases for land use assessment, sector plans, critical biodiversity areas, SPOT5 imagery <i>etc.</i>	CSD	Data bases	Year 2, ongoing	
	Identify possible external threats from development.	CSD, PM	List of threats	Ongoing	
	Participate in IDP and SDF processes to influence decisions.	PM	Minutes of meetings	Annually	
	Respond to EIAs, scoping reports <i>etc.</i>	PM, CSD	Scoping, EIA reports	As required	
	Engage with identified landowners to achieve common conservation goals.		Minutes of meetings	Ongoing	

10.2.4 Park consolidation programme

The purpose of this programme is to achieve the SANParks goal of conserving ecological patterns and processes typical of the region by acquiring conservation-worthy land through purchase or by other means in line with SANParks land acquisition framework. The rationale for this programme can be found in section 8 on page 60.

In order to conserve the range of biodiversity and landscapes, the park has been involved in the Richtersveld Cultural and Botanical Landscape Heritage site and the ARTP. The advent of the GEF5 funding has helped fuel this focus of the project. SANParks has now started to pursue expanding the park's conservation footprint in the Klein Duin / Oorgrabies-Wes area. The idea is to secure the biodiversity important Vyftienmyl se Berge with its unique Succulent Shrubland ecosystem as a key step and expand to the coast through a co-operative relationship with the local government/community.

To meet the conservation expansion objectives over the next ten years, the focus will be primarily in the Klein Duin / Oorgrabies-Wes area. This expansion would be largely through contractual relationships with local government and community to take the park closer to the coast and the economic hub of Port Nolloth. The total expansion footprint is about 38,059 ha, with about 1,030 ha of this identified for acquisition. Expansion of the park in the south would largely consolidate the entire unique "Vyftien Myl se Berge" Succulent Shrubland ecosystem and add another vegetation type not represented in the park, namely the Richtersveld Sandy Coastal Scorpionstailveld. This expansion is identified as important in the Northern Cape Protected Areas Expansion Strategy. It also falls within a Critical Biodiversity Area. Expanding the Succulent Karoo and taking the park closer to the coast would meet national priorities and link the important coastal and terrestrial ecological interface.

This programme links with high-level objective 1 and objective 1.4 on page 40. To achieve the purpose of this programme, the actions listed in the table below will be implemented.

PARK CONSOLIDATION PROGRAMME					
High-level objective: To ensure co-operative, transparent and inclusive decision-making by promoting sound governance, advocating mutual responsibility and shared benefits, and encouraging close co-operation between the multiple management authorities, role players and landowners.					
Objective: To advance a coast-to-inland representation of Richtersveld biodiversity and landscapes by identifying and defining areas, and including such via different mechanisms in close co-operation with relevant stakeholders.					
Sub-objective	Actions	Responsibility	POE	Timeframe	Reference
To acquire strategically identified properties of conservation-important land to consolidate the park.	Update the conservation expansion plan as per section 8 of this document.	CSD, PM	Document	Ongoing	
	Motivate and prioritise acquisitions.		Priority list	Year 1	
	Obtain and allocate required funding.	CSD	Document	Annually	
	Target the acquisition / contractual inclusion of ~40, 000 ha over 10 years.	CSD, PM	Agreements	Year 10	
	Review conservation expansion plan.		Report	Year 3, ongoing	

10.3 Biodiversity

A number of biodiversity management programmes have been developed to effectively manage the diversity, patterns and processes of the characteristic elements of a typical Succulent Karoo and Desert ecosystems. The key management strategies listed below cover the next planning cycle (or longer), in order to advance the biodiversity component of the park’s desired state, and represent the sub-objectives of the park’s biodiversity programme:

- To determine potential change of plant species composition, vegetation structure and functionality and its consequences to ecological processes by monitoring, data analysis and evaluating results;
- To manage minor disturbance by developing effective monitoring progress and where applicable minimise, control or prevent the impacts;
- To ensure persistence of species and plant communities of special concern by identifying threatened and rare species, plant communities and threats, and where applicable, develop and implement management responses;
- To manage minor disturbance by developing effective monitoring progress and where applicable minimise, control or prevent the impacts;
- To mitigate potential impacts of climate change on park biodiversity by actively participating in the national climate initiatives;
- To define biodiversity assets and identify threats by collating existing information and facilitating co-operative research;
- To mitigate the impacts of the nomadic stock grazing regime on biodiversity, by identifying an optimal grazing regime, developing management protocols, implementing these and ensuring compliance; and
- To evaluate outcomes of management interventions for biodiversity by co-operative design and implementation of monitoring programmes.

10.3.1 Vegetation programme

The purpose of this programme is to determine potential change of key habitats and plant communities and its consequences for fauna and associated processes, as well as for their aesthetic value.

Since protected areas are under increasing threat from a range of external and internal factors, and a primary SANParks mandate being the conservation of biodiversity, monitoring is an essential component of measuring the performance of protected areas. Moreover, the requirement for biodiversity monitoring in national parks is specified in national legislation (NEM: BA) and international policy (Convention on Biological Diversity), as well as by SANParks’ own adaptive management approach. The requirement for biodiversity monitoring as specified by SANParks’ own adaptive management philosophy and the SANParks’ Framework for Biodiversity Monitoring guides the structure and development of the Biodiversity Monitoring System for SANParks (McGeoch *et al.*, 2011).

The necessity for an ecological landscape unit classification, which describes and maps a conservation area, has been established. A sound understanding of the ecology of the park, summarised in a landscape classification map, contributes considerably to the compilation of an effective wildlife management programme and conservation policy. As a protected area, it also serves as a permanent reference site for



wider landscape vegetation reconnaissance surveys in the Northern Cape region (Bezuidenhout *et al.*, 2015). Such a description and map can be used to aid in the selection of sites for vegetation monitoring and serves as a basis to determine wildlife-habitat relationships (Ferreira *et al.*, 2013). The landscape units identified in the park are adapted from the definition of Gertenbach (1983): “A landscape is an area with a specific geomorphology, macroclimate, soil and vegetation pattern, and associated fauna”. A landscape unit has a distinctive geomorphology, land type, soil, and plant species composition and vegetation structure associated with it (*sensu* Bezuidenhout, 1993). Twenty-six landscape units were identified in the park (Bezuidenhout & Hendricks, 2003).

Past research has focused on inventurisation (vegetation / habitat map and plant species list) and the monitoring of veld condition. In the park, the degradation has been ascribed to mismanagement by mining activities, livestock farming and variations in rainfall. The difficulty in disentangling biotic and abiotic determinants of vegetation change hinders the understanding of vegetation dynamics in confined plant-herbivore systems (Kraaij & Milton, 2006). Vegetation change in permanent fenced and open plots in the park has been monitored over the past ± 30 years (Jurgens, 2017). Jurgens (2017) also conducts annual observations of 54 monitoring plots of 100 m² in the Richtersveld region. Three automatic weather stations were also installed in the park to support and assist with capturing climate data, and these are located at Koeroegab, Numees and Vandersterrberg. The vegetation monitoring records in and outside the enclosure plots show very slow changes and thus rehabilitation of degraded vegetation in these ecosystems will take very long (Jurgens, 2017). It is therefore important to prevent vegetation degradation due to the long-term consequences of vegetation degradation in these ecosystems (Jurgens, 2017). These exclosures, according to Jurgens (2017) allow interesting observations and in many of these exclosures a very slow re-establishment of keystone plant species are observed and could even be identified in satellite images. In the past ± 30 years of vegetation monitoring, Jurgens (2017) noted that no major change in the plant species composition took place, as well as, no increase of invasive plant species. However, Jurgens (2017) found a major change in plant species composition in several of the *Brownanthus pseudoschlichtianus* plant communities over the last few decades, which coincide with a major increase of *Calobota angustifolia*, and / or *Calobota halenbergensis* plant species.

Bezuidenhout *et al.* (2014) conducted a botanical reconnaissance survey along the Orange River in the ARTP to determine the nature and extent of changes to the threatened riparian woodland. Most of the Orange River was classified as critically endangered due to (i) expansion of irrigated crop farming, (ii) up stream dam constructions, (iii) grazing pressures and (iv) mining activities. Apart from these actions, alien plant species also started replacing the natural vegetation. More information is needed before recommendations can be proposed.

A detailed lower level plan outlining the rationale and operational approach is available. This programme links with high-level objective 2 and objective 2.1 on page 40. To achieve the purpose of this programme, the actions listed in the table below will be implemented.

VEGETATION PROGRAMME				
High-level objective: To ensure the persistence of the uniquely arid adapted biodiversity by maintaining, conserving and restoring ecological processes as well as reducing human impacts within the landscape and geology associated with the Succulent Karoo and Desert biomes of the park.				
Objective: To determine potential change of plant species composition, vegetation structure and functionality and its consequences to ecological processes by monitoring, data analysis and evaluating results.				
Actions	Responsibility	POE	Timeframe	Reference
To implement research projects to assess the understanding of the functioning of the different landscape units and assess the veld condition of these landscape units.	CSD, PM	Projects	Year 2, 4, 6, 8, 10	Degradation & restoration LLP, Fire LLP, Fresh water LLP and SSC LLP

10.3.2 Degradation and rehabilitation programme

The purpose of this programme is to assess the habitat degradation status and implement mitigation measures needed to facilitate the improvement of ecological processes and enhancement of ecosystem functioning in affected areas.

The National Policy on the Conservation and Sustainable Use of South Africa's Biodiversity, produced by the DEA calls for the identification of key sites for rehabilitation based upon biological and socio-economic criteria, and the development and implementation of rehabilitation plans for identified sites. Similarly, the Convention of Biological Diversity (CBD) lists rehabilitation as an important tool for promoting the conservation of biodiversity. Human threats are still actively affecting biodiversity due to past disturbances such as the aftermath of long periods of intensive grazing (Daemane *et al.*, 2011). Environmental disturbances that hinder ecosystem stability and function, threaten the various benefits derived from national parks as they result in decreased species diversity and subsequent decline in ecological function and resilience (Tilman *et al.*, 1997; Evans *et al.*, 2001). Therefore, these anthropogenic disturbances should be mitigated and ecological processes restored to reduce undesirable impact on the biological integrity of ecosystems.

SANParks consider degradation as the deterioration of the environment through depletion of resources such as air, water and soil; the destruction of ecosystems and the extinction of wildlife. The generated change or disturbance to the environment is perceived to be deleterious or undesirable. During this process in some cases, the disturbed or damaged ecosystem cannot re-establish on their own without human facilitation (SER, 2004; Forsythe, 2013). This is because the environment has been exposed to frequent or intense disturbances that hinder or delay ecosystem repair (Pullin, 2002). These disturbances can be man-made or natural and still need human interventions to recover even in natural ecosystems such as national parks (Daemane *et al.*, 2013). Most degradation types in the park are human-induced such as; mining practices, invasive alien species (although relatively small scale), past and present herbivory and erosion and soil degradation. Invasive alien plants have allopathic effects that completely exclude and hinder native vegetation presence (Sean *et al.*, 2008; Gerber *et al.*, 2008) by modifying nutrient formation and hydrology (Higgins *et al.*, 1999; Zachariades & Goodall, 2002). This restructures resource availability and modifies ecosystem processes. In general, degrading agents in the system lead to species loss (Oldeman *et al.*, 1991; Nachtergaele *et al.*, 2010). However, not all disturbances and associated change is toxic for ecosystems. The impact differs with the type of disturbance and its intensity. For example, moderate grazing benefits biodiversity as it removes senescent vegetation (Read & Andersen 2000; Littlewood 2008). Generally highest diversity and conservation value result at intermediate levels of disturbance (Barnosky *et al.*, 2012; Chesson and Huntly, 1997; Roxburgh *et al.*, 2004). Apart from human-induced activities, degradation can be caused by natural disturbances (*i.e.* floods, droughts) that are too frequent or severe to allow natural ecosystem recovery within a reasonable period. Degradation resulting from various factors, including climate perturbations and extreme events, inappropriate fire or herbivory regimes, alien species invasion, as well as human activities, generally reduces flow of ecosystem goods and services. Although some of these are natural processes, intervention may be required to aid recovery in protected areas where natural recovery processes are slow or prohibited because of fragmented habitat surrounded by alternative land use. Except for some chaotic or gradual natural events leading to land degradation, the phenomenon is mainly due to the interaction of the users with the land. Water runoff is also accelerated by road infrastructure in areas of high tourism intensities. Degradation therefore affects the capacity of the habitat to support life, thereby contributing to an unsustainable ecological system.

Though it is often challenging to distinguish between natural and human induced erosion, the effect of domestic grazing and its footpaths in the park is very pronounced. Four plant communities, namely Central Richtersveld Montane Shrubland; Northern Richtersveld Scorpionstailveld; Swartport Plain Desert and Noams Mountain Desert are threatened by erosion (Daemane, 2012). These areas are characterised by a network of severe rill erosion, which in most incidences have developed into severe gullies. In landscapes with a high functional status, soil, water and nutrients are strongly conserved within the landscape and used within that system. By contrast; landscapes with a low functional status tend to lose existing material resources, fail to capture incident rainfall and are unable to capture replacement materials. Infestation by alien invasive plants also occur causing vegetation community degradation as species richness, composition and diversity declines. Therefore, these anthropogenic disturbances should be mitigated and ecological processes restored to reduce undesirable impact on the biological integrity of ecosystems. Degradation is often accompanied by loss of ecosystem functioning to such an extent that transformation or change in some areas cannot undergo passive rehabilitation without mitigation measures to facilitate recovery. The Landscape Function Analysis technique (Tongway & Hindley, 2004) is undertaken at selected sites to assess soil stability, infiltration / runoff and nutrient cycling as indicators to measure soil degradation. Newly rehabilitated sites are included annually to the monitoring programme and where possible other variables such as invertebrates, small mammals and birds will be included in future



monitoring activities. Rehabilitation in areas affected by soil degradation includes gully control methods such as rock packing, eco-logs and mulch to reduce water runoff. Detailed degradation and alien plant distribution maps have been compiled and are used for prioritisation of restoration. Vegetation is then monitored in selected sites to assess the success of intervention measures in areas affected by sheet erosion.

If rehabilitation does not receive attention especially in case of degradation associated livestock impacts, the park runs the risk of allowing further degradation, which consequently has negative impacts on biodiversity. The risks involved include erosion, loss of biodiversity and reduced vegetation cover and forage to support herbivores. In this regard, the BSP unit has since 2012 / 2013 rehabilitated 621 ha at a cost of R 9,010,229.

Detailed degradation and alien plant distribution maps have been compiled and are used for prioritisation of restoration. Invasive alien clearing will be addressed in programme 10.3.3 below. This programme links with high-level objective 2 and objective 2.2 on page 40. To achieve the purpose of this programme, the actions listed in the table below will be implemented.

DEGRADATION AND REHABILITATION PROGRAMME				
High-level objective: To ensure the persistence of the uniquely arid adapted biodiversity by maintaining, conserving and restoring ecological processes as well as reducing human impacts within the landscape and geology associated with the Succulent Karoo and Desert biomes of the park.				
Objective: To manage minor disturbance by developing effective monitoring progress and where applicable minimise, control or prevent the impacts.				
Actions	Responsibility	POE	Timeframe	Reference
Identify and map priority areas affected by soil degradation.	BSP, CSD	Map	Ongoing	
Develop a 5-year rehabilitation plan reflecting Annual Plan of Operation (APO).		Documents	Year 1, 6	
Rehabilitation of areas affected by water / wind erosion and footpaths created by livestock.	BSP	Ha rehabilitated	Ongoing	
Monitoring recovery in areas undergoing rehabilitation.	BSP, CSD	Records	Ongoing	

10.3.3 Invasive and alien species programme

The purpose of this programme is to protect the biodiversity and infrastructural assets and tourism experiences within the park through suppressing and where possible eradicating and preventing the re-infestation of invasive and alien species (IAS), within the park as well as the protected area buffer of the park, and to protect the park from new and emergent species.

Many international conventions call for the management of IAS among others the Convention on Biodiversity. In South Africa, the management of IAS is mandatory under the NEM: BA. The IAS management framework for SANParks (Hendricks & Symonds, 2009) provides the context within which all management of IAS is implemented. A small number of alien or extra-limital animal species are found in the park, or occasionally enter the park from neighbouring properties. It is SANParks' policy that no species that were not historically present in the area are allowed to persist in a park. Consequently, all extra-limital or alien animal species must be removed from the park as soon as is practically possible. There are three categories of plants, each with its own management and control regulations. NEM: BA provides for the protection of South Africa's biodiversity within the framework of the National Environmental Management Act (Act No. 107 of 1998) [NEMA]. This act puts in place a framework for the management of IAS, regulations governing the management of IAS was published in July 2013 (Government Gazette No. R. 506).

Climate change, IAS, pollution and mining are amongst some of the key threats to protected areas (Alers *et al.*, 2007). Invasive and alien species are accepted to be one of the largest and fastest growing threats to biodiversity and the ecosystem services they support. These species can transform the structure and species composition of ecosystems by replacing indigenous species, either directly, by out-competing them for resources or by changing the way nutrients are cycled through the ecosystem. They also increase biomass, which in turn changes fire regimes and fire intensity (McNeely *et al.*, 2001). Foxcroft *et al.* (2013) identified biological invasions as one of the greatest threats to protected areas. The development of robust decision-making tools that are based on both invasive species traits as well as ecological principles, along with effective implementation, is key to the success of invasive species management programmes. The likelihood of protecting the park from the threats of IAS is dependent on sound management strategies, adequate resources and effective engagement with key stakeholders, effective legislation and policing of legislation. The likelihood of eradication or maintenance control varies considerably with species and terrain invaded. Rapid response is required to remove species before being allowed to build up large populations.

List of invasive species occurring in the park

Twenty-nine alien plant and animal species have been recorded for the park. In addition to the above, one extra-limital bird species has been recorded, and are listed in Table 13 below.

Table 13. List of alien and invasive plant and animal species recorded in the park.

Taxonomic classification	Scientific name	Common name	NEM: BA category	Current perceived level of threat
Birds	<i>Columba livia</i>	Rock dove	3	low
	<i>Passer domesticus</i>	House sparrow	3	low
	<i>Sturnus vulgaris</i>	Common starling	3	low
Mammals		Cattle		
		Donkey		
	<i>Canis familiaris</i>	Domestic dog		low
	<i>Capra hircus</i>	Domestic goat		low
	<i>Felis silvestris catus</i>	Domestic cat		low
Plants	<i>Argemone ochroleuca</i>	Mexican poppy	1b	low
	<i>Austrocylindropuntia cylindrica</i>	Cane cactus	1b	low
	<i>Catharanthus roseus</i>	Madagascar periwinkle	1b	low
	<i>Chenopodium album</i>	Lambs quarters		low
	<i>Datura inoxia</i>	Downy thorn apple	1b	low
	<i>Lantana camara</i>	Lantana	1b	medium
	<i>Melia azedarach</i>	Syringa	1b	low
	<i>Nicotiana glauca</i>	Wild tobacco	1b	medium
	<i>Opuntia articulate</i>	Articulated cactus		assessment needed
	<i>Opuntia microdasys</i>	Yellow bunny-ear cactus	1b	assessment needed
	<i>Prosopis glandulosa</i>	Honey mesquite	3	medium
	<i>Ricinus communis</i>	Castor oil bush	2	low
	<i>Salsola kali</i>	Tumble weed	1b	medium
	<i>Schinus molle</i>	Pepper tree	3	low
	<i>Tecoma stans</i>	Yellow bells	1b	low

Description of the land infested and assessment of the extent of infestation

In arid areas drainage lines are recognised as zones of high resource availability, however these areas are also prone to greater disturbances such as flooding as well as heightened pressure from herbivory and human activities that include water abstraction and other inappropriate land use practises (Milton & Dean, 2010). Resource availability drives IAS along with resource utilisation, propagule pressure (Richardson, 2006) as well as land disturbances such as flooding, herbivory pressure and inappropriate land use and these can all contribute to plant invasions.

The Orange River, which forms the northern boundary of the park as well as an international boundary with Namibia, is the main conduit for IAS into the park. The river is invaded with continuous pockets of IAS on



both sides of the river along the entire boundary with Namibia. These areas pose the greatest challenge to management as the Orange River is infested over the greater part of its length and brings a continual flow of propagules into the park as well as cross border. Furthermore, the Kook and Gannakouriep Rivers form tributaries to the Orange River and IAS have been recorded along their reaches. Management of IAS is currently undertaken along the length of the Orange River and the two tributaries. Invasions of predominantly *Prosopis glandulosa* and *Nicotiana glauca* are recorded within the rivers ecotonal footprint.

The footprint of IAS along these river sections is estimated at 5,577 ha of which the primary invader is *P. glandulosa* recorded at an average of 12 % density across its distribution range. Much of the habitat that the species invade is the riparian 'thickets' dominated by sweet thorn *Vachellia karoo* which provide important riverine habitat in the arid landscape. The Ebony tree *Euclea pseudebenus* occurs along low-lying water courses in the arid regions of South Africa. As a key tree species in the park its habitat, associated with riverine areas, needs to be protected from invasions of alien woody species such as *P. glandulosa* and *N. glauca* that could displace the species if there is no effective IAS management programme in these areas.

Status report on the efficacy of past control measures

The Working for Water (WfW) programme has been active in the park since the 2008 / 2009 financial year. From inception until the end of the 2016 / 2017 financial year R 6.268 million has been invested into the control and eradication of IAS with a further R 4.775 million planned for 2017 / 2018 and a further R16 million earmarked for the period up until 2020 / 2021. The programme has utilised 24,000 person days and cleared an estimated 4,300 initial ha and further 8,500 follow-up ha (cumulative). During this period, initial clearing primarily involved the mechanical and chemical control of *P. glandulosa* and *N. glauca* along the Orange River.

Clearing of *P. glandulosa* has been successful; however the need for systematic follow-ups has been identified as a critical objective for management into the future.

Current measures to monitor, control and eradicate invasive and alien species

The SANParks' IAS framework provides an integrated approach to IAS management, with the primary objective of meeting the biodiversity objectives of the park's management plan. The framework includes five vital components:

- Assessment and risk analysis;
- Priority setting;
- Early detection and rapid response;
- Control; and
- Restoration.

The spread of IAS into the park from the broader alien plant footprint and cadastral areas is a high risk. These areas will be monitored, assessed for risk of pathway movement into the park, prioritised in terms of eradication and treated accordingly. A full assessment and risk analysis of IAS in the park will enable priority setting. Prioritisation will then allow resources to be directed into ecologically sensitive and economically feasible areas. A generic set of criteria has been developed to prioritise areas and species. Once species and associated areas have been prioritised for treatment, this will be fed into an APO, which will form the basis of the motivation for funding annually. The APO will set out clearing schedules for each site, personnel requirements and costing. A long-term strategy will be developed for the areas within the park and adjacent buffers, which will assist in compiling an inventory, priority listing and allocation of resources over a five to ten year time frame. This long-term strategy will inform funding motivation and operations on an annual basis. Working with the South African National

Biodiversity Institute (SANBI) Early Detection and Rapid Response Programme, the park will aim to identify pathways into the park, so that new IAS introductions may be prevented, and to enable a rapid response to eradicate or contain infestation. Even though a new invasion may seem insignificant, it must be evaluated for risk and potentially prioritised for treatment to ensure the threat does not spread, which could potentially require exponentially more effort and resources to clear at a later stage.

Control methods, or an integrated combination thereof are designed to suit the target species and environment in which they occur. The following methods could be used within the park, cadastral and broad alien plant footprint boundaries:

1. Initial treatment (mechanical, chemical and biological).
 - Chainsaw – fell, debranch and stack;
 - Foliar spray – application of herbicide; and
 - Biocontrol release - collection of clean cladodes, propagation of biocontrol and deployment of agent.
2. Follow-up treatment (manual, chemical and biological).
 - Loppers and hand saws;
 - Foliar spray – application of herbicide; and
 - Biocontrol release - collection of clean cladodes, propagation of biocontrol and deployment of agent.
3. Integrated combination of methods.

The following species have been identified as a priority for control:

- *Prosopis glandulosa*
- *Nicotiana glauca*

Ongoing monitoring of potential habitats for all listed plant species is critical.

Indicators of progress and success, indications of when the programme is to be completed

The success of the control programme will be determined by the results gathered from the monitoring programme. These results will highlight the status of IAS infestation, densities and rate of spread. These in turn, will direct operational investment and the longevity of the programme in the park.

It is projected that, with effective management and sustained funding the key areas along the Orange River will be brought under control over the next 5 year cycle. Monitoring of effectiveness of methodology is important, as is the long-term monitoring for re-infestation or regrowth, post clearing.

This programme links with high-level objective 2 and objective 2.2 on page 40. To achieve the purpose of this programme, the actions listed in the table below will be implemented.

INVASIVE AND ALIEN SPECIES PROGRAMME					
High-level objective: To ensure the persistence of the uniquely arid adapted biodiversity by maintaining, conserving and restoring ecological processes as well as reducing human impacts within the landscape and geology associated with the Succulent Karoo and Desert biomes of the park.					
Objective: To restore the structure and function of degraded land by addressing the threats posed by soil erosion and alien and invasive vegetation.					
Sub-objective	Actions	Responsibility	POE	Timeframe	Reference
To systematically survey and list alien species in and around the park.	Survey the park and cadastral area to determine IAS (fauna and flora) abundance and distribution, and maintain updated species lists.	PM, BSP, CSD	Reports	Annually, Year 2 for cadastral area	
	Secure funding to evaluate the broader alien plant footprint to determine IAS (flora) abundance and distribution.	BSP	Funding allocated	Year 3	



INVASIVE AND ALIEN SPECIES PROGRAMME

High-level objective: To restore and conserve biodiversity, by understanding and managing the key ecological patterns and processes, and mitigating the effects of conflicting objectives.

Objective: To restore the structure and function of degraded land by addressing the threats posed by soil erosion and alien and invasive vegetation.

Sub-objective	Actions	Responsibility	POE	Timeframe	Reference
To prevent, where possible, the introduction of alien species.	Prohibit and where present remove alien species (fauna and flora) from staff quarters and tourism accommodation.	PM	Reports	Ongoing	
	Monitor, and / or where necessary, manage previously degraded areas within the park and adjacent to the park in order to reduce the risk of invasion or post clearing reinvasion.	PM, BSP	Results	Ongoing	
To ensure the effective and timely development and implementation of integrated control strategies, in such a manner that rapid response and long-term maintenance goals are met.	Maintain control of species and areas according to the current management programmes' APO.	BSP, PM	APO	Annually	
	Introduce biological control agents and / or other appropriate and novel methods (subject to risk-benefit evaluation) where appropriate and necessary.			Annually	
	Eradicate, where possible, all new incursions of alien species (fauna and flora) and monitor the efficiency of the eradication programme.	PM	Report	Ongoing	
	Monitor the efficacy of the clearing programmes.	PM, BSP, CSD	Reports	Ongoing	

10.3.4 Freshwater ecosystem programme

The purpose of the freshwater ecosystem programme is to strive for “natural” patterns and processes of water in the landscape, by appropriate conservation and utilisation of ground and surface water as well as associated ecosystems.

South Africa is a signatory to the CBD. Therefore, SANParks' strategic plan, management plans and conservation policies are informed by the CBD's Programme of Action on Protected Areas. In 2010, CBD member nations agreed to 20 Aichi Targets to stop loss of biodiversity by 2020. Target 11 states that, “by 2020, at least 17 % of terrestrial and inland water areas and 10 % of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well-connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscape and seascape”. South Africa was pro-active in adopting a freshwater conservation target. This target emerged from a series of participative workshops involving several government departments and national agencies [SANParks, Council for Scientific and Industrial Research and SANBI], and stated that at least 20 % of each inland water ecosystem type should be conserved (Roux *et al.*, 2006). The endorsement of a quantitative target was followed by a national planning exercise to identify strategic spatial priority areas for satisfying the 20 % target. The resulting conservation priorities, known as Freshwater Ecosystem Priority Areas (FEPAs), comprise 22 % of South Africa's river length and 38 % of wetland area (Nel *et al.*, 2011). Furthermore, the National Water Act No. 36 of 1998 requires that aquatic ecosystems' health be monitored.

An important step is to acknowledge freshwater ecosystems as biodiversity features in their own right that are central to a protected area’s conservation mandate. Even in protected areas such as national parks, freshwater ecosystems are often appreciated only for their functional utility such as game watering or providing attractive locations for tourist lodges, rest camps, lookout points and game drives. In the park, biodiversity associated with riverine habitats is driven by three main factors: (i) the climate and nature of the landscapes (e.g. temperature and underlying geology) that rivers drain; (ii) the flow characteristics of rivers (e.g. perennial, intermittent or ephemeral flows); and; (iii) the geomorphological zone or slope of a river (e.g. mountain headwater stream, foothills or lowland river). Accordingly, conservation of rivers also depends on the conservation of their surrounding terrestrial landscapes, their natural hydrological regimes (including the magnitude, frequency, duration, timing, and rate of change in water flow) and their longitudinal connectivity between different zones.

In arid and semi-arid landscapes, there is an intricate relationship between water, soil, vegetation and productivity. The capacity of these landscapes to regulate water is a major determinant of their functionality, of which grazing and rainfall are key drivers. In intact landscapes, nutrients and water will result in vegetated patches, which in turn will impede runoff (protecting against erosion), increase water infiltration and maintain soil biota and fertility. Increased grazing intensity will reduce vegetation cover, which leads to increased runoff and decreased water infiltration. At local scales, freshwater ecosystems are highly connected systems. Hydrological connectivity mediates the transfer of matter, energy and organisms via water within and between elements of the water cycle. Connectivity can be viewed along three gradients: longitudinal, lateral and vertical. Longitudinal connectivity refers to the pathway across the entire length of a stream or river. Lateral connectivity refers to the links between a water body and the adjacent land. Vertical connectivity refers to the connections between surface and groundwater.

The Orange River Basin extends into four countries; the Republic of Botswana, the Kingdom of Lesotho, the Republic of Namibia and the Republic of South Africa. It includes the total land area of Lesotho, most of the central part of South Africa and reaches to the southern part of Botswana as well as draining most of the southern half of Namibia. The Orange - Senqu River Commission came into existence on 03 November 2000 by agreement among the four basin member states in terms of the Southern African Development Community Protocol on Shared Watercourse Systems, with one of the primary aims being the integrated development and management of the water resources of the Orange River to the mutual and equitable benefit of all parties.

Although the freshwater ecosystems programme deals primarily with surface water, in this case the Orange River, it cannot be seen in isolation of groundwater resources. Monitoring the integrity of the portion of the Orange River that borders the park is essential, however, it will not be able to cover all the indicators involved in completing a full river ecosystem integrity assessment. It will focus on visual assessments of the in-stream habitats of the Orange River by screening potential water quality and flow problems over time. The Thresholds of Potential Concern (TPCs) still need to be developed at various levels to determine the need for responses.

A detailed lower level plan outlining the rationale and operational approach is available. This programme links with high-level objective 2 and objective 2.2 on page 40. To achieve the purpose of this programme, the actions listed in the table below will be implemented.

FRESHWATER ECOSYSTEM PROGRAMME					
High-level objective: To ensure the persistence of the uniquely arid adapted biodiversity by maintaining, conserving and restoring ecological processes as well as reducing human impacts within the landscape and geology associated with the Succulent Karoo and Desert biomes of the park.					
Objective: To manage minor disturbance by developing effective monitoring progress and where applicable minimize, control or prevent the impacts.					
Sub-objective	Actions	Responsibility	POE	Timeframe	Reference
To provide a rapid evaluation of the river should acute incidents occur such as fish kills, spillage of pollutants, algal blooms etc.	Implement the river monitoring level 1 assessment.	PM	Report	Annually	
	Establish an inventory, status and usage of boreholes and troughs within the park.	PM, CSD	Database	Year 2	Herbivory, re-introduction, nomadic stock LLPs
	Document the distribution and status of natural water sources in the park.				



10.3.6 Herbivory management programme

The purpose of this programme is to restore and maintain the process of herbivory. Herbivory management in the park will focus on vertebrates.

Herbivory is in effect a natural disturbance impact on plants, but also facilitates aspects such as seed dispersal, pollination and compensatory growth. Important though is that the gradient of disturbance intensity is spatial – some places should have intense levels while others have low levels of herbivory as a disturbance agent. Such gradients allow different combinations of all kinds of species to exist in response to herbivory disturbances. Some non-selective herbivores and / or livestock can serve as ecosystem engineers through mechanical structural changes they may induce. Disturbances with low herbivore intensity may not result in change at all. Individuals choose where to go in a landscape based on where resources are. Essential resources like water are the first determinant for many large vertebrates. The second is where individuals perceive safety from predators including man. They then choose places based on where replaceable resources are (e.g. one grass type versus another grass type). The intensity of herbivory will thus be a consequence of the spatial distribution and variability of resources. Ecosystems recover from disturbances such as herbivory through successional processes which helps create diversity.

The majority of the large wild mammals were hunted to extinction in this region in the early 1900s (Skead, 2011). When SANParks took responsibility for the management of the park in 1991, few mammalian herbivore species were still present. Species such as common duiker, greater kudu, grey rhebok, steenbok and klipspringer were recorded at the time. Due to continued hunting and domestic dogs present in the park, the status of some of these species (e.g. common duiker, steenbok and grey rhebok) is unknown. There have been no sightings recorded of these species for a number of years. Research is needed to determine the status of these species. Even so, SANParks re-introduced four species to the park between 2008 and 2016 including springbok, Hartmann's mountain zebra, gemsbok and red hartebeest.

Two key features typify the park, firstly, the park is a contractual park with an extensive history of livestock farming taking place inside the park. SANParks view livestock as 'naturalised' herbivores where the intensity with which livestock uses the landscape is influenced by where water is available or provided and how owners actively herd their livestock. Herders protect livestock against any predation. Managing these naturalised herbivores and their herbivory role thus requires mechanisms of mimicking population control as guided by maximum sustainable yield models given that livestock is a key asset for the contractual partners. The persistence of natural herbivores in the park face threats such as poaching and predation by domestic dogs that accompany herders. This creates excellent landscapes of fear and thus variability in how herbivores will use the landscape, but can also create intensive removal of individuals resulting in ecological traps – births cannot exceed deaths. Supplementary introductions may be required to ensure the role of herbivores even if SANParks implement domestic dog predation control. The second element is the absence of herbivores as key drivers in the Klein Duin / Oograbies Wes section. Here re-introductions followed by mimicking absent predation effects provide opportunities for partnerships with communities.

Decision-making for the management of herbivory is based on mimicking lost dispersal processes, as well as incomplete predation processes due to the unfeasibility of having large numbers of predators in the park. The number of herbivores to be removed or introduced is based on a joint decision-making process between scientists, veterinarians and park management. This process involves an evaluation of several herbivore population models (against trends in annual aerial survey results), satellite imagery that provides a spatial and temporal indication of vegetation quality (measured as "greenness"), vegetation surveys that incorporate the compositional and structural components of vegetation condition, and climate forecasts provided by the South African Weather Service.

A detailed lower level plan outlining the rationale and operational approach is available. This programme links with high-level objective 2 and objective 2.2 on page 40. To achieve the purpose of this programme, the actions listed in the table below will be implemented.

HERBIVORY MANAGEMENT PROGRAMME					
High-level objective: To ensure the persistence of the uniquely arid adapted biodiversity by maintaining, conserving and restoring ecological processes as well as reducing human impacts within the landscape and geology associated with the Succulent Karoo and Desert biomes of the park.					
Objective: To manage minor disturbance by developing effective monitoring progress and where applicable minimise, control or prevent the impacts.					
Sub-objective	Actions	Responsibility	POE	Timeframe	Reference
To establish essential resources across landscapes and habitats through the management of water provisioning and natural sources.	Establish an inventory, status and usage of boreholes and troughs within the park.	PM, CSD	Database	Year 2	Freshwater LLP
	Document the distribution and status of natural water sources in the park.	CSD, PM			Freshwater LLP
To manage the landscape of fear and risks of ecological traps by implementing robust dog management and restoring natural meso-predators.	Define the status of small mammalian herbivores in the park.	CSD	Report	Year 3	
	Define the status of meso-carnivores in the park.				
	Evaluate the role of domestic dogs and illegal harvesting in the persistence of small mammalian herbivores.				Nomadic livestock LLP
	Develop a collaborative annual domestic dog plan.	PM	Document	Year 2	
	Develop a restoration plan for small herbivores and meso-carnivores.	CSD	Document	Year 2	
To ensure the role of herbivores by restoring and maintaining natural herbivore assemblages through appropriate species introductions and off-takes that mimic ecological limitations while contributing to socio-economic opportunities.	Conduct mammalian herbivore census.	CSD	Report	Year 3, 6, 9	
	Recommend annual mammalian herbivore management responses using interactive population models integrated with naturalized livestock present.	CSD	Report	Year 3, 6, 9	
	Develop a herbivore restoration plan for Klein Duin / Oograbies Wes to support socio-economic development initiatives.		Document	Year 3	Re-introduction LLP

10.3.7 Fire management programme

The purpose of this programme is to determine the potential impact of fire on the small isolated Fynbos and Azonal vegetation units and its consequences for the faunal component and aesthetic values.

According to the National Veld and Forest Fire Act, No 101 of 1998, SANParks is obliged to be a member of the local Fire Protection Association (FPA) to gain full legal benefit thereof and stakeholder support. However, there is no need for a FPA in the Richtersveld region because the likelihood of the natural vegetation to burn and associated consequences should a fire occur, are relative low.

Fire is a rare but quite natural phenomenon in the arid Fynbos Biome, occurring predominantly in above average rainfall years after sufficient fuel loads have accumulated. Natural fires occur during the summer months due to lightning strikes associated with electric storms. However, a lack of historical records of fires and a lack of research pertaining to fire management in the area makes it difficult to put forward appropriate conservation objectives for fire management. The estimated rate of occurrence is approximately every 10 to 20 years for the Stinkfonteinberge Quartzite Fynbos while the Azonal Lower Gariep Alluvial Vegetation is more often burnt by local farmers / herdsman. They burn the *Phragmites* reeds found on the floodplains of the Orange River adjacent to the riparian vegetation to provide grazing for their livestock and clear the dense reeds for visual security. In dry years, these fires can spread into the adjacent threatened riparian vegetation. Fire was noted by locals in the Stinkfonteinberge Quartzite Fynbos in the early 2010s, however no formal records of this fire exist.

All fires need to be reported. This data will be collated and sent to the relevant scientists within Scientific Services. MODIS 250m satellite images will be used to map the fires.



This programme links with high-level objective 2 and objective 2.2 on page 40. To achieve the purpose of this programme, the actions listed in the table below will be implemented.

FIRE MANAGEMENT PROGRAMME					
High-level objective: To ensure the persistence of the uniquely arid adapted biodiversity by maintaining, conserving and restoring ecological processes as well as reducing human impacts within the landscape and geology associated with the Succulent Karoo and Desert biomes of the park.					
Objective: To manage minor disturbance by developing effective monitoring progress and where applicable minimise, control or prevent the impacts.					
Sub-objective	Actions	Responsibility	POE	Timeframe	Reference
To promote the natural fire regime in the region by suppressing and/or managing all veld fires.	Map all fire occurrences.	PM, CSD	Map, reports	As required	

10.3.8 Disease management programme

The purpose of the disease management plan is to acknowledge indigenous diseases as a component of biodiversity within the park, while preventing the introduction or impact of introduced diseases on wildlife and to minimise spread of disease from the park to neighbouring communities.

SANParks acknowledges its legal responsibilities with regard to managing diseases, especially controlled diseases, in the light of the requirements as set out in the Animal Diseases Act No. 35 of 1984. Whilst disease management options are limited in free-ranging wildlife, emphasis is on prevention of disease introduction (in particular alien diseases like bovine tuberculosis and canine distemper) and to reduce the risk and impact of indigenous wildlife diseases to neighbouring communities and their livestock. Due to the dynamic nature of disease and the continuous improvement of diagnostic tests, disease management depends on making the best decisions with the data available at the time.

One of the features of the park is that it serves to protect the traditional nomadic pastoralist lifestyle of the Nama people in this arid region. Due to the sparse rainfall and temperature extremes, the natural densities of wildlife and their associated diseases and vectors are low. However, there is the potential for transfer of pathogens around shared grazing between wildlife and livestock and therefore a disease monitoring and management plan is required. The park is also located in a trans-boundary conservation area with Namibia and therefore disease surveillance for early detection of introduced pathogens is required by the Department of Agriculture, Forestry and Fisheries. No wildlife diseases have been reported in the park (Hofmeyr *et al.*, 2012), but sheep scab *Psoroptes ovis* and blue sheep lice *Linognathus ovillus* and red lice *Bovicola ovis* are known to occasionally cause infestation in the communal sheep. The provincial state veterinary office in Springbok is responsible for providing veterinary extension and clinical services to stock farmers in the park, and usually responds to such parasite outbreaks with a targeted dipping campaign. Livestock are also monitored annually during the Anthrax vaccination campaign run by the State. Domestic dog densities in the surrounding areas are also low and therefore threats from rabies and distemper are thought to be low. It should be noted though that domestic dogs are not routinely vaccinated against rabies and distemper in the surrounding area.

This programme links with high-level objective 2 and objective 2.2 on page 40. To achieve the purpose of this programme, the actions listed in the table below will be implemented.

DISEASE MANAGEMENT PROGRAMME					
High-level objective: To ensure the persistence of the uniquely arid adapted biodiversity by maintaining, conserving and restoring ecological processes as well as reducing human impacts within the landscape and geology associated with the Succulent Karoo and Desert biomes of the park.					
Objective: To manage minor disturbance by developing effective monitoring progress and where applicable minimise, control or prevent the impacts.					
Sub-objective	Actions	Responsibility	POE	Timeframe	Reference
To set up an adequate surveillance system for dead, dying and culled animals as well as introductions and translocation.	Conduct a training course for disease syndrome identification and sample taking.	CSD, local State vet	Register	Years 5	
	Develop a reporting structure for disease incidence that allows for close interaction between local State vet, park staff, biotechnician and Scientific Services.	CSD, PM, local State vet	Reports	Year 1	
	Develop a quantitative risk assessment and associated disease mitigation actions for all animal introductions or translocations.	CSD, PM	Completed risk assessment	As required	
	Ensure blood, tissues and associated materials are banked whenever an animal is handled / captured / culled for translocation and veterinary or research purposes.	CSD	Biological samples	As required	

10.3.5 Species of special concern programme

The purpose of this programme is to ensure persistence of species and plant communities of special concern by identifying threatened and rare species, plant communities and threats and implementing species specific management interventions.

SANParks’ biodiversity values stipulate that, except in crucial instances for the survival of globally critically endangered species, management for system integrity and biodiversity must take precedence over species management. However, SANParks will strive to prevent extinction, within national parks, of species on the International Union for the Conservation of Nature (IUCN) global critically endangered or endangered lists, and will work with other conservation initiatives to secure and strengthen the future of such species over their historic distribution ranges. Species lists for the Klein Duin / Oograbies Wes section of the park are currently incomplete and further research is needed to compile these lists. Within this context, there are numerous species currently found in the park that are regionally threatened (Table 14 and 15 below).

The park’s vegetation has evolved according to Williamson (1995), within a water-stressed environment and therefore consists mainly of succulent plant species that are adapted to these harsh conditions. It is considered to be one of the world’s species richest succulent assemblies. The Bezuidenhout (1996) list of red data plant species comprised 48 threatened species and species of conversation concern, however with the updated plant species list the number of threatened plant species and species of conservation concern occurring in the park increased to 140 species (Red List of South African Plants, 2017; Van Wyk & Bezuidenhout, In prep.; Hilton-Taylor 1996).

Five species of mammals currently found in the park are regionally threatened (Child *et al.*, 2016). The leopard, Hartmann’s mountain zebra and Cape clawless otter are classified as Vulnerable and the grey rhebok and brown hyaena are Near Threatened. The current status of the grey rhebok in the park is uncertain as these animals have not been sighted in a long time, therefore their status needs to be investigated.

Nine bird species found in the park are currently threatened (Taylor *et al.*, 2015). The Ludwig’s bustard and martial eagle are regionally classified as Endangered, whereas a further five species are classified Vulnerable and two Near Threatened.

Of the 62 reptile species located in the park, three species are threatened (Bates *et al.*, 2014). Two gecko species are threatened, one classified as Vulnerable and the other as Near Threatened. One tortoise species found in the park is threatened, however the status of this species in the park is unknown. The shell of a speckled-dwarf tortoise *Homopus signatus* was located at the top of Paradyskloof many years ago and



shells of this species have been located on the Vandersterrberge, however there have been no recent live sightings of this species (Bauer & Branch, 2001).

Table 14. List of Species of Special Concern (SSC), excluding plants, which occur in the park.

Taxonomic classification	Scientific name	Common name	IUCN category - regional	IUCN category - global
Birds	<i>Neotis ludwigii</i>	Ludwig's Bustard	Endangered	Endangered
	<i>Polemaetus bellicosus</i>	Martial Eagle	Endangered	Vulnerable
	<i>Falco biarmicus</i>	Lanner Falcon	Vulnerable	Least Concern
	<i>Aquila verreauxii</i>	Verreaux's Eagle	Vulnerable	Least Concern
	<i>Gorsachius leuconotus</i>	White-backed Night Heron	Vulnerable	Least Concern
	<i>Ciconia nigra</i>	Black Stork	Vulnerable	Least Concern
	<i>Pelecanus onocrotalus</i>	Great White Pelican	Vulnerable	Least Concern
	<i>Calendulauda bartowi</i>	Bartow's Lark	Near Threatened	Least Concern
	<i>Eupodotis vigorsii</i>	Karoo Korhaan	Near Threatened	Near Threatened
Mammals	<i>Panthera pardus</i>	Leopard	Vulnerable	Least Concern
	<i>Equus zebra hartmannae</i>	Hartmann's mountain zebra	Vulnerable	Least Concern
	<i>Aonyx capensis</i>	Cape clawless otter	Vulnerable	Least Concern
	<i>Palea capreolus</i>	Grey rhebok	Near Threatened	Least Concern
	<i>Parahyaena brunnea</i>	Brown hyaena	Near Threatened	Near Threatened
Reptiles	<i>Pachydactylus cf. goodi</i>	Good's gecko	Vulnerable	Vulnerable
	<i>Homopus signatus</i>	Speckled dwarf tortoise	Vulnerable	Vulnerable
	<i>Goggia gemmula</i>	Richtersveld pygmy gecko	Near Threatened	Near Threatened

Table 15. The number and status of Red data plant species which occur in in the park. Data from 1996 and 2017 are included for comparison.

	CE	EN	V	NT	Rare	LC	Declining	DDT	NS
Bezuidenhout 1996	0	1	3	17	23	0	0	2	2
Van Wyk 2017	7	15	34	9	16	34	1	8	16

Key: CE = Critically Endangered; EN = Endangered; V = Vulnerable; NT = Near Threatened; LC = Least Concern; DDT = Data Deficient; NS = Not Sure.

This programme links with high-level objective 2 and objective 2.3 on page 40. To achieve the purpose of this programme, the actions listed in the table below will be implemented.

SPECIES OF SPECIAL CONCERN PROGRAMME					
High Level Objective – To ensure the persistence of the uniquely arid adapted biodiversity by maintaining, conserving and restoring ecological processes as well as reducing human impacts within the landscape and geology associated with the Succulent Karoo and Desert biomes of the park.					
Objective – To ensure persistence of species and plant communities of special concern by identifying threatened and rare species, plant communities and threats, and where applicable, develop and implement management responses.					
Sub-objective	Actions	Responsibility	POE	Timeframe	Reference
To understand the distribution, population status and current threats of SSC and prioritise for action where appropriate.	Compile a species list for fauna and flora and identify the species of special concern within this list for Klein Duin / Oograbies Wes.	PM, CSD	Reports	Ongoing	
	Develop an appropriated monitoring programme for identified species.				
	Establish knowledge base of the other species of concern that are listed and have not received attention to date.	CSD	Reports, documents, workshops	Ongoing	

10.3.9 Re-introduction programme

The purpose of the re-introduction programme is to re-establish viable populations of faunal or floral species that occurred in the park historically. This includes not only species that no longer occur in the park, but also those whose populations need to be supplemented in order to prevent local extinction or to enhance genetic diversity.

Re-introduction should only take place if there is good evidence that the species occurred in the area in historical times and consideration should be given to whether the original causes of local extinction have been removed. However, it should be noted that re-introductions cannot be based on the historical distribution of the species alone. Additional factors such as current habitat suitability, as well as population viability are central to the success of re-introductions and are addressed in the SANParks Policy Framework. All re-introductions need to be carefully considered against the objectives set out for the park, including consideration of stakeholder interests. These trade-offs are best addressed by undertaking risk benefit analyses (RBA), which should be conducted to weigh up the risks and benefits of re-introductions.

It is anticipated that the park will re-introduce new faunal species in the Klein Duin / Oograbies Wes section of the park at some stage in the near future.

This programme links with high-level objective 2 and objective 2.4 on page 40. To achieve the purpose of this programme, the actions listed in the table below will be implemented.

RE-INTRODUCTION PROGRAMME					
High-level objective: To ensure the persistence of the uniquely arid adapted biodiversity by maintaining, conserving and restoring ecological processes as well as reducing human impacts within the landscape and geology associated with the Succulent Karoo and Desert biomes of the park.					
Objective: To re-establish ecological patterns and processes by re-introducing and / or supplementing faunal and / or floral species that historically occurred in the park.					
Sub-objective	Actions	Responsibility	POE	Timeframe	Reference
To determine the need to re-introduce species that historically occurred in the area.	Identify species for re-introductions, conduct a RBA to determine feasibility of reintroduction.	PM, CSD	Reports	Ongoing	Herbivore, disease and habitat and vegetation LLPs
	Secure funding and partnerships to monitor and implement monitoring.				
To supplement currently small populations of particular species.	Establish a monitoring protocol for detecting and establishing population sizes for smaller species (e.g. small herbivores).	CSD, PM	Monitoring protocol	Year 5, 10	
	Submit proposals to Wildlife Management Committee (WMC) to source required species.		Proposals	As required	
	Supplement populations as per WMC recommendation.	PM, CSD	Reports	As required	



10.3.10 Climate change programme

The purpose of this programme is to recognise where the park may play an active role in contributing to the global effort to understand the threats of climate change to diverse arid desert ecosystems, sustainable livelihoods and cultural heritage of indigenous communities living in the area.

South Africa is actively involved in, and signatory to major global drives to deal with climate change such as the UN Framework Convention on Climate Change, the Intergovernmental Panel on Climate Change, Kyoto Protocol, Copenhagen Accord, the Cancun Agreement and more recently the Paris Accord, which has solidified actions amongst members. Other conventions such as the United Nations Convention to Combat Desertification and the CBD also have relevance for addressing mitigation and adaptation to climate change to enhance synergies in national parks and beyond. Currently, DEA is leading Phase III of The Long-Term Adaptation Flagship Research Programme in response to the South African National Climate Change Response White Paper (gazetted in October 2011), by undertaking climate change adaptation research and scenario planning for South Africa. The National Adaptation Plan will provide further guidance in this regard. SANParks Strategic Plan for 2016 – 2020 further describes how policies, ecosystem management frameworks and management plans, are designed to adopt various mitigating and adaptation interventions to prevent species extinction and ecosystem degradation due to impacts related to climate change. SANParks is mandated to contribute to South Africa's Biodiversity Sector Climate Change Adaptation Implementation Plan within municipalities closest to parks in accordance with the IDPs. It is expected that SANParks should develop a climate change adaptation policy in which expansion of protected areas in line with the NPAES remains a priority. The park is therefore required to actively play a role in contributing towards South Africa's objectives as stipulated in the South African National Climate Change Response White Paper described above.

The impact of climate change is already evident on livelihood and culture in the region. Increased wind speeds have resulted in loss of grazing potential that the community attribute to sand blown over vegetation and reduced recruitment potential. These conditions exacerbate the impact of grazing. The increased sand blown across the landscape also drives the loss of natural springs that herders previously used in the conservancy. Climate change may impact on the make-up of this cultural landscape.

There is also a need to have a better understanding of the potential impact of climate change on tourism, with subsequent identification of adaptation measures. Of particular concern are the impacts of heat waves on the ability and willingness of staff and tourists to partake in outdoor activities (or visit the park at all during certain times of the year) or the impact on key tourism products like the reliability and timing of the annual spring flowers. Unlike in the more urban parks, threats to tourism infrastructure are minimal. Although highly rare, increased floods from elsewhere along the Orange River may affect certain campsites and rest-camps. The opening and closing of the Orange River mouth could be an effective strategy to mitigate some of the impact.

There is a realisation that the park is already experiencing climate change and will continue to do so despite having a minimal direct contribution to greenhouse gas emissions (GHG), although due to the park's remote location, travel to the park does give rise to substantial carbon emissions. The major source of GHG emissions in the park buffer zone and adjacent region is from mining activities. While the potential of succulents and soil to store carbon needs further investigation, the park should implement management actions that ensure that its carbon footprint and that of its tourists are accounted for and reduced. Information gathered from the vegetation research projects and weather stations will be used in the climate change modelling.

This programme links with high-level objective 2 and objective 2.5 on page 40. To achieve the purpose of this programme, the actions listed in the table below will be implemented.

CLIMATE CHANGE PROGRAMME					
High-level objective: To ensure the persistence of the uniquely arid adapted biodiversity by maintaining, conserving and restoring ecological processes as well as reducing human impacts within the landscape and geology associated with the Succulent Karoo and Desert biomes of the park.					
Objective: To mitigate potential impacts of climate change on park biodiversity while promoting climate change adaptation by actively participating in the national climate initiatives.					
Sub-objective	Actions	Responsibility	POE	Timeframe	Reference
To understand how the variation in climate and extremes impact on biodiversity, tourism and natural resource use by neighbouring communities in the park.	Document impacts of climate change on endemic species of special concern, threatened ecosystems and processes important for the park and the region.	CSD, SAEON	Reports, publications	Year 1, ongoing	Northern Cape Biodiversity Sector Plan, South African National Climate Change Response White Paper
	Document impacts of climate change on the partner stakeholders' livelihoods, wildlife resource use and cultural heritage.	PM, CSD	Reports, surveys, research projects	Annually	
To reduce and manage vulnerability of critical biodiversity areas, landscapes and cultural heritage sites in the park and thereby improve resilience and adaptive capacity.	Implement programmes that ensure survival and resilience of species of special concern and ecosystems to climate change through expansion plans, rehabilitation and reduction of desertification inside the park and its buffer zone.	Various	Reports	Ongoing	Northern Cape Biodiversity Sector Plan, Richtersveld Municipality SDF
	Collaborate with the communities to develop locally relevant adaptation actions that restore ecological infrastructure while aligning with International, National and Regional Climate Change Adaptation initiatives	CSD, PM	Report	Year 2, 4, 6, 8, 10	Eco-tourism, Green Economy, Integrated land-use, Bioregional planning and management programme
To promote green initiatives to reduce carbon footprint in our area of interest.	Monitor and measure the carbon footprint of the park and develop effective ways to reduce it and contribute towards SANParks achieving its year on year target.	CSD, PM	Report, publications	Year 2, ongoing	South African National Climate Change Response White Paper, SANParks APP
To communicate threats and response activities exerted by climate change to stakeholders.	Enhance workforce climate literacy.	CSD, PM	Report	Ongoing	
	Engage communities regarding the effect of climate change.				
To monitor and evaluate the impact of the implementation programmes, and adapt as required	Collect, analyse and archive climatic data and document and collate impacts related to extreme climatic events in the park.	CSD, PM	Archived reports, updated databases	Annually	
	Evaluate park preparedness and vulnerability.		Report	Year 2, 4, 6, 8, 10	Namakwa District Biodiversity Sector Plan; Vulnerability Index
	Audit the park's green initiatives.	PM	Report	Year 2, 4, 6, 8, 10	
	Keep abreast with evolving knowledge on global climate change and feedback information.	CSD, PM	Minutes of meetings and forums	Ongoing	



10.3.11 Information programme

The purpose of this programme is to identify, understand and collate information about organisms, factors and habitats that can be defined as biodiversity assets and to identify threats to their existence through co-operative research studies.

The term ‘asset’ is considered to be something useful or valuable to a person or organisation (Soanes & Stevenson, 2004). In the context of this programme, the biodiversity assets are therefore defined as: ‘valuable organisms, habitats and factors within the park that significantly contribute to sustaining the unique biodiversity and ecosystems of the park. These biodiversity assets will range from being endemic to providing vital processes that sustain the ecosystems of the Succulent Karoo and Desert biomes within the park.

To decide which organisms, habitats or factors are biodiversity assets to the park, factual knowledge need to be generated about them through research studies. Thus ensuring that Park Management is best informed to implement the Management Plan. Generating knowledge through research is an ongoing activity throughout SANParks and has contributed significantly towards biodiversity management and the identification of key biodiversity assets (Asner & Levick, 2012; SANParks, 2012). Key biodiversity assets (*i.e.* hotspots for biodiversity, landscape features, cultural heritage and fresh water ecosystem) have been identified through research and public participation processes as some of the unique attributes deserving conservation attention. Such information is then accessible to enhance biodiversity management, identification of research gaps and implementation of the park management plan.

Although the park was only proclaimed in 1991, research has been executed on sites more than 20 years before its proclamation. These sites are now within the park. One of the first research projects conducted here investigated the dynamics of succulent plants under different climatic conditions over a 17-year period (Jürgens *et al.*, 1999). Since then there has been a steady increase of registered research projects in the park, ranging from studies that are investigating climate to ones investigating the impact of altered water-flow to the riparian vegetation. The majority of this research is focused on fauna and flora. The remoteness of the park from major research institutions (and SANParks research nodes) does, however, result in it having less executed and published research projects compared to the other parks (SANParks, 2012 to 2015).

This programme links with high-level objective 2 and objective 2.6 on page 40. To achieve the purpose of this programme, the actions listed in the table below will be implemented.

INFORMATION PROGRAMME					
High-level objective: To ensure the persistence of the uniquely arid adapted biodiversity by maintaining, conserving and restoring ecological processes as well as reducing human impacts within the landscape and geology associated with the Succulent Karoo and Desert biomes of the park.					
Objective: To define biodiversity assets and identify threats by collating existing information and facilitating co-operative research.					
Sub-objective	Actions	Responsibility	POE	Timeframe	Reference
To assess and understand the ecological status of the biodiversity assets of the park and identify their research and monitoring needs.	Collate and summarise past and new assets from research findings and identify and develop research and monitoring project needs on their outstanding issues.	CSD	Publications, articles and reports	Year 3	Vegetation programme, freshwater programme

INFORMATION PROGRAMME					
High-level objective: To ensure the persistence of the uniquely arid adapted biodiversity by maintaining, conserving and restoring ecological processes as well as reducing human impacts within the landscape and geology associated with the Succulent Karoo and Desert biomes of the park.					
Objective: To define biodiversity assets and identify threats by collating existing information and facilitating co-operative research.					
Sub-objective	Actions	Responsibility	POE	Timeframe	Reference
To identify threats and develop mitigation and adaptation measures related to the biodiversity assets of the park.	Collate data from previous & current research projects / monitoring programmes and develop further research / monitoring needs where appropriate.	CSD	Reports, publications	Year 3	Climate change programme

10.3.12 Nomadic stock farming programme

The purpose of this programme is to mitigate the impacts of the nomadic stock grazing regime on biodiversity.

The Richtersveld communal rangeland is one of the richest botanical deserts of all environmental hotspots in the world. At the same time, it is also a cultural landscape encompassing the two thousand year old transhumance pastoral livelihood of the Nama people and their sustainable use of and relationship with the rangeland. The Nama people practiced a traditional lifestyle, which can be described as a subsistence economy with livestock farming and the collection of plant material for medicinal use. Contrary to the normal practice of excluding nearly all human land use in national parks, the grazing resources of the park remain under the communal tenure use of several pastoralists for livestock production. These factors together converge to present a unique environment of one of the world’s most important sites for the conservation of succulent flora and the preservation of a livelihood which was once a common way of life throughout the world.

Communal land tenure in the Richtersveld is based upon membership and a series of rights and duties with respect to the use of the land. Each pastoralist has the right of access to areas of the commonage, which provide grazing. Thus, tenurial grazing arrangements occur by respectful understanding ‘who is grazing where’ and are currently based on informal consensus amongst the pastoralists. The original inhabitants remain within the park and have agreed to limit the total number of livestock grazing within the confines of the park. A total of 26 farmers are allowed to keep their herds of animals in the park. These animals graze unhindered. The herds of livestock in the Richtersveld community area consist primarily of domestic goats *Capra hircus* and some sheep *Ovis aries*, especially the fat-tailed variety. Other animals include horses and wild donkeys. Livestock produce is both used domestically as part of the family’s diet, as well as a source of income when selling live animals and meat. Livestock marketing in the Richtersveld is extremely irregular. Farmers sell their animals to members of the village, freelance speculators in the region or nearby butcheries. The shortage of markets, local slaughterhouses and refrigerators means that there is a tendency to keep a surplus of animals.

The lifestyle of herders inside the park can be described as semi-nomadic subsistence (Hendricks, 2004) dependent on livestock farming and the collection of plant material for ethnobotanical purposes. This means that these herders primarily maintain an existence living off the produce and income from their livestock. They constantly move their livestock from one stock post to another depending on the availability of forage and water for their animals. Most of the herders would allow their livestock to graze the undulating and mountainous terrain during winter when shrubs and other bushes are green and high in moisture content. During summer, herders settle along the Orange River where their animals have access to constant water and feed on the leaves of riverine trees and grazing lawns. The livestock is kept at a stock post, the place where livestock farmers keep their animals during the night and return to the pasture every night (Hendricks *et al.*, 2005). Most of the farmers ‘kraal’ their animals during the night to protect them from predators, but at the same time, it is also easier for livestock farmers to handle the animals there.

This programme links with high-level objective 2 and objective 2.7 on page 41. To achieve the purpose of this programme, the actions listed in the table below will be implemented.



NOMADIC STOCK FARMING PROGRAMME

High-level objective: To ensure the persistence of the uniquely arid adapted biodiversity by maintaining, conserving and restoring ecological processes as well as reducing human impacts within the landscape and geology associated with the Succulent Karoo and Desert biomes of the park.

Objective: To mitigate the impacts of the nomadic stock grazing regime on biodiversity by identifying an optimal grazing regime, developing management protocols, implementing these and ensuring compliance.

Sub-objective	Actions	Responsibility	POE	Timeframe	Reference
To maintain an inventory of livestock inside the park.	Count the number of livestock herds and the size of each herd inside the park.	PM, CSD	Number of animals	Year 1, 4, 7, 10	Herbivore LLP
	Document the ownership structure of each herd inside the park.		Ownership	Year 1, 4, 7, 10	Herbivore LLP
To develop and implement guidelines for the effective management of livestock farming inside the park.	Develop a Grazing Management Plan for livestock farming inside the park.	CSD	Document	Year 1	
	Implement the Grazing Management Plan for livestock farming inside the park.	PM	Report	Year 2, ongoing	
	Establish an inventory and maintain boreholes and drinking troughs within the park.			Ongoing	
To monitor and evaluate the impact of livestock farming on the biodiversity inside the park.	Monitor vegetation differences in and outside enclosures.	CSD	Report	Year 1, 4, 7, 10	Species of Special Concern LLP
	Map movement patterns of herds.		Database	Year 1, 4, 7, 10	
	Monitor fuel wood species and quantity collection.	PM	Inventory	Ongoing	
To manage and control the donkey and cattle populations inside the park.	Count the number of donkeys and cattle inside the park.	PM	Database	2018	Herbivore LLP
	Ensure all donkeys and cattle are controlled and managed.		Document	2018	
To manage and control problem animals inside the park.	Investigate and capture problem animals.	PM	Report	As required	
	Translocate problem animals to other areas inside park or conservation areas.		Risk Benefit Analysis		

10.3.13 Outcomes programme

The purpose of this programme is to evaluate outcomes of management interventions for biodiversity by co-operative design and implementation of monitoring programmes.

Protected areas are under increasing threat from a range of external and internal pressures on biodiversity. With SANParks primary mandate being the conservation of biodiversity, monitoring is an essential component of measuring the outcomes of management interventions for biodiversity.

All the biodiversity actions identified in the management plan are expected to be implemented in order to achieve the park's desired state. It is therefore vital that management track progress towards achieving these outcomes. Various tools and processes have been adopted to track progress. The Management Effective Tracking Tool (METT) assessment is conducted biennially to measure strategic achievements. The park also participates in the State of Biodiversity Management Effectiveness (SoBME) assessment that is done every five years. SANParks has

designed a goal audit assessment tool, adopted from the METT scoring model. The total score of 67% and above is used as a guideline to determine sound management. During these assessments, the information demonstrating the achievement of the agreed outputs (management actions) is provided. The outcomes from the park audits need to be incorporated into the annual plan of operations to ensure that the management actions are implemented. Lessons learnt should also be fed back into the adaptive management planning cycle (see Section 10.7). This evaluation criteria is also complemented by engagements at science-management forums where progress on implementation of biodiversity programmes is continuously assessed and adaptive management applied in order to achieve the expected outcomes.

This programme links with high-level objective 2 and objective 2.8 on page 41. To achieve the purpose of this programme, the actions listed in the table below will be implemented.

OUTCOMES PROGRAMME				
High-level objective: To ensure the persistence of the uniquely arid adapted biodiversity by maintaining, conserving and restoring ecological processes as well as reducing human impacts within the landscape and geology associated with the Succulent Karoo and Desert biomes of the park.				
Objective: To evaluate outcomes of management interventions for biodiversity by co-operative design and implementation of monitoring programmes.				
Actions	Responsibility	POE	Timeframe	Reference
Participate in the METT assessments.	PM, CSD	Report	Year 2, 4, 6, 8, 10	
Ensure that biodiversity outcomes from the park goal audit (including METT) are incorporated into the annual plan of operations for implementation.	CSD, PM	Document	As required	
Participate in the SoBME assessments.	PM, CSD	Report	Year 5, 10	
Evaluate implementation progress of biodiversity programmes during Science Management Forums and adapt designs (where required implement monitoring programmes).	CSD, PM	Documents	Annually	

10.4 Responsible Tourism programme

The purpose of the Responsible Tourism (RT) programme is to act as an enabler for conservation through enhancement of the financial sustainability of the park with optimal benefit to the local communities.

SANParks' has adopted the national Responsible Tourism Standard, SANS1162:2011. The RT programme thus looks at all aspects of the current and potential tourism product and service offering in order to ensure that the park meets the required standards for environmental and financial sustainability, local community beneficiation and customer service excellence, and this starts by establishing the parks responsible tourism baseline. This baseline will need to be established in order to identify a clear point of departure from which to work. A measure for customer service excellence is measuring the customer feedback, tourism quality standards, universal access (UA) standards, and then evaluating the visitor management aspects relating to the park, for example gate access efficiency. Implementation of RT enables operational efficiency and thus creates the environment for new product development, packaging and dynamic pricing in order to maximise yield, though dependencies such as the availability of advanced technologies do exist.

The park is considered to have a high scenic value with high biodiversity value. Whilst the park is not a key driver of tourism income generation for SANParks, it has revenue generating potential and shows steady growth. The park is not yet breaking even, but is seen to be a park that could play a significant role as a socio-economic catalyst in the region. Currently, the larger part of tourism income is generated by accommodation offered within the park and the conservation fees charged for park access. A greater contribution can be achieved with extensive and effective tourism planning, and reviewing and adapting to the constantly changing environment.

A detailed lower level plan supports this programme. This programme links with high-level objective 3 and objectives 3.1 – 3.7 on page 41.



RESPONSIBLE TOURISM PROGRAMME

High-level objective: To promote and enhance adventure-based tourism opportunities in the unique desert landscape, enabling visitor engagement through eco-, geo- and cultural experiences, whilst growing revenue, protecting and ensuring remote tranquillity and sense of place.

Responsible Tourism performance objective: To establish, maintain and continuously improve the park's Responsible Tourism performance, by implementing SANS1162.

Sub-objectives	Actions	Responsibility	POE	Timeframe	Reference
To communicate 2022 Responsible Tourism Strategy to all park stakeholders.	Educate and motivate staff in the responsible tourism principles and enhance tourism capacity and skills base within staff complement.	Tourism standards	Training records	Year 3	RT Policy 2012-2022, RT Strategy
	Inform the park stakeholders of the SANParks 2022 Responsible Tourism Strategy and potential impact on the park	PM	Park Forum minutes	Ongoing	2012-2022 RT Strategy
To enable continuous improvement of Responsible Tourism performance.	Establish a baseline (gap analysis) to identify current performance of the Responsible Tourism Standard, SANS1162:2011.	Tourism standards	Responsible Tourism standards manual	Year 3	SANS1162, RT Strategy
	Engage in Responsible Tourism assessment, in order to measure performance improvement in relation to RT baseline targets.	Tourism standards	Responsible Tourism assessment / audit report	Year 3, 6, 9	SANS1162 Responsible Tourism baseline targets
	Engage in Tourism Quality Assurance assessments and grading, as appropriate.	Tourism standards	Tourism quality assessment report, tourism grading assessment report	Year 3, 6, 9	RT Strategy
	Engage in UA assessments.	Tourism standards	UA assessment report	Year 3, 6, 9	UA Strategy UA Protocol
Visitor experiences objective: To continually enhance the visitor experience within the park, by effective visitor engagement, management, interpretation and quality of facilities offered.					
Establish and / or monitor, where relevant, Responsible Tourism requirements for commercial and Public Private Partnership (PPP) partners.	Engage with commercial and PPP operators regarding SANParks' commitment to RT principles and agree to targets and assessment with operators.	BDU	Updated agreements, assessment reports	Year 3, 6, 9	SANS1162, Individual PPP agreements

RESPONSIBLE TOURISM PROGRAMME

High-level objective: To promote and enhance adventure-based tourism opportunities in the unique desert landscape, enabling visitor engagement through eco-, geo- and cultural experiences, whilst growing revenue, protecting and ensuring remote tranquillity and sense of place.

Visitor experiences objective: To continually enhance the visitor experience within the Park, by effective visitor engagement, management, interpretation and quality of facilities, activities and services offered.

Sub-objectives	Actions	Responsibility	POE	Timeframe	Reference
To ensure effective visitor management in the park.	Create a park visitor management plan, including priorities for implementation.	GM: Visitor Management	Document	Year 3	Visitor management protocol
	Implement the visitor management plan actions according to the prioritised list.	PM		Year 3, ongoing	
	Maintain the visitor management plan taking changes in the environment into account.	GM: Visitor Management		Year 3, 6, 9	
To enable a quality visitor experience through dynamic interpretation of biodiversity, cultural and heritage value of the park.	Create a park interpretation plan, considering existing interpretation, and including priorities for implementation.	GM: Visitor Management	Document	Year 3	Interpretation Protocol
	Implement the interpretation plan actions according to the prioritised list.	PM		Year 3, ongoing	
	Maintain the interpretation plan taking changes in the environment into account.	GM: Visitor Management		Year 3, 6, 9	
	Identify mechanisms for improving the parks UA facilities and services, with reference to existing facilities for persons with mobility impairments and access for the aged.	Tourism standards	Business targets	Year 3	UA protocol
	Implement improvements to accessibility for persons with mobility impairments.	PM	Report	Year 3, 6, 9	UA Plan
	Identify and implement opportunities for engaging visitors with sensory impairments, e.g. hearing and sight.	PM	Report	Ongoing	UA Plan
	Engage in regular UA training of customer facing staff, to enable an empathetic and appropriate response.	PM	Register	Year 3, 6, 9	UA Protocol
To ensure adequate, effective and accurate visitor communication within and on approach to the park.	Update and maintain the signage manual.	PM, GM: Interpretation	Document	Year 3	Branding guideline
	Complete the implementation of and maintain signage requirements.	PM, GM: Interpretation	Report	Year 3, 6, 9	Signage manual
	Tourism guide to be completed and maintained.	Regional Marketing Manager	Document	Year 2	Interpretation plan, sales and marketing strategy
	Ensure clear and accurate communication of park rules, rates and facilities on all platforms, including within the park, on correspondence, and on the website.	Regional Communication Manager, PM	Park rules, park information on website, reservation attachments, interpretive signage	Ongoing	Visitor management policy and protocols, SOPs



RESPONSIBLE TOURISM PROGRAMME

High-level objective: To promote and enhance adventure-based tourism opportunities in the unique desert landscape, enabling visitor engagement through eco-, geo- and cultural experiences, whilst growing revenue, protecting and ensuring remote tranquillity and sense of place.

Visitor experiences objective: To continually enhance the visitor experience within the Park, by effective visitor engagement, management, interpretation and quality of facilities, activities and services offered.

Sub-objectives	Actions	Responsibility	POE	Timeframe	Reference
To ensure adequate, effective and accurate visitor communication within and on approach to the park.	Ensure all staff are adequately trained (including conservation and support staff), to communicate key park, tourism and biodiversity information to visitors, and where appropriate to access information, if unknown.	PM	Register	Ongoing	Park rules, visitor information
Service excellence objective: To enable appropriate customer- focused service excellence, by understanding and responding appropriately to market preferences.					
To continually enhance customer service standards applicable to all visitors and other travellers.	Manage and resolve feedback received from the public timeously (all sources) visiting or having visited the park.	PM	Closure of customer feedback issues	Ongoing	Guest feedback
	Review and assess customer feedback received and action taken to address customer service recommendations and targets, reporting on these in the Tourism Quality Assurance Assessment Report.	PM	Report	Annually	Guest feedback
	Regularly assess facilities to ensure standards are maintained and operational procedures are optimised.	PM	Report	Year 3, 6, 9	Tourism grading standards
Grow tourism revenue objective: To grow income through tourism by providing visitors with an appropriate and a diverse range of products and services, whilst protecting the tranquillity and sense of place.					
To ensure optimal development and maintenance priorities to enable revenue optimisation.	Identify events, activities and facilities that may be considered for development within the park.	PM	Product development framework	Year 10	Park management plan
	Identify specific sites (including cultural heritage sites) with tourism development potential.	PM	Product development matrix	As required	
	Review of development plan in order to ensure optimal tourism development priorities without eroding conservation values.	PM	Document	Year 3, 6, 9	
	Conduct a feasibility study of priority opportunities in order of perceived value added and income generated.	Product Development Steering Committee	Document	As required	Product development guideline
	Review of maintenance and replacement / refurbishment priorities.	PM	Document	Year 3, 6, 9	Tourism maintenance protocol

RESPONSIBLE TOURISM PROGRAMME

High-level objective: To promote and enhance adventure-based tourism opportunities in the unique desert landscape, enabling visitor engagement through eco-, geo- and cultural experiences, whilst growing revenue, protecting and ensuring remote tranquillity and sense of place.

Grow tourism revenue objective: To grow income through tourism by providing visitors with an appropriate and a diverse range of products and services, whilst protecting the tranquillity and sense of place.

Sub-objectives	Actions	Responsibility	POE	Timeframe	Reference
To ensure optimal development and maintenance priorities to enable revenue optimisation.	Implement identified development projects.	PM	Document	Year 10	Park management plan
Operational efficiency objective: To enable cost savings within tourism operations, by ensuring operational effectiveness and controls.					
To ensure optimal returns from commercial operations.	Support retail outlet(s) and restaurant(s) promotion in order to maximise concession income generating potential.	PM	Report	Ongoing	Concession income
	Review tourism operational procedures and processes for possible leakage, and put processes in place to limit these.	PM	Report	Ongoing	Tourism plan, Responsible Tourism standards
	Review staffing practices and where possible improve management of staff complement through peaks and troughs.	PM	Document	Year 3, 6, 9	Resource management plan
	Provide regular staff training in operational procedures and customer service.	PM	Register	Annually	Training plan and policies
To market the park to SANParks' broader markets and park specific target markets.	Identify park specific markets, and devise strategies for expanding on these markets, where not included in the strategic and focus markets for SANParks.	Regional Marketing Manager	Document	Year 2, 4, 6, 8, 10	Sales and marketing strategy
	Create opportunities to market the park to Black Middle Class and Previously Disadvantaged Individuals (PDI) markets, with specific focus on local communities.	Regional Marketing Manager		Year 2, 4, 6, 8, 10	Sales and marketing strategy
	Expand the reader group for the park. Create awareness for people who have never visited the park.	Regional Marketing Manager		Year 2, 4, 6, 8, 10	Sales and marketing strategy
	Find opportunities for media coverage and enhance existing - editorials, magazines, social media ensuring to maintain high media visibility.	Regional Marketing Manager		Year 2, 4, 6, 8, 10	Sales and marketing strategy
	Maintain marketing collateral for the park.	Regional Marketing Manager		Year 2, 4, 6, 8, 10	Sales and marketing strategy
	Sponsor journalists and build relationships with journalists that will promote the park to key source and yet untapped markets.	Regional Marketing Manager, Regional Communications Manager, GM: Sales and Marketing		Ongoing	Sales and marketing strategy



RESPONSIBLE TOURISM PROGRAMME

High-level objective: To promote and enhance adventure-based tourism opportunities in the unique desert landscape, enabling visitor engagement through eco-, geo- and cultural experiences, whilst growing revenue, protecting and ensuring remote tranquillity and sense of place.

Promotion objective: To promote the park with its species rich, unique landscapes and cultural experiences, by developing and implementing a variety of sales, marketing and communication strategies.

Sub-objectives	Actions	Responsibility	POE	Timeframe	Reference
To market the park to SANParks' broader markets and park specific target markets.	Explore opportunities for promoting Park attractions in conjunction with tourism partners e.g. Beaufort West Tourism Organisation.	PM	Minutes of meetings	Ongoing	
	To enhance the research and collection of data relating to untapped tourism markets.	Research Manager	Document	Year 3, 6, 9	
	Where appropriate, promote park events, internally, to the customer base and / or target markets.	Regional Sales and Marketing / Manager		Ongoing	Sales and Marketing Strategy

Equitable access objective: To enable equitable access to the park and facilitate Small, Medium and Micro Enterprise (SMME) opportunities, by supporting local stakeholder interests and needs.

To engage with stakeholders in order to enable access to the park by a variety of transport mechanisms.	Engage with local and regional government, commercial business operators and the local community to identify opportunities for improving local community (especially PDIs) access to the park.	PM	Park Forum minutes	Quarterly	
To understand the desired community interaction with the park in order to encourage community visitation and interaction with the park.	Attending farmers' union meetings to communicate with neighbouring farms to keep communications open.	PM	Minutes of meetings	Quarterly	
	Identify unexplored opportunities for encouraging visitation by communities surrounding the parks. Using the park forum create opportunities for enhancing the community interaction with the park.	PM	Minutes of meetings	Annually	Community engagement

10.5 Constituency building and benefit sharing

The People and Conservation department in SANParks was established to build constituencies among people in support of the conservation of the natural and cultural heritage assets within national parks. This is achieved through strengthening relationships with neighbouring communities, contributing to local socio-economic development through job creation and skills development, cultural resource and indigenous knowledge management, environmental education programmes, awareness and interpretation programmes, social science research, and youth outreach. Stakeholders are engaged on different levels and in diverse ways according to their needs. It is of vital importance to the existence, development and expansion of the park to maintain good relations with these stakeholders.

10.5.1 Stakeholder relationship programme

The purpose of this programme is to establish and maintain meaningful and beneficial relationships with a wide range of stakeholders supporting SANParks core business of biodiversity conservation and tourism. The stakeholder programme is a key strategy to achieve the overall desired state of the park.

The park aims to enhance biodiversity conservation through the promotion of a conservation ethic and developing healthy community custodianship for the park. Co-operative, collaborative and mutual beneficial relationships are essential to reach park objectives and ultimately to ensure the sustainability of the park. Both formal and informal partnerships are initiated, maintained and nurtured with Government, conservation entities, business partners, communities, various non-governmental organisations, community based organisations, the media, customers and employees. The park / SANParks will use the media (printed media, radio, television and online media) as a key communication tool to keep stakeholders informed and to promote a positive image of SANParks. Media relations are managed by the Regional Communication Manager and Park Manager and are subject to SANParks' communication protocols.

The park works closely with the communities of Eksteenfontein, Kuboes, Lekkersing, Sanddrift and the stock farmers to promote mutually beneficial community relations. Various community projects / initiatives are either implemented or supported by the park. These include amongst others:

- Collaborate with the various Community Development Workers (CDWs) on community events, outreach programmes and job creation;
- Attend regular meetings with the stock farmers to discuss operational matters of mutual interest;
- Collaborate with various Northern Cape provincial Departments to co-present or support programmes / initiatives that focus on health, arts and culture *etc.*; and
- Support the implementation of the GEF5 project that could lead to the identification of economic opportunities linked to, or compatible with, conservation and sustainable biodiversity and heritage resource use.

The park has a close working relationship with the SANParks Honorary Rangers. They contribute both in cash and in kind to park programmes. Their vast expertise is used by the park to fulfil its vision and mission. They contribute in the following ways, to name but a few:

- Support and assist in environmental education;
- Fundraising; and
- Participate in park operations when requested;

A detailed lower level plan outlining the rationale and operational approach is available. This programme links with high-level objective 4 and objective 4.1 on page 41.

STAKEHOLDER RELATIONSHIP PROGRAMME					
High-level objective: To contribute to the well-being of people in the Richtersveld region by facilitating, promoting and advocating opportunities for the development of sustainable socio-economic initiatives associated with the park.					
Objective: To enhance stakeholder relationships through participation in various informal and formal fora.					
Sub-objectives	Actions	Responsibility	POE	Timeframe	Reference
To improve co-operation and build sound stakeholder relationships.	Engage with government structures such as the Department of Economic Development and Tourism and to present the annual Cultural Event.	PM	Minutes of meetings	As required	
	Collaborate and engage with conservation entities (such as Endangered Wildlife Trust, SANBI and Universities).	PM	Reports, minutes of meetings, workshops	As required	
	Engage in mutually beneficial projects with the CDWs for the benefit of local communities.	PM	Minutes of meetings, joint events	Monthly or quarterly	SANParks Guidelines for Stakeholder Participation
	Maintain good visitor relations through providing a customer feedback service.	PM	Visitor book analysis, customer care logs, customer care performance	Ongoing	



STAKEHOLDER RELATIONSHIP PROGRAMME

High-level objective: To contribute to the well-being of people in the Richtersveld region by facilitating, promoting and advocating opportunities for the development of sustainable socio-economic initiatives associated with the park.

Objective: To enhance stakeholder relationships through participation in various informal and formal fora.

Sub-objectives	Actions	Responsibility	POE	Timeframe	Reference
To improve co-operation and build sound stakeholder relationships.	Maintain good media relations through media releases, radio sessions and active participation on social media sites.	Regional Communications, PM	Media release, social media posts	As required	SANParks' Communications Protocol, Media Policy & Procedures
	Maintain liaison with Honorary Rangers, including identification of park requirements and needs.	PM	Minutes of meetings	Ongoing	
	Support the implementation of the GEF 5 project.	PM	Report	Year 1 - 5	

10.5.2 Socio-economic development programme

The purpose of this programme is to play a significant, targeted and effective role in contributing to local economic development, economic empowerment and social development in communities and neighbouring areas. This will be achieved by partnering with national and local government through participating in government programmes such as the Expanded Public Works Programme (EPWP), contributing to the municipal IDPs, and beneficiation and local and regional procurement.

The SANParks socio-economic development programme is aligned to Government's National Development Plan and the DEA objectives to enhance fair and equitable sharing of benefits from biological resources and to improve the socio-economic benefit flow from biodiversity conservation. A number of programmes are implemented throughout SANParks to contribute to the development of local communities, including, waste management, social legacy, Expanded Public Works Programme, and Environmental Protection, Infrastructure Development, the wildlife economy and blue economy. The Green and Blue economy programmes contribute to the development and growth of green sector industries in local communities through provision of access to and use of wildlife and marine resources in national parks. Wildlife economy initiatives include game breeding, sustainable hunting, eco-tourism and bio-prospecting whilst marine economy include fishing and related aquaculture activities. The decision to implemented green or blue economy initiatives will depend on the outcome of feasibility studies. The establishment of viable ecotourism enterprises for the economic benefit of the local communities is another key area for the programme. The sourcing of goods and services from the local communities is also promoted through the identification and ring fencing of opportunities for the benefit of the local enterprises.

The EPWP remains a significant focus area of SANParks to effectively contribute to local socio-economic development while achieving biodiversity outcomes. The park currently manages various programmes namely WfW, Working for Ecosystem and environmental monitors. These programmes focus on poverty alleviation and are labour intensive projects that create temporary jobs in the short term while simultaneously achieving biodiversity objectives. Since its inception in 2008 until 2016, 170 temporary jobs were created and R 15,278,434 has been spent on operations and the management of these programmes. Skills development and capacity building is regarded as a cornerstone to enable economic activity. Emphasis is placed on skills development in the above programmes. The park will continue to facilitate and encourage skills development through learnership and internship programmes in a broad range of fields (*i.e.* reception, field guiding experiential training for students). The park continues to

support and develop local initiatives or small businesses that provide services that are required during specific events or functions. Where possible, local SMMEs, and especially previously disadvantaged individuals are favoured when sourcing contractors, provided that all procurement conditions as stated in SANParks procurement policy are adhered to.

Local social development initiatives are supported through collaborating with the Northern Cape Departments of Basic Education, Social Development, Health, Agriculture, Labour, National Department of Environmental Affairs, Department of Environment and Nature Conservation and the Richtersveld Local Municipality. Examples of these initiatives include community clean-up programmes, HIV/Aids and Women’s month awareness campaigns, and drug abuse awareness programmes, amongst others. The park continues to give preference to local community members when filling vacancies (temporary and permanent positions) as per the contractual agreement, and thereby enhancing the economic upliftment of communities in general. The annual recruitment of female students for the South African Tourism College in Graaff-Reinet, in partnership with the park, also supports job creation in the communities.

A detailed lower level plan outlining the rationale and operational approach is available. This programme links with high-level objective 4 and objective 4.2 on page 41.

SOCIO-ECONOMIC DEVELOPMENT PROGRAMME					
High-level objective: To contribute to the well-being of people in the Richtersveld region by facilitating, promoting and advocating opportunities for the development of sustainable socio-economic initiatives associated with the park.					
Objective: To contribute to economic development within the Richtersveld by identifying opportunities and facilitating skills development programmes.					
Sub-objectives	Actions	Responsibility	POE	Timeframe	Reference
To maintain and strengthen relationship with local government.	Ensure projects are incorporated into the local and district municipal IDPs.	PM	IDP's	Annually	
	Collaborate with local government departments on socio-economic programmes.	PM	Events, minutes of meetings	As required	
To provide socio upliftment, employment, skills development and business opportunities for local residents, entrepreneurs and business.	Identify additional opportunities for implementation of the EPWP programmes.	BSP, PM	Feasibility study and business plan	Annually	
	Identify opportunities to contribute to local economic benefit through projects or contributions such as the wildlife economy.	PM	Report	Ongoing	
	Provide employment and skills development through the implementation of the EPWP programmes.	BSP, PM	Report	Annually	
	Recruit staff locally when filling permanent and temporary vacancies.	PM	Establishment table	As required	SANParks Recruitment Policy
	Provide skills development opportunities for permanent and temporary staff.	PM, BSP	Annual Training plan, Individual Development Plans	Annually	SANParks Learning and Development Strategy
	Procure goods and services locally, providing preference to local BBBEE-accredited suppliers.	PM	BBBEE Procurement Report	As required	SANParks Commercialisation Strategy, SANParks Supply Chain Policy



SOCIO-ECONOMIC DEVELOPMENT PROGRAMME

High-level objective: To contribute to the well-being of people in the Richtersveld region by facilitating, promoting and advocating opportunities for the development of sustainable socio-economic initiatives associated with the park.

Objective: To contribute to economic development within the Richtersveld by identifying opportunities and facilitating skills development programmes.

Sub-objectives	Actions	Responsibility	POE	Timeframe	Reference
To demonstrate the impact of the park on local socio-economic upliftment.	Commission research on the socio-economic benefit of the park.	CSD, PM	Research contract	Year 2	

10.5.3 Environmental education and interpretation programme

The purpose of this programme is to build constituencies amongst people in support of the park's conservation endeavours by playing a significant, targeted and effective role in promoting a variety of educational opportunities and initiatives.

An integrated approach to environmental education and interpretation has been adopted in SANParks. A broad stakeholder base is targeted and relevant programmes addressing a variety of issues are presented. The current beneficiaries of this programme are mainly school and youth groups and special interest groups. The approach takes the form of organised, high quality interactive activities, which are categorised into:

- Formal programmes:**
 These programmes target the formal education sector and are directed at school groups and communities adjacent to the park. This is achieved through facilitating visits to the park and outreach programmes. The programmes are aligned with the school Curriculum Assessment Policy Statement (CAPS). Examples of these formal programmes are the experiential training programme, calendar - and special day commemorations and providing opportunities for students from tertiary institutions to complete their experiential training.
- Informal programmes:**
 The informal programmes are aimed at park visitors and community-oriented initiatives targeting specific stakeholders such as the broader community and especially women, youth and people living with disabilities. The content of the programmes is conservation issue-specific. Examples of these informal programmes are information sharing (*ad hoc* talks, presentations and posters), SANParks Week, interpretive leaflets and signage.

Interpretation is provided to visitors in the form of information leaflets such as species lists and visitor maps. Interpretative signage is currently limited and there is a need to develop appropriate informative signage. The park has an environmental education camp at Potjiespram that are utilised by school / community groups. Educational programmes can be provided in this camp according to specific needs.

Because most schools experience transport challenges coupled to the poor condition of the gravel road to the park, the local schools find it difficult to visit the park to engage in environmental education programmes. A sponsored park bus is used to transport learners to the park to ensure that the environmental education programmes continue.

The proposed ‘Richtersveld Desert Botanical Garden’ (which includes the Richtersveld Indigenous Nursery) to be established representing the indigenous flora of South Africa’s Desert Biome, is to be based at Sendelingsdrift. This will be a joint venture between SANParks and SANBI that will focus on amongst others; the facilitation of research opportunities, indigenous plant collections and collection management, nursery management, low maintenance landscaping of the Sendelingsdrift Rest Camp gardens and information sharing and promoting knowledge of the vegetation and associated wildlife.

A detailed lower level plan outlining the rationale and operational approach is available. This programme links with high-level objective 4 and objective 4.3 on page 41. To achieve the purpose of this programme, the actions listed in the table below will be implemented.

ENVIRONMENTAL EDUCATION AND INTERPRETATION PROGRAMME					
High-level objective: To contribute to the well-being of people in the Richtersveld region by facilitating, promoting and advocating opportunities for the development of sustainable socio-economic initiatives associated with the park.					
Objective: To create an awareness of, and support for the park’s endeavours by facilitating formal and informal educational initiatives.					
Sub-objectives	Actions	Responsibility	POE	Timeframe	Reference
To plan, develop and present formal education programmes for organised school and other youth groups.	Develop an environmental education plan and update annually.	PM	Document	Year 1 and ongoing	CAPS
	Organise and conduct environmental education programmes for schools including calendar days.	PM	Reports	Ongoing	
	Organise and conduct applicable youth development programmes that will benefit the local communities.	PM	Reports	Ongoing	
	Organise and conduct outreach programmes in the identified communities.	PM	Reports	Ongoing	
	Develop new and update existing programme information.	PM	Documents	As required	CAPS
	Arrange and facilitate community awareness programme initiatives targeting specific stakeholders on conservation issues.	PM	Reports	Year 1, ongoing	
	Facilitate presentations and talks for special interest groups.	PM	Reports	As required	
	Review and update current materials (programmes and activities).	PM	Programmes	As required	
	Implement the agreement to ensure the successful establishment and maintenance of the Richtersveld Desert Botanical Garden.	PM, CSD	Reports	Ongoing	Agreement

10.5.4 Cultural heritage programme

The purpose of this programme is to consolidate, sustain and manage the significance, authenticity and integrity of the tangible and intangible cultural heritage resources for which the park is responsible, for the enjoyment and benefit of all South Africans and of the world.

The management of the cultural heritage resources is guided by national legislation, policies and procedures within SANParks. The National Heritage Resources Act (NHRA) No 25 of 1999 provides the framework for the maintenance and conservation of heritage resources in accordance with the standards and procedures set out by the South African Heritage Resources Agency (SAHRA). SANParks policies such as the Cultural Heritage Policy (2011), the Heritage Objects Collections Management Policy (2011), and Guidelines for Burials and Scattering of Ashes (2010) and the Development and Maintenance of Heritage Sites (2011) provides further guidance. The Site Management Plans will also specify the management and monitoring actions to be implemented.

The park safeguards various cultural heritage sites. Whilst some sites are not well known, others are threatened by possible inappropriate development and impact from tourists / mining and animals. All the known sites need to be managed and protected. It will also be important to conduct more surveys in order to update information generated by previous surveys. The results of this work should be entered into a



geographic information system (GIS) database to facilitate monitoring and management. The cultural heritage programme also include oral history and the documentation of indigenous knowledge. The oral history collection project aims to build a relationship between the park and communities by recovering and interpreting information relating to cultural heritage, specifically related to the areas incorporated within the park. The process of identification of cultural heritage sites (cultural mapping) and development of Site Management Plans will be conducted in conjunction with local community members and the organisations representing community interests, as well as relevant academic institutions and researchers.

Access by visitors and local communities, interpretation, risk mitigation and monitoring of the sites are important components for the management of these sites. Updating the tourism information and interpretation will allow tourists to experience sites that are easily accessible in the park. An example of this is the petroglyph trail which is highlighted as an attraction in the park guide document, and can be enhanced by adding GPS co-ordinates and pointing out its easy access. Interpretive signage for accessible cultural sites and a proper map of cultural sites will be ideal to promote cultural heritage in the park. There is a need for a nomadic lifestyle display of the indigenous people at the main reception of the park. In order to fully comply with all management requirements for cultural heritage resources in the park, a number of initiatives have been planned and are being implemented.

This programme links with high-level objective 5 and objectives 5.1 – 5.4 on page 42. To achieve the purpose of this programme, the actions listed in the table below will be implemented.

CULTURAL HERITAGE PROGRAMME					
High-level objective: To preserve and promote the diverse cultural heritage of the Richtersveld through identification, maintenance and effective management of tangible and intangible assets and values for current and future generations.					
Objectives	Actions	Responsibility	POE	Timeframe	Reference
To identify and document cultural tangible and intangible assets and values in order to update, maintain and disseminate the park's cultural heritage inventory.	Carry out a survey of the park to identify all sites.	PM	Documents	Year 3	
	Create and update a full inventory of cultural resources.	PM	Database	Year 3	NHRA
	Record the oral history of the park.	PM	Database	Ongoing	
	Support ongoing cultural heritage research.	CSD, PM	Registered research projects	Ongoing	
To conserve the tangible and intangible cultural heritage assets and values through effective management and where relevant sustainable utilisation.	Develop a cultural heritage management plan.	PM	Document	Year 4	
	Implement the cultural heritage resources management plan.	PM	Reports	Year 5, ongoing	Cultural Heritage Management Policy
	Develop, implement and report on a monitoring plan.	PM	Document, reports	Year 1, and ongoing	NHRA
	Develop and review site specific management plans for selected sites.	PM	Documents	Year 4, 9	NHRA
	Draft the SAHRA Section 9 Annual Report on the park's Cultural Heritage Management.	PM	Report	Annually	NHRA

CULTURAL HERITAGE PROGRAMME					
High-level objective: To preserve and promote the diverse cultural heritage of the Richtersveld through identification, maintenance and effective management of tangible and intangible assets and values for current and future generations.					
Objectives	Actions	Responsibility	POE	Timeframe	Reference
To improve the cultural knowledge and awareness of local communities and visitors to the park through the interpretation and education of various programmes.	Identify and develop sites that are suitable for tourism.	PM	Report	Year 2, 5, 8	
	Develop an interpretation plan as part of each Site Management Plan.	PM	Document	Year 4	
	Identify and develop sites that are suitable for tourism.	PM	Report	Year 2, 5, 8	
	Develop an interpretation plan as part of each Site Management Plan.	PM	Document	Year 4	
	Incorporate cultural heritage component into environmental education and interpretation programmes.	PM	Documents	Ongoing	SAHRC
	Provide visitor access to selected sites as a guided activity.	PM	Reports	Ongoing	
To evaluate outcomes of management interventions for cultural heritage by co-operative design and implementation of monitoring programmes.	Evaluate the outcomes of the implementation of the cultural heritage resources management plan.	PM	Reports	Ongoing	Cultural Heritage Management Policy

10.6 Effective park management

Effective park management programmes (including daily, weekly, monthly quarterly and annual actions, reports and reviews) ensure that the values and objectives of the park are maintained. These programmes put in place the systems and processes that enable proactive management of the park’s objectives. This section outlines the management programmes, objective and actions that assist in effective park management such as environmental management, financial management (e.g. procurement, reporting), budgeting, maintenance planning, and monitoring compliance.

10.6.1 Environmental management programme

The purpose of this programme is to minimise negative operational impacts on the environment and set clear guidelines for the management of environmental impacts.

The Minister of the DEA has, in terms of section 24(2) of the NEMA, identified activities that may not commence without authorisation from the competent authority. The NEMA is of general application throughout South Africa and relevant provisions therefore apply to the park.

Given the national importance of the park, it is vital to manage this park in accordance with the required environmental standards. Proper management of new developments and operational activities within the park can only be achieved through appropriate planning and effective controls. A number of management tools are used to develop and manage the park in a manner consistent with the relevant legislation and SANParks policy framework. These key tools and controls used by the park form the basis of an environmental management framework.

Further to the provisions of the NEMA, the park will implement best practice to guide all operational activities that may have an impact on the environment. These activities will cover any new infrastructure development that is not listed under the NEMA, general maintenance *etc.* The development of best practice operating procedures will be guided by the precautionary principal. The precautionary principal states that if an action might cause harm to the environment, in the absence of a scientific consensus that harm would not ensue, the burden of proof falls on those who would advocate taking the action.

Sendelingsdrift and all the affiliated mines (Aasplant, Blouplant, Jakkalsberg, Okta and Reuning) are all under the management of Trans Hex Group. These mines are currently not operational, but they are not formally closed either. Little to no rehabilitation has been conducted in these areas, but processes are in



place for mapping and drawing up a 10-year closure plan, which will include potential rehabilitation plans. The park needs to ensure that the current impact and development of mining do not increase by encouraging the monitoring, evaluation and rehabilitation of affected areas.

This programme links with high-level objective 6 and objective 6.1 on page 42. To achieve the purpose of this programme, the actions listed in the table below will be implemented.

ENVIRONMENTAL MANAGEMENT PROGRAMME					
High-level objective: To strive for effective management and administrative support services through good corporate governance enabling the park to achieve its objectives.					
Objective: To strive for best practise and ensure compliance with environmental legislation through improved governance and environmental risk management.					
Sub-objectives	Actions	Responsibility	POE	Timeframe	Reference
To manage and reduce the impacts of park activities on the vital attributes.	Identify and map all current mining activities and continuously engage with the affected parties to ensure that rehabilitation plans are put in place.	PM	Map	Year 3	
	Make all environmental legislation available to relevant staff.	PM	Electronic / hard copy of applicable legislation	Ongoing	
	Ensure that EIAs and heritage impact assessments are completed for listed activities.	PM	Documents, reports	As required	
	Conduct internal scoping for all activities / developments that may potentially impact on the environment.	SGM:SP, PM	Documents	As required	
	Provide an environmental management plan (EMP) to contractors / service providers when operating in the park.	SGM:SP, PM	Document	As required	
	Enforce the requirements as set out in the EMP.	PM	Inspection checklist, report	As required	
	Develop and implement a set of best practice procedures for the identified activities.	PM	Standard operating procedures	Year 2	
	Develop and implement emergency response plan/s for identified activities.	PM	Documents	Year 2	
	Implement the water and electricity savings programme.	PM	Green energy devices	Year 7	

10.6.2 Risk management programme

The purpose of the programme is to update and maintain the park's risk profile and to manage risks accordingly. SANParks regards the management of business risks as an integral part of management across all operations.

In line with corporate governance best practices and as per PFMA requirements, the Board of SANParks has formalised the risk management processes by adopting a Corporate Risk Management Framework (CRMF). As its foundation, the risk management framework follows an enterprise-wide risk identification and assessment process, based on thorough understanding of the environment in which the organisation operates and the strategic corporate objectives it intends to deliver on.

The main aim of the CRMF is to instil a culture of corporate risk management awareness and risk ownership as a joint responsibility. This will provide SANParks with a comprehensive understanding of all identified risks and their potential impact on the achievement of objectives, thereby creating a good basis for the effective management of all risks to remain within the risk appetite of the organisation.

Acknowledging that all activities occurring at different levels within the organisation are exposed to the various types of risks, the focus of this framework is to shift the attention of this organisation towards a philosophy of optimising the balance between potential risks and the potential rewards that may emanate from both pro-active and conscious risk oriented actions. As such, SANParks maintains a corporate profile of the identified key strategic challenges it faces. This profile is communicated to the Board and is reviewed on an on-going basis. The risk profile reflects among others the risks identified as well as how each is addressed and or monitored.

At individual park level, the Park Manager is responsible for risk management. Being the link between the operational activities and its environment on the one hand, and the corporate support and management structure on the other, the park manager is in many instances, responsible for implementation of corporate initiatives, programmes, management plans and others that form part of the SANParks strategy to address or mitigate issues of risk. Examples are the implementation and roll-out of a safety and security plan, implementing and maintaining ecological monitoring systems to identify and assess the impact of environmental change, and complying with financial and cash-flow directives especially in economic depressed times.

Similarly, the Park Manager needs to ensure that emerging issues of risk, that can jeopardise achievement of the park (and SANParks corporate) objectives, are timely identified and assessed in terms of possible severity. In consultation with the corporate support structure such issues are either assessed to be within the management capacity of the park and its existing resources, or the matter is elevated to a corporate level, where a specific risk management strategy is agreed upon, resources allocated where applicable, and a risk management or monitoring plan is implemented.

This programme links with high-level objective 6 and objective 6.2 on page 42. To achieve the purpose of this programme, the actions listed in the table below will be implemented.

RISK MANAGEMENT PROGRAMME					
High-level objective: To strive for effective and efficient management and administrative support services through good corporate governance enabling the park to achieve its objectives.					
Objective	Actions	Responsibility	POE	Timeframe	Reference
To establish and maintain effective, efficient and transparent systems of risk management.	To identify and assess risks for all operations in the park.	PM	Register	Quarterly	CRMF
	To develop responses to address and prevent or mitigate issues of risk.	PM	Document	Annually	PFMA, OHS Act, NEM: PAA,
	To monitor effectiveness in terms of the risk response plan and improve as needed.	PM	Report	Quarterly	Park risk profile

10.6.3 Financial management and administration programme

The purpose of this programme is to ensure sound financial management and administration. As a public entity, SANParks manages the public funds entrusted to the organisation in accordance with the Public Finance Management Act, Act 1 of 1999 (as amended by Act 29 of 1999), and it is listed as Schedule 3 Part A: 25 public entity. Financial management and administration encompasses the following, trade income, staff debtors, creditors, financial administration and supply chain management (SCM). Support is also provided by the regional financial and administration manager and the regional SCM practitioner that is based in Mokala National Park. Without incisive financial management of the park, there can be no realistic conservation effort.



Trade income manages all income received by the park which includes monthly billing of staff debtors, fuel sales and confirming payments received. The administration and finance unit will verify and ensure that all transactions captured in the financial system correspond with the income received and expenditure incurred. The administration and finance unit ensures capturing of invoices on the system to ensure payment of all suppliers and service providers and the follow-up of outstanding invoices and queries received from suppliers. The Park Manager, Finance, Human Resource and Administration Officers are responsible to supervise, guide and provide the necessary assistance with the budget process, asset management and related administration. SANParks budget policy dictates a zero-based approach, which implies that every category must be critically assessed, evaluated and supported by an approved business plan. Annual budgets should be compiled in accordance with budget guidelines and instructions issued by the Corporate Finance Division. The Park Manager, in collaboration with middle management will ensure sound and proper budget management.

Middle management is responsible for procuring goods and services, as well as ensuring compliance and managing contracts with the assistance of the Finance and Human Resources and Administration Officers and the Regional SCM Practitioner. Middle management, with the support of the Human Resources and Administration Officers are responsible for asset control and manage a wide range of assets in support of the park. The park will ensure that all park operations and park projects are cost-effective and financially sound. In addition, particular attention will be given to developing a diverse income base and proactive financial networking to maintain and improve the financial sustainability of the park.

This programme links with high-level objective 6 and objective 6.3 on page 42. To achieve the purpose of this programme, the actions listed in the table below will be implemented.

FINANCIAL MANAGEMENT AND ADMINISTRATION PROGRAMME					
High-level objective: To strive for effective and efficient management and administrative support services through good corporate governance enabling the park to achieve its objectives.					
Objective: To ensure sound financial management and administration.					
Sub-objective	Actions	Responsibility	POE	Timeframe	Reference
To attain effective financial management.	Ensure less than 1% variance on cost of operations.	PM	Statements with <1% variance	Ongoing	
	Ensure sound financial management of special projects – BSP.	BSP	Budget targets achieved	Ongoing	
	Participate in the independent audit of financial records.	PM	Report	As required	
	Address audit findings.	PM	Report	As required	
To grow revenue (Including alternative sources of revenue).	Identify new and align existing business opportunities within the commercialisation programme of SANParks.	PM	Opportunities identified in line with policy	Ongoing	
	Identify possible external funding to supplement current income streams.	PM	Funding proposals submitted	Ongoing	
To improve the management of financial resources.	Prepare accurate and realistic annual budgets in consultation with management team that are in line with the sound management plan objectives.	PM	Annual budgets prepared	Annually	

FINANCIAL MANAGEMENT AND ADMINISTRATION PROGRAMME					
High-level objective: To strive for effective and efficient management and administrative support services through good corporate governance enabling the park to achieve its objectives.					
Objective: To ensure sound financial management and administration.					
Sub-objective	Actions	Responsibility	POE	Timeframe	Reference
To improve the management of financial resources.	Provide monthly financial reports timeously by cost centre.	PM	Reports	Monthly	
	Review the insurance schedule and submit to corporate.	PM	Documents submitted	Annually	
	Submit insurance claims as and when required	PM	Claims	As required	
To ensure proper asset and SCM.	Verify and manage assets registers.	PM	Register	Bi-annually	
	Assist with the procurement of goods and services.	PM	Reports	Ongoing	
	Manage and maintain existing contracts for the supply of goods and services.	PM	Register	Ongoing	
	Ensure sound management of vehicle fleet (<i>i.e.</i> logbooks, services, licencing and fuel management).	PM	Logbooks, service records, fuel card statements	Monthly	

10.6.4 Human capital development programme

The purpose of this human capital development programme is to ensure that the park has an adequate human resources function to render effective conservation, visitor and supporting services. SANParks has developed corporate human resources policies, guidelines and procedures to guide the park and its workforce in an effectively organised structure while delivering the outputs of the management plan.

By adhering to these policies, guidelines and procedures, the park will ensure that competent staff is appointed, and that current staff will be managed in an effective manner to keep them positive, proactive and committed to their tasks and responsibilities. This will also ensure that human resource management will comply with the relevant national legislation. Park human resource capacity is not only defined by development of current staff, but requires the holistic management of the appropriate human capital. This includes the creation of a learning environment, developing leadership skills, sharing of knowledge and experiences as well as offering staff wellness programmes to employees and their families. This will assist staff in dealing with the negative effects of lifestyle diseases and other lifestyle challenges (*i.e.* financial planning). The Human Resources and Administration Officer must report on new appointments, resignations, attendance registers, overtime claims, leave *etc.* A salary instruction is prepared from this for processing and preparation of monthly salaries. The park reviews training needs on an annual basis and submits the training needs analysis and requirements for approval to Head Office. Compilation of training needs commences with the compilation of Individual Development Plans for each staff member and is then followed by training, skills development and performance appraisals. Park management encourages all staff to improve their levels of skills and qualifications in their relevant field of expertise through study bursaries and training on an on-going basis.

The park currently (2017) has 31 permanent positions, seven temporary, seven Environmental Monitors and 115 contract positions (including internships, temporary workers, BSP and EPWP workers). Additional management functions and infrastructure, especially in tourism and conservation departments as outlined in this plan, will make it necessary to investigate the need to grow the staff establishment.

This programme links with high-level objective 6 and objective 6.4 on page 42. To achieve the purpose of this programme, the actions listed in the table below will be implemented.



HUMAN CAPITAL DEVELOPMENT PROGRAMME

High-level objective: To strive for effective and efficient management and administrative support services through good corporate governance enabling the park to achieve its objectives.

Objective: To ensure sufficient and effective staff capacity to achieve management objectives by adhering to corporate human resource policies and guidelines.

Sub-objectives	Actions	Responsibility	POE	Timeframe	Reference
To ensure the park attracts and retains the most suitable human capital.	Preparation and processing of monthly salaries and employee benefits and leave management.	PM	Salary instructions	Ongoing	
	Ensure implementation of the prescribed disciplinary code and procedures.	PM	Reports	As required	
	Conduct regular employment equity and skills development forum meetings.	PM	Minutes of meeting	Quarterly	EE report submitted
	Fill vacancies as per employment equity targets.	PM	EE statistics	Ongoing	
To implement plans and skills development strategies to meet the strategic goals of the organisation.	Identify training needs and conduct training interventions within budget allocation.	PM	Document, reports	Annually	
	Assist employees with applications with regard to study bursaries, staff accommodation bookings, changes in medical status, banking changes and assist with queries to medical aid regarding unpaid medical accounts.	PM	Documents	Ongoing	
To implement plans and skills development strategies to meet the strategic goals of the organisation.	Participate in the internal and independent audit of human capital documentation.	PM	Report	As required	
	Address audit findings.	PM	Report	When required	
To ensure the park attracts and retains the most suitable human capital.	Develop human capital in the fields of tourism, conservation and administration through the internship programme.	PM	Payroll	Annually	
	Develop human capital in the field of people and conservation and ecotourism by introducing tourism and conservation experiences to learners and community groups.	PM	Learner and community groups addressed	Annually	
To implement workplace wellness programmes.	Conduct wellness awareness workshops.	PM	Workshops	Annually	Wellness policy
	Provide private facilities within the park to enable employee's access to the wellness programme.	PM	Facility	Ongoing	Wellness policy

HUMAN CAPITAL DEVELOPMENT PROGRAMME					
High-level objective: To strive for effective and efficient management and administrative support services through good corporate governance enabling the park to achieve its objectives.					
Objective: To ensure sufficient and effective staff capacity to achieve management objectives by adhering to corporate human resource policies and guidelines.					
Sub-objectives	Actions	Responsibility	POE	Timeframe	Reference
To implement workplace wellness programmes.	Identify and refer employees that require assistance through the employee wellness programme.	PM	Number of referrals	As required	Wellness policy
	Invite professionals to the park to promote awareness on OHS and health issues.	PM	Attendance registers	Ongoing	OHS Act
	Commemorate events related to wellness (e.g. AIDS day, world blood donor day, days of activism on non-violence against women).	PM	Attendance registers	Annually	Wellness policy

10.6.5 Information and records management programme

The purpose of the programme is to establish and maintain a database of park information.

Management of the park requires that appropriate data and information is collected, maintained and made readily accessible to staff responsible for all aspects of management. Data is not only essential for formulating effective long-term management objectives, plans, programs and systems, but also for educating and informing residents, associations, user groups, local authorities, provincial and national decision and policy makers, international organisations and aid / donor agencies.

This programme links with high-level objective 6 and objective 6.5 on page 42. To achieve the purpose of this programme, the actions listed in the table below will be implemented.

INFORMATION AND RECORDS MANAGEMENT PROGRAMME					
High-level objective: To strive for effective and efficient management and administrative support services through good corporate governance enabling the park to achieve its objectives.					
Objective: To achieve best practice in the field of information and records management by complying to the Records Management Legislative framework and policies, thereby ensuring care of all vital records in SANParks.					
Sub-objectives	Actions	Responsibility	POE	Timeframe	Reference
To develop and implement a records management and file plan for the park in accordance with SANParks policies and procedures.	Review the existing records management and file plan of the park, and implement a single file plan.	PM	File plan	Year 2	National Archives and Records Services of SA Act
	Implement the records management and file plan.		Records and documents filed	Ongoing	Corporate file plan and policy
	Ensure appropriate access to park files and records in accordance to corporate records management policy and guidelines.		Access procedures recorded and implemented	Ongoing	Corporate file plan and records management policy

10.6.6 Infrastructure programme

The purpose of this programme is to provide guidance for the upgrading and maintenance (day-to-day and scheduled) of infrastructure. This is primarily to ensure that the park's infrastructure (buildings, roads, fences *etc.*) and services infrastructure (provision of water, electricity and waste management) is well maintained and its capacity is continually improved in order to provide safe, reliable, increasingly environmentally friendly and affordable products to its clients and visitors. The technical department's key responsibility is the delivery and implementation of departmental programmes and to ensure the realisation of set goals regarding the above.



Infrastructure in the park consists of facilities in support of conservation (such as management roads and tracks, office facilities, staff housing, fences, bulk services, airstrip, workshops and stores) and tourism (*i.e.* tourist roads and tracks, office facilities, staff housing, bulk services, public viewing points, bird hide, picnic sites, tourist accommodation and swimming pools). These facilities enable staff to execute their respective duties towards achieving the park's objectives and providing a tourism product at the best possible standard.

Management policies and procedures ensure that infrastructure is maintained, renovated, upgraded and replaced at the required intervals and specify design norms and standards, including national construction regulations, "green building" and "touch the earth lightly" principles as well as electricity, water saving measures and minimising waste. The 5-year rolling maintenance plan addresses issues related to securing funding for upgrading, renovation / maintenance and replacement. The technical department continues to periodically review and assess performance in an attempt to align activities and allocate resources.

This programme links with high-level objective 6 and objective 6.6 on page 43. To achieve the purpose of this programme, the actions listed in the table below will be implemented.

INFRASTRUCTURE PROGRAMME					
High-level objective: To strive for effective and efficient management and administrative support services through good corporate governance enabling the park to achieve its objectives.					
Objective: To maintain, upgrade and develop new park infrastructure through proper planning and efficient management.					
Sub-objectives	Actions	Responsibility	POE	Timeframe	Reference
To ensure that infrastructure in the park is maintained to a desired state.	Compile an inventory of all infrastructure in the park, assess construction types and update as required.	PM	Inventory	Year 1, as required	
	Document the scope of maintenance needs in accordance with relevant specifications.	GM:ISP, PM	Reports	Year 1	Building and Electrical regulations
	Document the scope of maintenance needs in accordance with relevant specifications to guide contractors.	PM, Parks technical office	Specification guideline	As required	Building and electrical regulations, civil engineering guideline / specifications
	Prioritise maintenance needs and develop a five-year rolling maintenance plan for the park.	PM	Maintenance plan	Annually	
	Implement the five-year rolling maintenance plan according to the annual maintenance schedules.	PM	Monthly reports	Ongoing	

INFRASTRUCTURE PROGRAMME					
High-level objective: To strive for effective and efficient management and administrative support services through good corporate governance enabling the park to achieve its objectives.					
Objective: To maintain, upgrade and develop new park infrastructure through proper planning and efficient management.					
Sub-objectives	Actions	Responsibility	POE	Timeframe	Reference
To ensure that infrastructure in the park is maintained to a desired state.	Identify possible development of infrastructure that can enhance visitor experience	PM	Reports	Ongoing	Reports / visitor feedback
	Assess progress, revise annual maintenance plan and evaluate standard of work.	PM	Monthly report	As required	Building / civil / electrical specifications
	Appoint contractors as needed to provide maintenance support.	PM	Purchasing order	As required	
	Ensure that all tourism infrastructure comply with tourism grading standards.	PM	Annual tourism grading report	As required	Tourism grading specifications
To ensure that all mechanical and electrical equipment is maintained to a desirable state.	Compile an inventory of all mechanical and electrical equipment in the park and update as required.	PM	Inventory	Year 1, as required	
	Develop and implement annual maintenance schedule for all equipment.	PM	Maintenance plan	Annually	OHS Act, electrical regulations, fire equipment, pressure vessels and lifting gear
To assist with planning and provide support to developmental infrastructure projects.	Provide input / support to the parks technical section during the planning and development phases of new infrastructure projects.	PM	Minutes of meeting, monthly reports	As required	

10.6.7 Safety and security programme

The purpose of this programme is to provide a safe and secure environment for both visitors and SANParks employees and to ensure area integrity.

SANParks implement and enforce the requirements contained in legislation and organisational policies. The primary legislation and organisational policies include, amongst others:

- NEMA;
- NEM: PAA and regulations;
- SANParks Code of Conduct; and
- Internal rules.

The safety and security plan comprehensively addresses both the strategic and operational aspects of visitor and staff safety as well as area integrity. A Strengths, Weaknesses, Opportunities and Threats analysis of issues affecting safety and security in the park has been developed and the outcome has been converted into achievable objectives and actions. Proactive consideration is given to issues such as working hours, law and order, high-risk areas, personnel, infrastructure, resources, equipment, staff training, reporting, data capture, record keeping, monitoring, information and intelligence. In addition to this, a number of reactive measures have been developed, including immediate action drills, emergency procedures and evacuation plans. All staff must be familiar with the above procedures and will receive regular relevant training.

The overall perceived poaching risk is medium. The security of the park’s biodiversity is at risk due to the local and international demand for succulent plants. Any compromise concerning safety and area integrity would negatively impact on tourism, biodiversity conservation and SANParks reputation.



A detailed lower level plan supports this programme. This programme links with high-level objective 6 and objective 6.7 on page 43. To achieve the purpose of this programme, the actions listed in the table below will be implemented.

SAFETY AND SECURITY PROGRAMME					
High-level objective: To strive for effective and efficient management and administrative support services through good corporate governance enabling the park to achieve its objectives.					
Objective: To provide a safe and secure environment for both visitors and SANParks employees and to ensure that the integrity of the natural and cultural resources and assets is secured.					
Sub-objectives	Actions	Responsibility	POE	Timeframe	Reference
To provide a high level of safety and security for visitors, SANParks employees, natural and cultural resources and assets.	Review the safety and security plan and relevant emergency action drills.	PM	Updated documents	Annually	Safety and Security Plan
	Conduct regular interventions <i>i.e.</i> patrols to ensure that area integrity is maintained.	PM	Monthly reports	Ongoing	
	Train staff in area integrity management, conservation guardianship and readiness to react to emergency situations.	PM	Training needs analysis	Annually	
	Develop and implement “a stage of readiness” for emergencies related to floods and veld fires to ensure visitor safety.	PM	Documents	As required	
	Assess readiness of staff and functionality of equipment.	PM	Reports	Annually	
	Properly equip staff to effectively carry out their safety and security functions.	PM	New equipment purchased	As required	
To improve overall park safety through interactions with external role players.	Align safety and security activities to accommodate collaborative operations with external partners, <i>e.g.</i> SAPS, DENC, MET neighbouring landowners.	PM	Document, report	Ongoing	
	To participate in external safety and security forums.	PM	Minutes of meetings	Quarterly	

10.6.8 Safety, health, environment and quality programme

The purpose of the current occupational health and safety (OHS) programme is to prevent, minimise and manage occupational accidents and occupational illnesses and diseases. This programme is required by the Occupational Health and Safety Act No 85 of 1993, to ensure that workplace hazards are managed and controlled in order to ensure a safe working environment at all times, including contractor activities on site. The OHS programme is guided by the SANParks SHEQ (Safety, Health, Environment and Quality) policy and framework and includes the elements required by the occupational health and safety legislation as a minimum, and is based on the ISO 45001 Occupational Health and Safety management system standard.

SANParks has made the decision to move away from the generic OHS management model to an internationally recognised and best practice system called the ISO 45001 standard. Under this

standard, the park is expected to align with and implement best practice processes and norms. The environment and quality components of the SHEQ programme will be developed over the next five to eight years.

The ISO 45001 standard consists of six elements namely:

- Identifying hazards and risks;
- Identifying legal and other requirements;
- Establishing objectives and programmes;
- Operational control;
- Emergency preparedness and response; and
- Internal audit.

The implementation of the ISO 45001 system will be done in a phased manner. The first phase (2016/17 – 2020/21) will focus on the first three bullets as listed above. Phase two (2021/22 – 2025/26), will focus on the last three bullets as listed above.

This programme links with high-level objective 6 and objective 6.8 on page 38. To achieve the purpose of this programme, the actions listed in the table below will be implemented.

OCCUPATIONAL HEALTH AND SAFETY PROGRAMME					
High-level objective: To strive for effective and efficient management and administrative support services through good corporate governance enabling the park to achieve its objectives.					
Objective: To continuously reduce the disabling injury frequency rate through the implementation of an efficient and effective Occupational Health and Safety management programme.					
Sub-objective	Actions	Responsibility	POE	Timeframe	Reference
To implement the ISO 45001 standard.	Identify hazards and risks.	OHS Manager, PM	Register	Year 2, ongoing	
	Identify legal and other requirements.	OHS Manager, PM	Register	Year 2, ongoing	
	Establish, implement and maintain programmes to mitigate identified hazards and risks.	PM, OHS manager	Register	Year 2, ongoing	
	Develop and implement standard operating procedures to manage identified hazards and risks.	PM, OHS Manager	Register, checklists, SOPs	Year 6, ongoing	
	Develop and implement emergency preparedness and response plans.	PM, OHS Manager	Documents	Year 6, ongoing	
	Conduct regular self-audits.	PM	Reports	Year 6, ongoing	
	Support internal audits.	OHS Manager, PM	Reports	Year 6, ongoing	
	Support external audits.	OHS Manager, PM	Reports	Year 7, 9	

10.7 Evaluation and learning

10.7.1 Introduction

Section 5 has dealt with the jointly agreed desired state, and section 10 with all the specific programmes, which are necessary to achieve this. However, the desired state cannot be effectively maintained without explicit attention being given to prioritisation, integration, operationalisation, and above all, reflection and adaptation according to the principles in the SANParks biodiversity custodianship framework (Rogers, 2003).

The need for reflection and adaptation (*i.e.* adaptive learning) comes from acknowledging that the world of conservation is complex and that the existing knowledge base is imperfect. Complexity implies that feedbacks between components of the conservation system are likely to change in unpredictable ways and the only way to stay abreast of such changes is through ongoing learning and adaptation. Lack of effective



feedback and reflection is the predominant underlying cause of failure of strategic adaptive management, and hence failure to realise the desired outcomes of the park. Evaluation should furthermore test the appropriateness of an intervention and monitor the predictive capacity, societal acceptability and accomplishment of broad goals (Kingsford & Biggs, 2012; Figure 12).

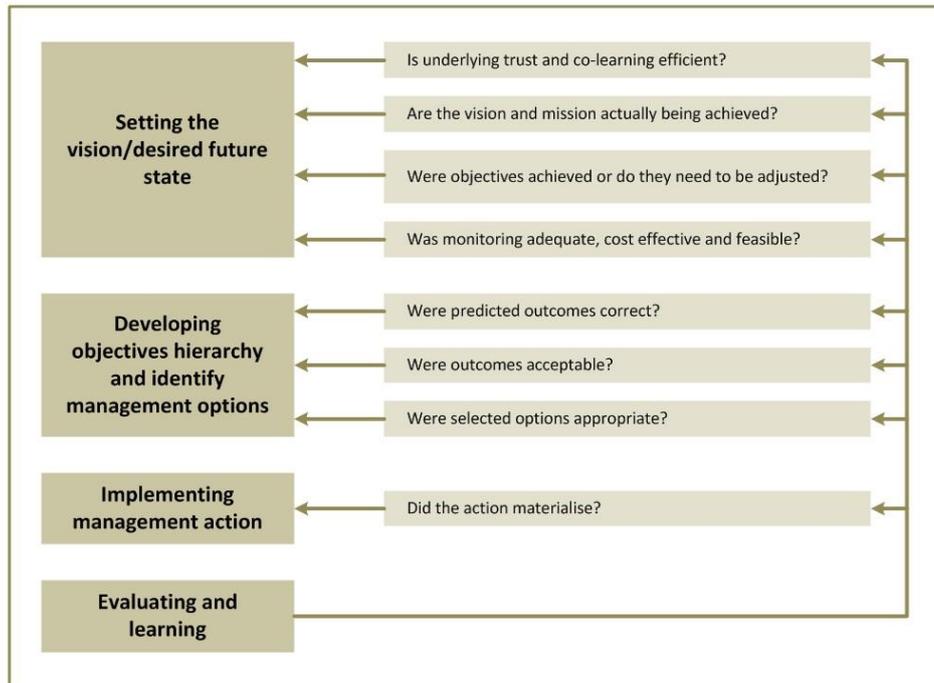


Figure 12. Feedback questions essential for adaptive learning (from Kingsford and Biggs, 2012).

10.7.2 Operationalisation

Given the desired state, and the programmes outlined in Section 10, specific action and operational plans need to inform the Key Performance Areas (KPA) of staff members (applicable personnel working in the Parks, CSD and Tourism Divisions) to ensure that the outcomes are achieved. In addition, explicit reflection and co-learning opportunities need to be maintained and honoured to facilitate an adaptable, learning approach that can cope with unexpected events or surprises. An example is those opportunities provided by the science-management forum engagements at park or regional level.

A critical component of strategic adaptive management is to monitor and evaluate the consequences of management decisions and actions. This involves assessment of the outcome of management interventions, but also frequent evaluation of early warning signals (referred to in SANParks as TPCs) of whether the intervention is on an appropriate trajectory for achieving the particular objective. Ongoing evaluation of emerging results against objectives is essential to allow strategy and methodology to be adjusted as new understanding and knowledge emerge. Continuous evaluation and learning are facilitated by making time for reflecting on the following questions (Roux and Foxcroft, 2011):

- Has the intended plan of operation materialised?
- Were the selected options appropriate?
- Were the predicted consequences correct and, if not, why?
- Is the monitoring adequate, cost effective and feasible?

- Were the consequences actually acceptable?
- Even if the predicted consequences were correct and are acceptable, are the objectives and vision being met?

Science-Management Forum discussions are aimed at ensuring that feedbacks take place, best available knowledge and understanding is incorporated into decision-making and TPCs are flagged and considered timely. In addition, annual reflection workshops involving managers and scientists will evaluate what has been learnt in each programme, and what should be adjusted.

If this process is effectively honoured, it is believed that the park will be practicing strategic adaptive management, and in accordance with our overarching values around complex systems, will have the best chance of achieving the desired state in a sustainable way.



Section 11: Costing

11.1 Introduction

In line with the legal requirement, the programmes of implementation to achieve the desired state have been costed below.

The park will adhere to the guiding principles listed below:

- Responsibly manage the allocation of budget, revenue-raising activities and expenditure;
- Ensure that solid financial management supports the achievement of the objectives in this plan;
- Compliance to the Public Finance Management Act as well as SANParks financial policy and procedures.

A funding estimate of the activities in this management plan was derived, using the zero-based budgeting approach. When estimating the costing the following items were considered:

- Those costs and associated resources which could be allocated to specific activities and which were of a recurring nature;
- Those costs and associated resources which could be allocated to specific activities but which were of a once-off nature;
- Unallocated fixed costs (water, electricity, phones, bank fees *etc.*);
- Maintenance of infrastructure;
- Provision for replacement of minor assets, (furniture, electronic equipment, vehicles, *etc.*).

11.2 Income

SANParks manages a number of national parks as part of the national park system, currently 21 in total. Not all of these parks are financially viable, currently only five national parks *i.e.* Addo Elephant National Park, Auwabias Falls National Park, Kalahari Gemsbok National Park, Kruger National Park and Table Mountain National Park make a surplus. SANParks receives an annual grant from the DEA to carry out its mandate, but this is not sufficient to cover the management costs. The organisation utilises its own revenue derived from commercial activities to subsidise the shortfall. The surplus generated by the aforementioned parks is used to fund management costs across all national parks. An organisation of this magnitude also has overhead costs relating to support services such as human resources, tourism and marketing, finance, conservation support *etc.* that is not allocated to individual parks and must be funded by the revenue generated in financially viable parks.

The income is categorised as follows; accommodation, conservation fees, concession fees, activities, other tourism income and wildlife sales. Total income for 2018 / 2019 is budgeted at -R 3,282,572 increasing to an estimated -R 4,649,162 in 2022 / 2023. A summary is presented in Table 16.

Table 16. A summary of the total estimated income budgeted for the park management plan over the next five years.

	2018 / 2019	2019 / 2020	2020 / 2021	2021 / 2022	2022 / 2023
Total income	-R 3,682,572	-R 3,903,526	-R 4,137,738	-R 4,386,002	-R 4,649,162

11.3 Expenditure

11.3.1 Recurring costs

The annual directly allocated cost (including staff, travel and supplies and tools) is estimated at R 20,230,508 for 2018 / 2019. These ongoing costs are split according to the programmes listed in Table 17.

Table 17. The estimated annual operational costs for the park for 2018 / 2019.

Programme	Amount	Percentage of total
Invasive alien species	R 5,456,108	26.97%
Responsible Tourism	R 4,240,652	20.96%
Infrastructure	R 2,174,927	10.75%
Degradation and rehabilitation	R 1,291,981	6.39%
Climate change	R 823,326	4.07%
Safety and security	R 799,071	3.95%
Finance and administration	R 665,623	3.29%
Herbivory	R 535,765	2.65%
Species of special concern	R 516,888	2.55%
Nomadic stock farming	R 419,620	2.07%
Environmental management	R 381,616	1.89%
Contractual park	R 301,381	1.49%
Vegetation	R 295,164	1.46%
Human capital development	R 287,395	1.42%
Transfrontier park	R 226,224	1.12%
Safety, health, environment and quality	R 194,514	0.96%
Outcomes	R 188,573	0.93%
Environmental education and interpretation	R 184,587	0.91%
Reintroduction	R 181,265	0.90%
Local socio-economic development	R 174,879	0.86%
Fresh water	R 171,508	0.85%
Stakeholder participation	R 127,009	0.63%
Co-operative management	R 110,193	0.54%
Park expansion p	R 107,365	0.53%
Information and records management	R 100,684	0.50%
Risk management	R 99,248	0.49%
Cultural heritage	R 69,728	0.34%
Disease	R 66,462	0.33%
Information	R 23,045	0.11%
Fire management	R 15,705	0.08%
Total	R 20,230,508	100 %

11.3.2 Once-off costs

In addition to the above there is a further once-off cost estimated at R 7,755,500 over the period 2018 / 2019 – 2022 / 2023 as can be seen in Table 18 below.

Table 18. The estimated once-off cost of the various programmes.

Programme	Estimated budget
New infrastructure	R 7,580,000
Cultural heritage programme	R 150,000
Disease programme	R 25,500
Total	R 7,755,500



11.3.3 Unallocated fixed costs

The unallocated fixed costs applicable but not allocated in Table 18 above for 2018 / 2019 amounts to R 1,133,226.

11.3.4 Maintenance

A breakdown of the infrastructure, both existing and new with their replacement value and an estimate of the ongoing annual maintenance for 2018 / 2019 is provided in Table 19. The projected maintenance for existing infrastructure is estimated at R 1,310,135 in 2018 / 2019. If the new planned infrastructure is developed, it will add a further R 230,353 (at 2018 / 2019 rates) to this annual maintenance budget, increasing it to R 1,540,487. The maintenance requirement was calculated as a percentage of the replacement value.

Table 19. The estimated replacement value of the existing infrastructure and any new infrastructure required with the estimated annual maintenance budget for the existing and new infrastructure in the park.

	Estimated replacement value			Estimated maintenance		
	Existing (R)	New (R)	Total (R)	Existing (R)	New (R)	Total (R)
Buildings	48,292,439	4,350,000	52,642,439	711,335	65,440	776,775
Roads and tracks	3,400,000	0	3,400,000	68,000	0	68,000
Trails	82,500	0	82,500	118,800	3,413	122,213
Fencing	6,750,000	0	6,750,000	135,000	0	135,000
Water system	5,450,000	2,730,000	8,180,000	272,500	136,500	409,000
Electricity	800,000	500,000	1,300,000	0	25,000	25,000
Sewerage	225,000	0	225,000	4,500	0	4,500
Other	0	0	0	0	0	0
Total	64,999,939	7,580,000	72,579,939	1,310,135	230,353	1,540,487

11.3.5 Replacement of minor assets

While many of the vehicles are leased along with the computers, it will significantly reduce this requirement, as these items are expensive and require frequent replacement. To calculate the replacement provision, the cost price of the assets was divided by the estimated useful life. SANParks applies certain standards in this regard. The estimated asset value for various categories is based on their original purchase price and the estimated budget required annually making provision for their replacement. Management should thus make provision for about R 1,470,936 in 2018 / 2019, this figure is presented in Table 20.

Table 20. The total value various categories of minor assets and replacement thereof (based on the original purchase price).

Asset type	Asset value	Provision for replacement
Air conditioners	R 268,297	R 40,628
Computer equipment	R 285,489	R 100,873
Firearms	R 7,637	R 810

Furniture	R 481,652	R 72,936
Mechanical equipment	R 5,059,491	R 766,152
Office equipment	R 120,302	R 18,217
Vehicles, trailers and watercraft	R 2,758,527	R 417,720
White goods (e.g. stove, fridge, microwave)	R 353,966	R 53,601
Total	R 9,335,364	R 1,470,936

11.4 Summary

It is estimated that the park will require an annual operating budget of R 24,223,412 for 2018 / 2019, increasing to R 30,581,500 in 2022 / 2023. In addition to this amount, the park will also require R 7,755,500 over the next five-year period for once-off costs. A summary is presented in Table 21.

Table 21. A summary of the annual and once-off costs that is required to fully implement the activities in the management plan over the next five years.

	2018 / 2019	2019 / 2020	2020 / 2021	2021 / 2022	2022 / 2023
Annual cost	R 24,223,412	R 25,676,817	R 27,217,426	R 28,850,471	R 30,581,500
Once-off costs over five years	R 7,755,500				
SANParks budget for RNP	R 21,939,757	R 23,256,142	R 24,651,510	R 26,130,601	R 27,698,437
Shortfall	R 2,283,655				

The shortfall can be broken down as follows:

- An additional amount of R 1,341,968 is required for the replacement of assets;
- An additional amount of R 691,339 is required to cover the current maintenance shortfall; and
- An additional amount of R 56,856 is required to cover operational expenses (OPEX).

11.5 Implications

Should the park be unsuccessful in securing the shortfall amount of R 2,283,655 then the following programmes will be affected:

- Assets: The park will be unable to replace assets that have reached the end of their life span, operations could be adversely affected and thereby increasing the risk profile.
- Infrastructure programme: The park will be unable to maintain the current infrastructure to a high standard; and
- OPEX: Various programmes will be affected.

11.6 Future

It is foreseen that the park will absorb the current GEF 5 contractual staff members during the 2019 / 2020 financial year when the project comes to an end in 2018 / 2019. This cost must still be calculated and factored into the future budget.

There are various ways in which the shortfall could be covered, options include:

- To request additional funding from Head Office;
- To approach donors; or
- To except the shortfall and rationalise the programmes.

Depending on the priority and urgency of the various requirements, management will make a decision regarding the most appropriate action to take.



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Appendix 1: Declarations

1. Land declared

Government Notice 1969 / Government Gazette 13457 of 16 August 1991 declared the following land as the Richtersveld National Park in terms of the National Parks Act (Act No. 57 of 1976)

1. Beginning at the point where the eastern boundary of the 31 m wide electric powerline servitude, as indicated on approved SG Diagram 3615/1981, intersects the international border between the Republic of South Africa and Namibia; thence northeastwards and clockwise upstream along the said international border, to a point where the said international border meets the eastward prolongation of the northern boundary of Portion 12 of Farm 600, Administrative District of Namaqualand; thence westwards along the latter prolongation and the northern boundaries of the said Portion 12 and Portion 11 of the said Farm 600; so as to exclude the said portions from the area, to Beacon A as indicated on approved SG Diagram 11352/85 of the latter Portion 11; thence northwestward along a straight line connecting the said Beacon A with Beacon L on the said 31 m wide electric powerline servitude as indicated on the said approved SG Diagram 3615/1981, to the point where it intersects the eastern boundary of the 31 m wide electric powerline servitude; thence generally northwards along the latter eastern boundary, to the point where it intersects the said international border between the Republic of South Africa and Namibia, the point of beginning.

Government Notice 538 / Government Gazette 38844 of 05 June 2015 declared the following land as part of the Richtersveld National Park in terms of the National Environmental Management: Protected Areas Act (Act No. 57 of 2003)

1. The farm Oograbies West 153, in extent of 7,928.1087 ha, situated in the Namaqualand division and held by Title Deed No. T29431/1997.

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Appendix 2: Stakeholder participation report

STAKEHOLDER EVENTS AND ACTIVITIES

Stakeholder consultation

This table reflects the various organisations that were identified to participate in the park management plan process. The government departments are at national, provincial and local level. The intention is to show that, in terms of the spirit of co-operative governance SANParks has approached these parties.

International	Namibian Wildlife Resorts, Namibian Ministry of Environmental and Tourism Affairs
National Government	SAPS – Port of Entry - Border Control, Home Affairs (Immigration – Services), ARTP – Park Management Committee
Provincial government	NC Department Agriculture, NC Department Environment and Nature Conservation, NC Department of Basic Education, NC Department of Labour, NC Department Social Development
Local government	Richtersveld Local Municipality, Namakwa District Municipality
Park Forum	Richtersveld Combined Management Committee
Local Resident /Neighbours	Richtersveld communities (Eksteenfontein, Kuboes, Lekkersing & Sanddrift)
Media	Radio NFM, Die Plattelander newspaper, social media followers
Research	University Hamburg (Norbet Jurgens), NC Department Environment and Nature Conservation - Scientific Services
Tourist Associations	Open Africa, Northern Cape Tourism
Tour operator	Richtersveld Tours, Rey Janse van Rensburg Tours, Aukwatowa Tours
Honorary Rangers	Yes

Desired state workshop

A range of key stakeholders and SANParks specialists participated in the development of the desired state which entails developing a vision for the park supported by higher level objectives which forms the basis of the management plan.

Activities	Description
Invitations	Park management, certain SANParks specialists and key stakeholders were invited.
Desired State workshop	The workshop took place on 09 May 2017 at the Town Hall in Port Nolloth.
Attendance	37 Participants (21 stakeholders and 16 SANParks staff members) partook, representing the following constituencies: <ul style="list-style-type: none"> • NC Department Environment and Nature Conservation • Private landowners; • Richtersveld World Heritage Site; • Richtersveld Combined Management Committee; • Richtersveld Local Municipality; • Richtersveld Toere; and • SANParks.

Media platforms used to invite stakeholders to register and participate

A variety of media platforms were used to engage stakeholders in an effort to inform them of the revision of the park management plan and invite stakeholders to participate

Mechanism to register	Description
Printed media advertisements	Advertisements to inform interested and affected parties of the public days and request to register to participate was placed in the following national newspapers on 21 January 2018: <ul style="list-style-type: none"> • Sunday Times; • Rapport. An advertisement to inform interested and affected parties of the public days and request to register to participate was placed in Die Plattelander local newspaper on 26 January 2018.
Radio	Announcements were made on Radio NFM 98.1 three times a day on 29, 30, 31 January 2018 and 01 and 02 February 2018. Listeners were informed of the revision process and invited to attend the public meetings.
Registration at meetings	Participants were also able to register at the following meetings: <ul style="list-style-type: none"> • Desired state workshop on 09 May 2017 in Port Nolloth; and • Public meetings were held on 05, 06 and 07 February 2018 in Sanddrift, Kuboes, Eksteenfontein, Lekkersing and Port Nolloth.
Internet	Stakeholders were ask to register via the SANParks website from 01 April 2017.
Public information boards	Official notices were place at 5 public venues in the region, namely: <ul style="list-style-type: none"> • Community Hall, Eksteenfontein; • Community Hall, Kuboes; • Community Hall, Lekkersing • Community Hall, Sanddrift; and • Richtersveld Municipal Office, Port Nolloth.

Public days to allow comment on the draft management plan

Five public day meetings were held.

Venue	Date	Number of stakeholders that attended
Richtersveld Municipal Satellite Office, Sanddrift	05 February 2017	11
Richtersveld Municipal Satellite Office, Kuboes	06 February 2017	62
Richtersveld Municipal Satellite Office, Eksteensfontein	06 February 2017	12
Richtersveld Municipal Satellite Office, Lekkersing	07 February 2017	21
Council Chambers, Richtersveld Local Municipality, Port Nolloth	07 February 2017	3

Dissemination of documentation and feedback to stakeholders

Item	Action	Date
Draft park management plan for comment placed in public venues.	<ul style="list-style-type: none"> • Community Hall, Eksteenfontein; • Community Hall, Kuboes; • Community Hall, Lekkersing • Community Hall, Sanddrift; and • Richtersveld Municipal Office, Port Nolloth. 	26 January 2018
Draft park management plan for comment placed on SANParks website.	https://www.sanparks.org/conservation/park_man/	22 January 2018
Dissemination of comment and response document	The document will be available on the SANParks website, or emailed, mailed, faxed or delivered by hand where no contact details were supplied.	N/A
Dissemination of approved park management plan	The plan will be available on the SANParks website once approved by the Minister.	N/A

Appendix 3: Tourism product development framework

The product development framework provides park management with a guideline in order to inform the development potential of the park. Identified opportunities remain subject to comprehensive feasibility study prior to implementation, thus listing an activity does not automatically result in development.

Similarly, whilst specific products or activities may be developed within the park, they will be restricted to specific areas within the park or on the periphery (buffer zone), and may be further restricted to guided activities or events only. The park is zoned into various visitor use zones, based on its environmental sensitivity, as described in the legend below, and products are applicable to the various use zones accordingly.

For any development to be supported within the delineated buffer zone, the permissible land use schemes as per SPLUMA, and relevant development application processes must be adhered to.

LEGEND

No.	Visitor use zones	Description
1	Wilderness / remote	Wilderness conforms to the legal definition. Pristine natural environment, essentially undeveloped and roadless. Controlled non-motorised access - usually on foot. Could have paths where erosion is a problem or for safety.
2	Primitive	Almost completely natural state to be maintained. Development footprints absolute minimum. Controlled access - 4x4s, horse riding. Small basic overnight facilities.
3	Quiet	General natural state to be maintained. Only non-motorised access. Access not specifically controlled. Ablution facilities can be allowed.
4	Low intensity leisure	Motorised self-drive with basic facilities. Small - medium sized camps. Infrastructure should be minimised in order to maintain natural state.
5	High intensity leisure	High-density tourism development node with concentrated human activities. High volume roads, high density camps with modern amenities.
6	Buffer / adjoining	Land in the delineated buffer zone or adjacent to national parks. Products indicated are those with which SANParks is comfortable to be associated with as long as it does not conflict with the LUMS.

For the purposes of this management plan, the focus of the framework listed in Table 22 is to indicate which products already exist, which new products may be allowed, and in which visitor use zones these may occur.

Table 22: Tourism product development framework for the park.

PRODUCT CATEGORY	PRODUCT OR SERVICE	Is Product currently AVAILABLE or under development?		Is Product APPROPRIATE for the applicable National Park?		ZONING FOR WHICH PRODUCT IS APPROPRIATE						
		YES	NO	YES	NO	Within boundaries of national- / contractual park					Buffer / adjoining	
						1	2	3	4	5		6
Over-night facilities	Self-catering - limited service (serviced prior to arrival and after departure only)	Accommodation (budget)		√	√					√	√	√
		Accommodation (economy)		√	√		√		√	√	√	√
		Accommodation (premium) / guest house		√		√						√
		Accommodation backpacking / youth hostels		√	√				√	√	√	√
		Dormitories / school groups / educational facilities		√	√				√	√	√	√
		Game / bird hide		√	√		√		√	√	√	√
		Military bunker / fort / gun sites		√		√						√
		Tree houses / platforms		√		√						√
		Fly camp / platform / sleep out		√	√		√		√	√	√	√
	Self-catering - serviced (serviced daily)	Accommodation (budget)	√		√			√	√	√	√	√
		Accommodation (economy)	√		√		√		√	√	√	√
		Accommodation (premium) / guest house		√	√				√	√	√	√
		Accommodation backpacking / youth hostels		√		√						√
		Dormitories / school groups / educational facilities		√		√						√
		Houseboat (economy)		√		√						√
Camping	Houseboat (premium)		√		√						√	
	Camping (budget facilities) (power / no power)	√		√		√		√	√	√	√	
	Camping (premium facilities) (power / no power)		√	√		√		√	√	√	√	

PRODUCT CATEGORY	PRODUCT OR SERVICE	Is Product currently AVAILABLE or under develop-ment?		Is Product APPROPRIATE for the applicable National Park?		ZONING FOR WHICH PRODUCT IS APPROPRIATE								
		YES	NO	YES	NO	Within boundaries of national-/ contractual park					Buffer / adjoining			
						1	2	3	4	5	6			
Over-night facilities	Camping	Camping bush rustic (protected) (budget facilities)		√		√							√	
		Camping bush rustic (protected) (premium facilities / self-sufficient)		√		√								√
		Camping bush rustic (unprotected) (self-sufficient)	√		√			√		√				√
	Full service (generally some/all meals and activities included)	Game / bush / safari / boutique lodge - under 20 beds		√		√								√
		Game / bush / safari / boutique lodge - 20 beds plus		√		√								√
		Conference lodge / hotel - 21 - 50 beds		√		√								√
		Conference lodge / hotel - 50 beds plus		√		√								√
		Houseboat		√		√								√
		Luxury tented safaris		√	√			√		√	√			√
		Remote camp / fly camp / platform / sleep Out		√	√			√		√	√			√
		Overnight train rides		√		√								√
	Additional services	Cook and guide provided		√		√								√
		Cook, guide and OSV provided		√		√								√
Meal packages e.g. breakfast, half board or full board			√		√								√	
Leisure / recreational	4x4 Eco-trails (multi-day, self-drive, basic facilities)		√	√			√		√	√			√	
	4x4 Eco-trails (multi-day, self-drive, no facilities)		√	√			√		√	√			√	
	4x4 trails (full-day / half-day / guided or unguided)	√		√			√		√	√			√	
	Abseiling / rappelling		√	√			√		√	√			√	
	Animal interaction activities (limited)		√		√								√	
	Animal tracking activities		√		√								√	
	Archery		√	√					√	√			√	
	Base jumping		√		√								√	
	Bird watching	√		√		√	√	√	√	√			√	
	Boat cruises		√		√								√	
	Boat cruise - birding		√		√								√	
	Boat cruises - sunset		√		√								√	
	Botanical sightseeing	√		√		√	√	√	√	√			√	
	Bouldering	√		√									√	
	Bungee / bungee jumping		√		√								√	
	Cableway		√		√								√	
	Canoe trails (Varying facilities)	√		√			√		√	√			√	
	Canoeing	√		√			√		√	√			√	
	Canopy tour (acrobranch)		√		√								√	
	Canopy tour (boardwalk)		√		√								√	
	Canopy tour / flying fox (tree top / cliff to cliff)		√		√								√	
	Caving / spelunking/ potholing		√		√								√	
	Clay-pigeon / clay target shooting		√		√								√	
	Coasteering		√		√								√	
	Cruise - birding		√		√								√	
	Cycling		√		√								√	
	Cycling (downhill cycling)		√		√								√	
	Cycling (BMX track area)		√	√				√		√			√	
	Diving (scuba)		√		√								√	
	Dog walking		√		√								√	
Elephant backed rides / safaris		√		√								√		

PRODUCT CATEGORY	PRODUCT OR SERVICE	Is Product currently AVAILABLE or under development?		Is Product APPROPRIATE for the applicable National Park?		ZONING FOR WHICH PRODUCT IS APPROPRIATE					
		YES	NO	YES	NO	Within boundaries of national-/ contractual park					Buffer / adjoining
						1	2	3	4	5	6
Leisure / recreational	Fishing (catch and release)	√		√			√		√	√	√
	Funicular		√		√						√
	Game drives - night drive		√	√			√		√	√	√
	Game drives - night drive (Night Vision aided)		√	√			√		√	√	√
	Game drives - premium		√	√			√		√	√	√
	Game drives - standard		√	√			√		√	√	√
	Game drives - UA		√	√			√		√	√	√
	Games facilities (e.g. table tennis, pool, etc.)	√		√					√	√	√
	Geocaching		√	√				√		√	√
	Golf		√		√						√
	Golf club membership		√		√						√
	Green hunting / darting safaris		√		√						√
	Hang gliding		√		√						√
	Hiking	√		√			√	√	√	√	√
	Hiking trails - Wilderness (full service)		√		√						√
	Hiking trails - Wilderness (no facilities) (backpack)	√		√			√	√	√	√	√
	Hiking trails (budget)	√		√			√	√	√	√	√
	Hiking trails (premium)		√		√						√
	Horse riding		√	√				√		√	√
	Horse riding trails (varying facilities)		√		√			√		√	√
	Jet skiing		√		√						√
	Jogging / running	√		√				√		√	√
	Kayaking / paddling	√		√				√		√	√
	Kayaking / paddling trails	√		√				√		√	√
	Kitesurfing / kiteboarding / fly surfing		√		√						√
	Kloofing (guided)		√		√						√
	Mini golf / putt-putt		√		√						√
	Model aircraft flying		√	√					√	√	√
	Motorcycle trails (varying facilities)		√		√						√
	Motorcycling		√		√						√
	Motorcycling - off-road		√		√						√
	Motorised boating		√		√						√
	Mountain bike trails (varying facilities)	√		√				√		√	√
	Mountain biking	√		√				√		√	√
	Mountain biking - unicycling		√	√				√		√	√
	Mountaineering	√		√			√	√	√	√	√
	Paddle boards		√	√				√		√	√
	Paddle boats		√		√						√
	Paddle skiing		√	√				√		√	√
	Paragliding		√		√						√
Parasailing		√		√						√	
Park and ride		√	√				√		√	√	
Photography	√		√			√	√	√	√	√	
Picnicking (basic facilities)		√	√				√		√	√	
Picnicking (full facilities)	√		√				√		√	√	

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		YES	NO	YES	NO	Within boundaries of national-/ contractual park					Buffer / adjoining
						1	2	3	4	5	6
Leisure / recreational	Picnicking (no facilities)	√		√			√		√	√	√
	Quad biking		√		√						√
	Railway		√		√						√
	Rap jumping (deepelling)		√		√						√
	River rafting		√	√			√		√	√	√
	Rock climbing		√	√		√	√	√	√	√	√
	Sailing		√		√						√
	Sandboarding		√	√			√		√	√	√
	Self-drive night drives		√		√						√
	Skate boarding / roller blading		√		√						√
	Skate boarding / roller blading (downhill)		√		√						√
	Skydiving		√		√						√
	Snorkelling		√		√						√
	Spear fishing		√		√						√
	Speed gliding		√		√						√
	Sports facilities (e.g. tennis, squash, bowls, etc.)		√	√					√	√	√
	Stairway (via ferrata / ironway)		√		√						√
	Stargazing	√		√		√	√	√	√	√	√
	Surf Skiing		√		√						√
	Surfing		√		√						√
	Swimming	√		√			√		√	√	√
	Trail running	√		√							√
	Trail running (night time)		√	√		√	√	√	√	√	√
	Tubing		√	√			√		√	√	√
	Vessels (cruise boats, yachts, river/paddle boats)		√		√						√
	Walking	√		√		√	√	√	√	√	√
Walks - day	√		√		√	√	√	√	√	√	
Walks - night		√	√		√	√	√	√	√	√	
Wildlife / game viewing	√		√		√	√	√	√	√	√	
Wingsuit flying / wingsuiting		√		√						√	
Airborne (Implications of CAA)	Drones over national parks		√	√			√		√	√	
	Flights over national parks		√		√					√	
	Helicopter flips		√		√					√	
	Hot-air ballooning		√		√					√	
	Microlight flying / ultra-light aviation		√		√					√	
Interpretive	Archaeology		√	√					√	√	√
	Endangered species breeding centre		√		√					√	
	Films - amphitheatre		√		√					√	
	Films - auditorium		√		√					√	
	Interpretive centres		√	√				√	√	√	
	Palaeontology		√	√		√	√	√	√	√	
	Theatre		√		√					√	
	Tours - astronomy		√	√		√	√	√	√	√	
	Tours - birding		√	√		√	√	√	√	√	
	Tours - botanical		√	√		√	√	√	√	√	

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Interpretive	Tours - specialist (fauna and flora)		√	√		√	√	√	√	√	√
	Tours - tree (dendrology)		√		√						√
	Trail - mobility impaired		√	√				√	√	√	√
	Trails - brail		√	√				√	√	√	√
	Trails - sensory		√	√				√	√	√	√
Cultural / historical	Cleansing ceremonies (including baptism)		√	√		√	√	√	√	√	√
	Cultural dances		√	√		√	√	√	√	√	√
	Cultural points of interest	√		√		√	√	√	√	√	√
	Cultural village	√		√		√	√	√	√	√	√
	Gold panning (recreational)		√		√						√
	Historical points of interest	√		√		√	√	√	√	√	√
	Mountain worship		√	√		√	√	√	√	√	√
	Museums		√		√						√
	Religious facilities (prayer or otherwise)		√		√						√
	Storytelling		√	√		√	√	√	√	√	√
	Tours - battlefield / military		√		√						√
	Tours - cultural		√	√		√	√	√	√	√	√
	Tours - historical		√	√		√	√	√	√	√	√
	Tours - medicinal plants		√	√		√	√	√	√	√	√
	Tours - rock art	√		√		√	√	√	√	√	√
	Tours - South African struggle		√		√						√
Medical / health	Health spa		√		√						√
	Gymnasium		√		√						√
	Wellness centres		√		√						√
Developmental	Astronomy training		√	√		√	√	√	√	√	√
	Birding course		√	√		√	√	√	√	√	√
	Botany course		√	√		√	√	√	√	√	√
	Bush homeopathy		√		√						√
	Bush skills		√		√						√
	Field guide training		√		√						√
	Firearm skills		√	√		√	√	√	√	√	√
	First aid		√	√		√	√	√	√	√	√
	Game capture training		√		√						√
	Nature / wildlife photography course		√	√		√	√	√	√	√	√
	Nature based hospitality training		√		√						√
	Off-road driving skills training		√	√		√	√	√	√	√	√
	Orienteering		√	√		√	√	√	√	√	√
	Rope skills course		√	√		√	√	√	√	√	√
	Scuba diving Skills		√		√						√
	Specialised training / courses		√		√						√
	Survey and mapping skills		√	√		√	√	√	√	√	√
	Survival skills		√	√		√	√	√	√	√	√
	Tracking skills		√		√						√
	Training - ranger	√			√						√
Volunteering		√	√		√	√	√	√	√	√	

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						1	2	3	4	5	6
Developmental	Wilderness search and rescue		✓	✓			✓		✓	✓	✓
Children / youth	Babysitting		✓		✓						✓
	Child care centres in camps		✓		✓						✓
	Children activity centres (jungle gym)		✓	✓					✓	✓	✓
	Children encounter zone		✓		✓						✓
	Children game drives		✓		✓						✓
	Children holiday programmes in camps		✓	✓					✓	✓	✓
	Children trails		✓	✓			✓		✓	✓	✓
	Learner programmes	✓		✓					✓	✓	✓
	Paint ball		✓		✓						✓
	Youth camps (KampKwena, "summer" camps)	✓		✓					✓	✓	✓
	Business tourism and events	Events - any		✓	✓			✓		✓	✓
Events - adventure		✓		✓			✓		✓	✓	✓
Festivals			✓		✓						✓
Fundraising events e.g. WWF Swim for Nature		✓		✓			✓		✓	✓	✓
Lapas / bomas (to rent)			✓		✓						✓
MICE (Meetings, Incentives, Conventions and Exhibitions)			✓		✓						✓
Musical concerts			✓	✓			✓		✓	✓	✓
Photographic shoots and filming			✓	✓			✓		✓	✓	✓
Product launches			✓	✓			✓		✓	✓	✓
Races / competitions - marathons / trail running		✓		✓			✓		✓	✓	✓
Races / competitions - mountain-biking		✓		✓			✓		✓	✓	✓
Races / competitions - other			✓		✓						✓
Races / competitions - adventure / expedition racing		✓		✓			✓		✓	✓	✓
Scientific conferences			✓	✓					✓	✓	✓
Team building			✓		✓						✓
Weddings		✓	✓			✓		✓	✓	✓	
Retail / services	Apparel outlets		✓		✓						✓
	Airport / aerodrome / airstrip	✓		✓					✓	✓	✓
	Banking - Bank or ATM		✓	✓					✓	✓	✓
	Rental - bicycle		✓		✓						✓
	Camping equipment rental		✓		✓						✓
	Rental - car		✓		✓						✓
	Car wash		✓	✓					✓	✓	✓
	Casinos		✓		✓						✓
	Clinics / Doctor/ first aid		✓	✓					✓	✓	✓
	Outlets - community curios		✓		✓						✓
	Outlets - curios		✓	✓					✓	✓	✓
	Essential commodities in camps (ice, wood, etc.)	✓		✓					✓	✓	✓
	Fast moving consumer goods (FMCG) outlets		✓	✓					✓	✓	✓
	Fuel stations	✓		✓					✓	✓	✓
	Gas equipment hire		✓		✓						✓
	Hop-on guides		✓	✓			✓		✓	✓	✓
Internet café / Wi-Fi hotspot		✓	✓					✓	✓	✓	

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						1	2	3	4	5	6
Retail / services	Laundromats and laundry service		√	√					√	√	√
	Pharmacies		√		√						√
	Photo booth		√		√						√
	Pop-up retail		√		√						√
	Postal services		√		√						√
	Proshop		√		√						√
	Road emergency services		√		√						√
	Shuttle services		√		√						√
	Vending machines		√	√					√	√	√
	Vendors		√		√						√
	Wi-Fi facilities (free service)		√	√					√	√	√
Food and beverage	Bars		√	√					√	√	√
	Boma / lapa meals		√	√					√	√	√
	Bush meals		√	√					√	√	√
	Coffee shops / tea rooms		√		√						√
	Fast-food outlets		√		√						√
	Game drives picnic baskets		√		√						√
	Local cuisine		√		√						√
	MICE catering		√		√						√
	Picnic baskets		√		√						√
	Pop-up food, retail		√		√						√
	Restaurants		√		√						√
	Room service		√		√						√
	Sports bar		√		√						√
Non tourism related activities											
Mining/ Exploratory	Prospecting	√		√			√	√	√	√	√
	Mining	√		√			√	√	√	√	√
Consumptive / Subsistence	Fishing (non-release)		√	√			√	√	√	√	√
	Hunting (lethal)		√	√			√	√	√	√	√
	Sustainable harvesting of resources	√		√			√	√	√	√	√

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Appendix 4: Internal rules

The following internal rules are applicable to all persons entering the park in terms of Section 52 of the NEM: PAA. The internal rules for the park can be broadly divided into categories for staff, tourists / visitors and stock farmers respectively.

The internal rules applicable to staff are listed below:

- Staff is responsible for their guests and are to ensure that all rules and regulations are adhered to at all times;
- All firearms and ammunition are to be declared to Park Management (Park Manager / Senior Section Ranger);
- Staff and their visitors may only enter or exit the park through the main entrance gate or via the Pontoon border crossing;
- The speed limit of 60 km/h on the main road between the gate and rest camp, 40 km/h in the staff residential area and 20 km/h in the rest camp are applicable;
- No livestock are allowed inside the rest camp or living quarters;
- Strictly no domestic cats allowed within the Richtersveld National Park;
- A total of 2 pets per household are allowed with prior permission of Park Management;
- Do not disturb, feed, remove, pick, destroy, deface or cause damage to any animal, plant or object in the park;
- No firewood or kindling may be collected from any area within the park, except alien plant material, *i.e.* *Prosopis*.
- No littering is allowed;
- Staff is responsible for the cleanliness and basic upkeep of their house and the immediate surroundings of their house;
- Fires are only permitted in designated areas;
- Camping is only permitted in designated areas;
- No loud music or excessive noise is allowed in the park, rest camp or staff living quarters between 22:00 and 10:00;
- Use of the guest swimming pool or guests facilities is strictly prohibited;
- Do not drive or park in such a manner that it is a nuisance, disturbance or an inconvenience to any other person;
- No alcohol is to be consumed in front of visitors to the park;
- Only valid driver's licence holders may drive in the park;
- Person who fails to comply with lawful instructions issued by park officials will be dealt with accordingly;
- No person may drive off the existing roads;
- Any person who contravenes or fails to comply with the Regulations is guilty of an offence and liable to disciplinary action as per SANParks disciplinary policy and procedures or a fine as per the NEM: PAA.

The internal rules applicable to tourists / visitors are listed below:

- All tourists / visitors to the park are required to fill in their identity numbers or passport numbers on the SANParks indemnity forms when entering the park;
- All firearms are to be declared at the entrance gate. Unsealed firearms are strictly prohibited in the park;
- Tourists / visitors may only enter or exit the park through the main entrance gate or via the Pontoon border crossing;
- Strictly no feeding of animals is permitted. Feeding of monkeys and baboons will be liable to a fine;
- Exiting your vehicle is done so at your own risk;
- Remain on designated tourist roads. Do not enter a road that has a No Entry sign;

- Only valid driver's licence holders may drive in the park;
- Only 4x4 vehicles may be used on the designated 4x4 routes / roads. High clearance vehicles are suitable to access the majority of the park and its facilities;
- No person may drive off the existing roads-it's both illegal and damaging;
- The speed limit of 60 km/h on the main road between the gate and rest camp, 40 km/h in the staff residential area and 20 km/h in the rest camp are applicable;
- Do not drive or park in such a manner that it is a nuisance, disturbance or an inconvenience to any other person or animal;
- Unmanned aircraft / drones are strictly prohibited in National Parks unless authorised by Park Management;
- Strictly no pets permitted within the park;
- No animals (excluding guide dogs), domestic or otherwise, or plant material (other than firewood), may be brought into the park;
- Do not disturb, feed, remove, pick, destroy, deface or cause damage to any animal, plant or object in the park;
- No firewood or kindling may be collected from any area within the park, except alien plant material, *i.e. Prosopis*.
- No littering is allowed.
- Fires are only permitted in designated areas;
- Camping is only permitted in designated areas;
- No loud music or excessive noise is allowed in the park between 22:00 and 10:00.
- Only designated accommodation areas may be used. You may not stay overnight within the park without the knowledge of the Park Management;
- Traveling with in the park may only occur between sunrise and sunset;
- The main entrance gate opens at sunrise and closes at sunset.
- Overnight visitors may only exit the park if all payments have been made;
- An exit permit is required to exit the park. Exit permits are obtainable from reception;
- All conservation levy's and other payments to be made to reception prior leaving the park, proof of payment must be shown to the gate guard at the exit point;
- No alcohol permitted in the swimming pool area;
- Entrance to the swimming pool at own risk;
- Person who fail to comply with lawful instructions issued by park officials will be dealt with accordingly;
- Any person who contravenes or fails to comply with the Regulations is guilty of an offence and liable to a fine as per the NEM: PAA.

The internal rules applicable to stock farmers are listed below:

Livestock

- At no point in time will it be permitted, irrelevant of whether all stock farmers are within the park, for the amount of livestock to exceed 6,600 small stock units;
- All large stock (donkeys, horses and cattle) form part of the total permitted 6,600 small stock units for the park. Irrelevant of age, donkeys, horses and cattle are equivalent to 7 (seven) small stock units. Therefore 1 large stock unit is equivalent to 7 small stock units;
- The carrying capacity of the park is based on the suggested agricultural livestock loading of 25 ha per small stock unit;
- Stock farmers are not permitted to allow their stock to graze outside of the park's boundaries for period of 6 months or longer. Should a stock farmer leave the park for a period of 6 months or longer, they automatically give up their right as a park stock farmer;
- All livestock must be penned in a boma at a designated stock post. The designated stock posts are where livestock must be penned in the evenings and must return to after the days grazing; and
- No livestock will be permitted within the Sendelingsdrift rest camp and living quarters. Should any livestock be found within the designated area the responsible stock farmer will be held accountable. The stock farmer could lose its right as a park stock farmer.

Dogs

- Dogs serve a security purpose for some stock farmers. It is due to this reason that the parks stock farmers are permitted to possess dogs within the park;
- A maximum of 2 dogs per stock post will be permitted within the park;
- All dogs kept within the park must be clearly marked with a collar; and
- Stray dogs and dogs not in the immediate vicinity of the livestock, stock farmer or stock post will be shot.



Donkeys

- Stock farmers making use of donkeys for transportation or other purposes are permitted to keep donkeys within the park; and
- Donkeys that are kept within the park must be under the stock farmers control, graze together with the stock farmers livestock, be clearly marked and must be regarded as tame.

Resource utilisation

- In order to conserve the lifestyle and culture of the stock farmers within the park it is imperative to ensure acceptance of their position as part of the environment. It is permitted for the stock farmers to make use of certain natural resources including wood for fire and construction and plant material for medicinal purposes as and when needed; and
- To prevent overexploitation of the natural resources it is imperative that resource use occurs at a rate less than which the resource can recover, thus making it sustainable.

Problem animals

- Where stock farmers encounter problem animals within the park, the RCMC must be notified within a reasonable time frame to ensure that the problem animal can be captured and relocated to an authorised conservation area where they will no longer pose a threat to anyone; and
- The unsustainable use of non-renewable resources should be avoided due to it going against the mandate and etiquette of SANParks and the effect it has on the sensitive ecosystem remains unknown.

Water provision

Water for livestock must be provided for under the following conditions:

- Water points must be kept to a minimum (Hellskloof gate, De Koei, No.7, Rooilepel), while plant recovery, erosion, water table levels and water quality should be monitored annually;
- The use of ground water must be a last resort;
- Drilling of boreholes will only be considered once all other options have been exhausted;
- Existing natural springs currently being utilized within the park by stock farmers must be used as a water point at least 1 km away from the eye of the spring; and
- All pollution and resource utilization at the natural springs within the park is strongly discourage and any use of the natural springs within the park to be strictly regulated.

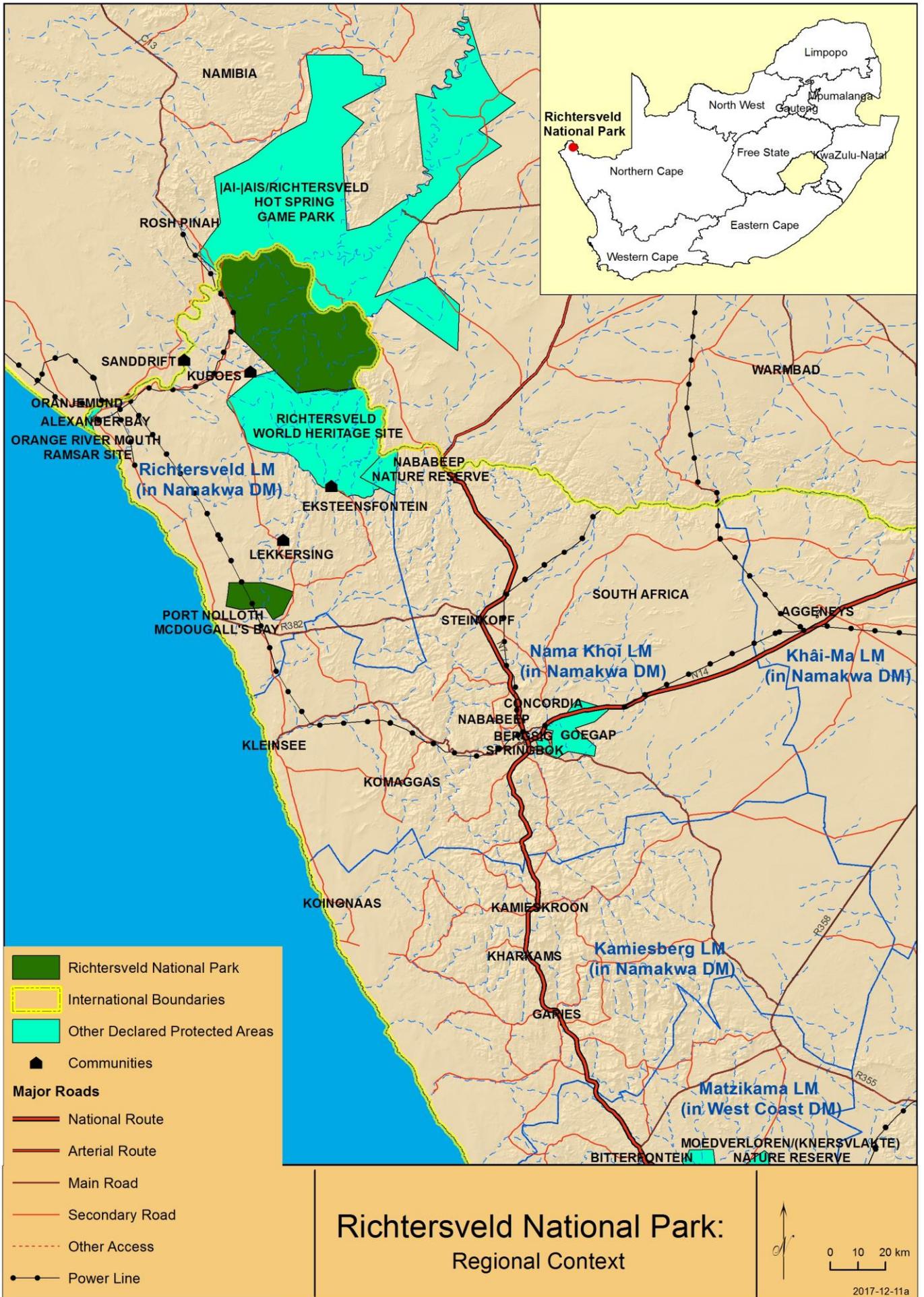
The internal rules applicable to park stock famers as listed above, will be substituted by the new grazing regulations when it is approved and accepted by all the parties.

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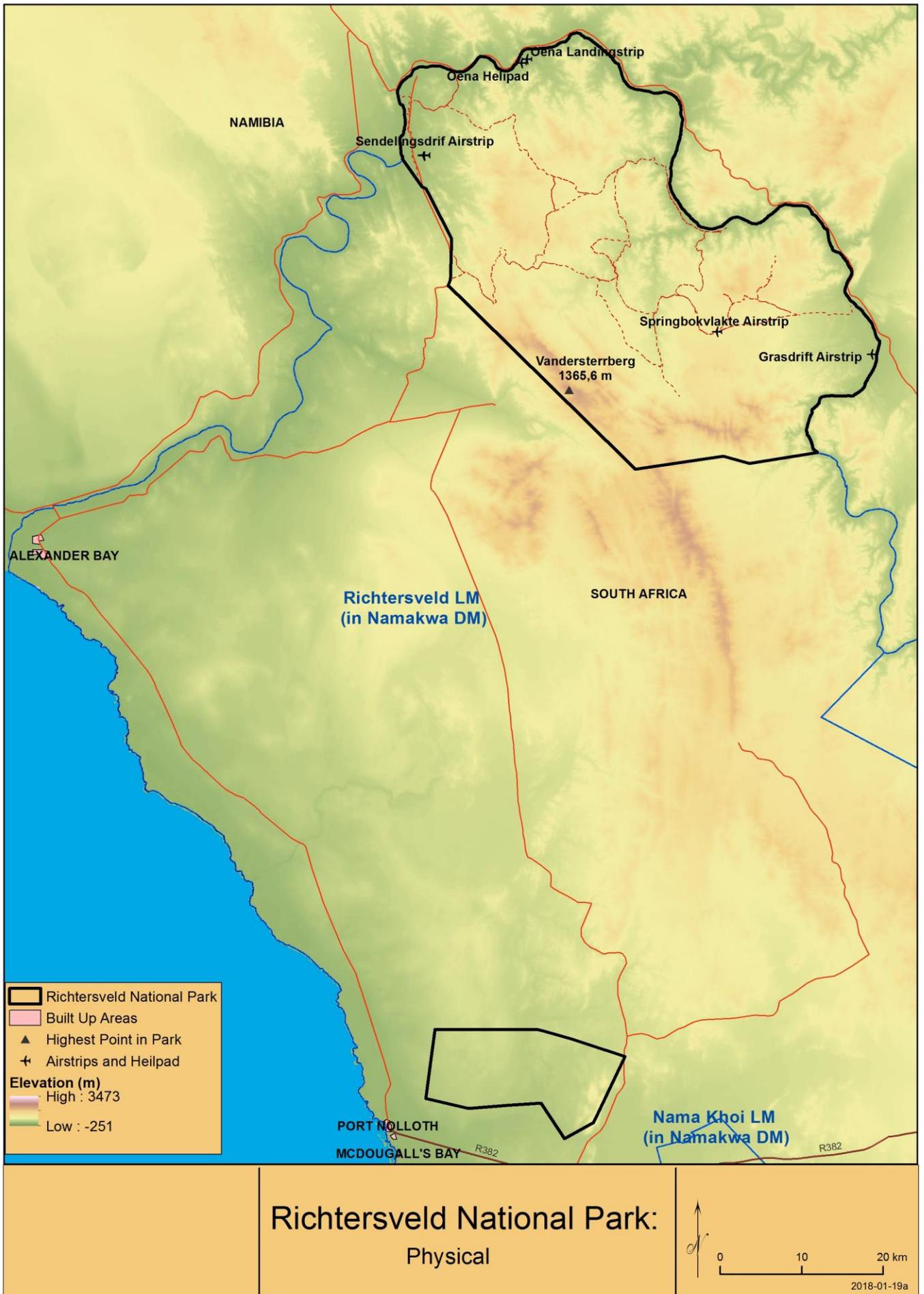


Appendix 5: Maps

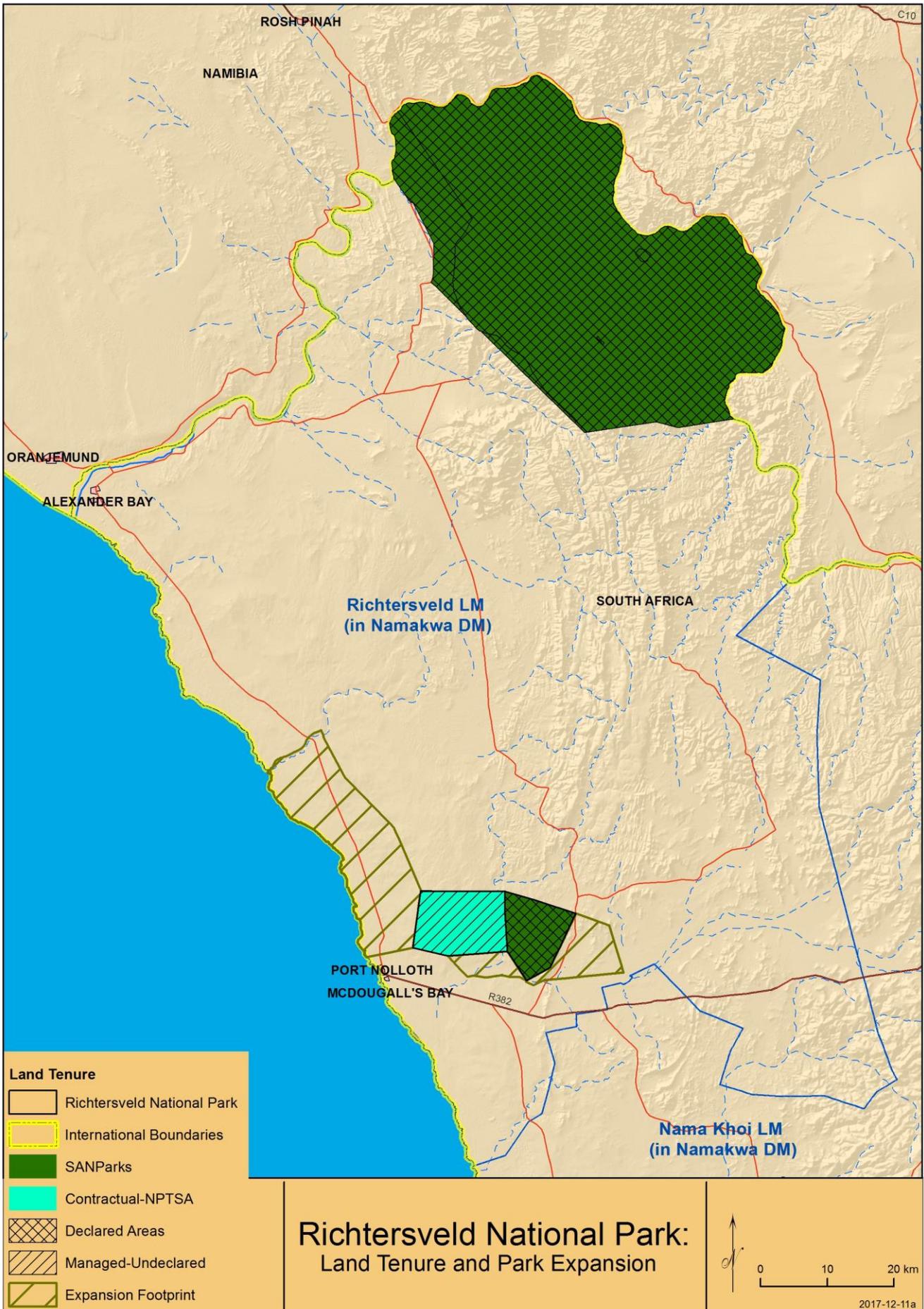
- Map 1: Regional context
- Map 2: Physical features
- Map 3: Land tenure and park expansion
- Map 4: Zoning
- Map 5: Zoning with sensitivity value
- Map 6: Buffer areas
- Map 7: Infrastructure and development
- Map 8: Vegetation



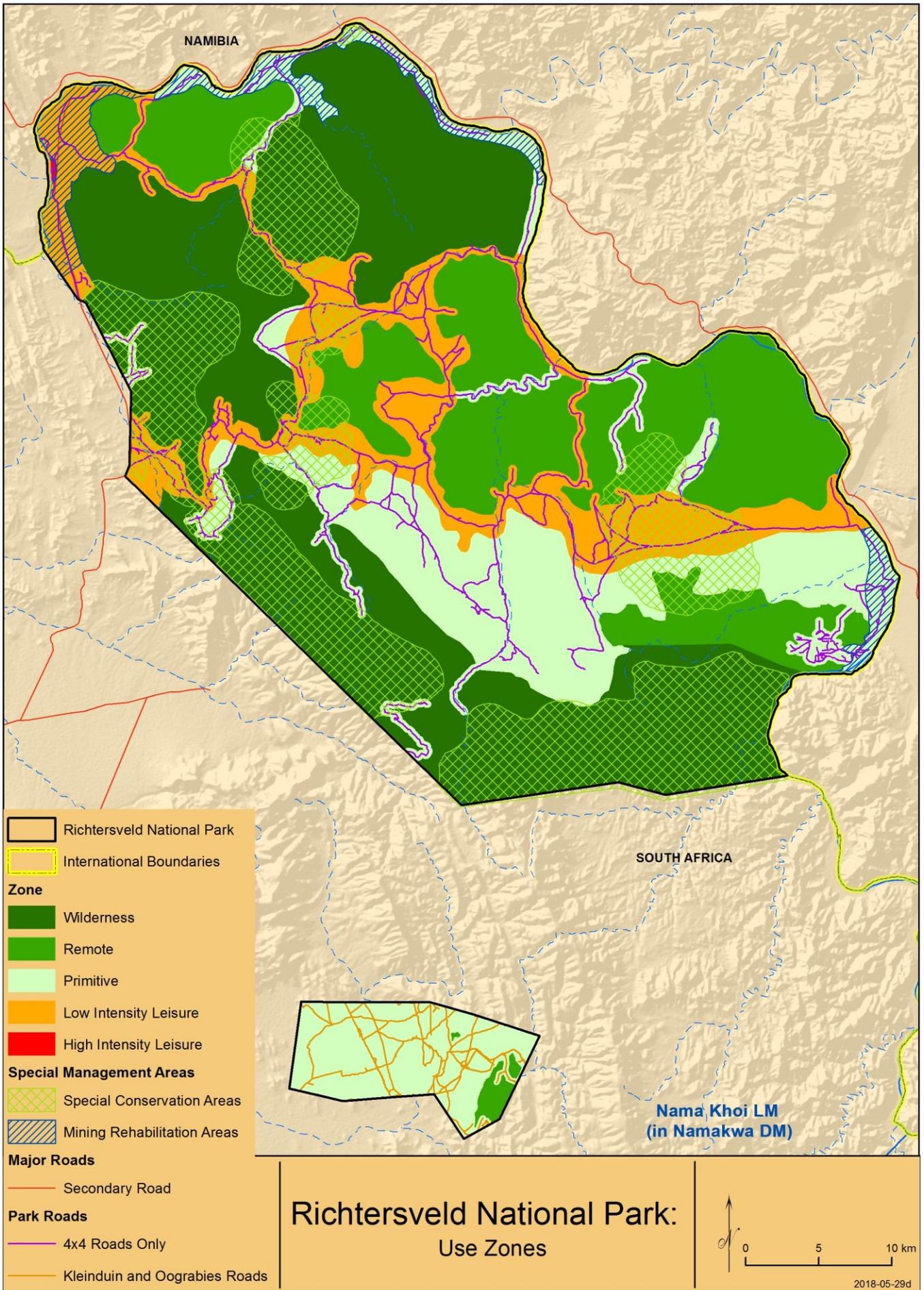
Map 1: Regional context



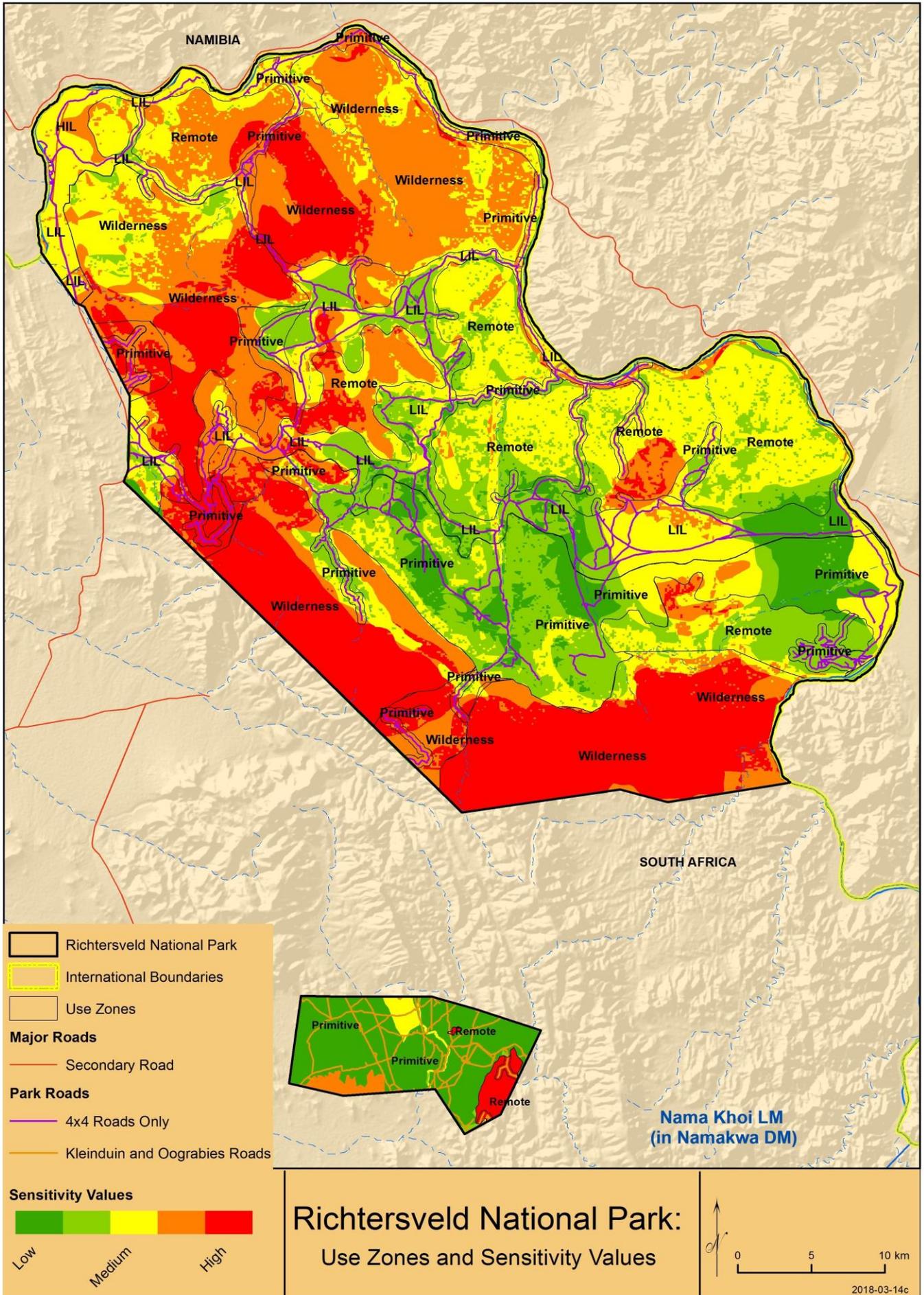
Map 2: Physical features



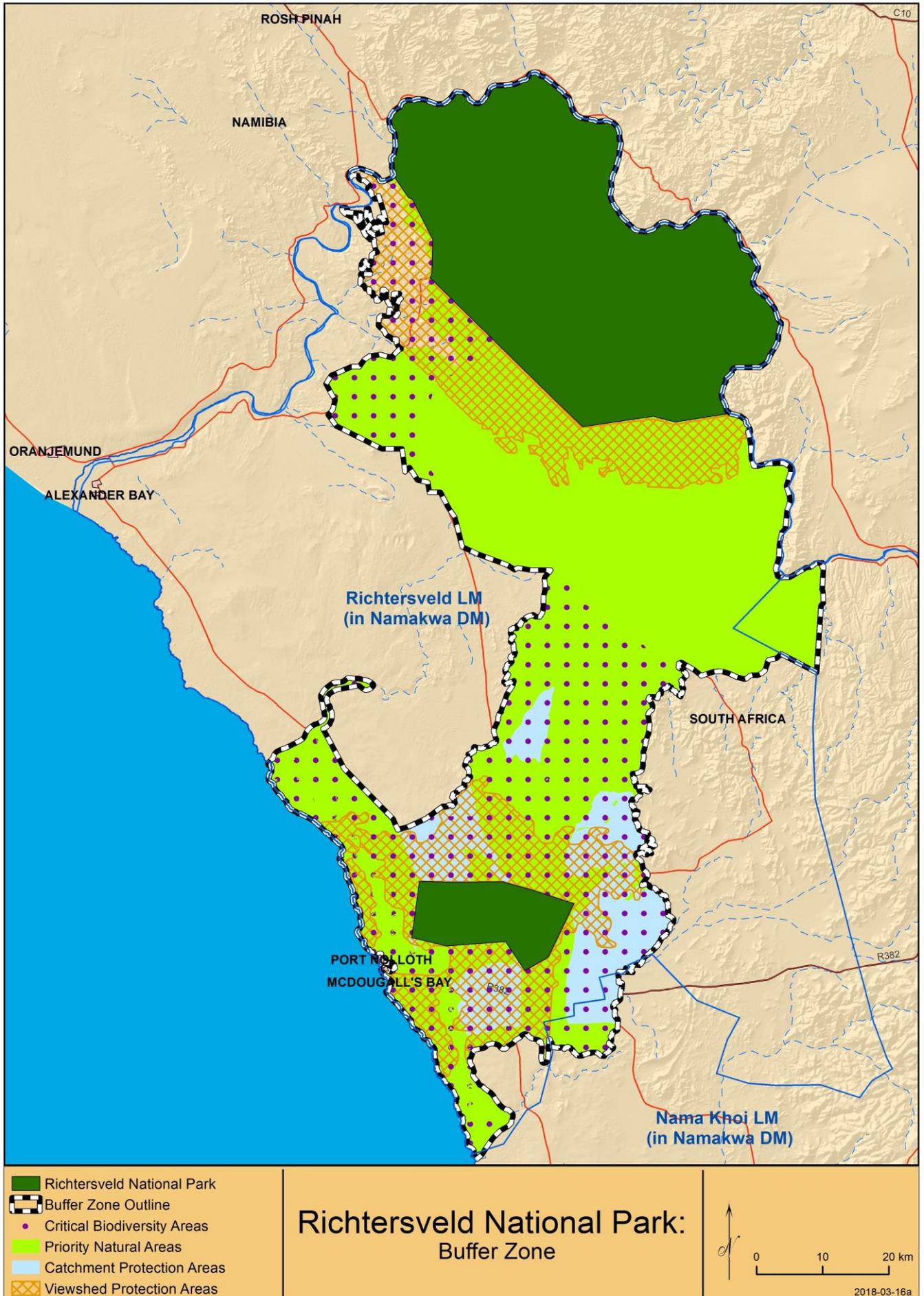
Map 3: Land tenure and potential expansion



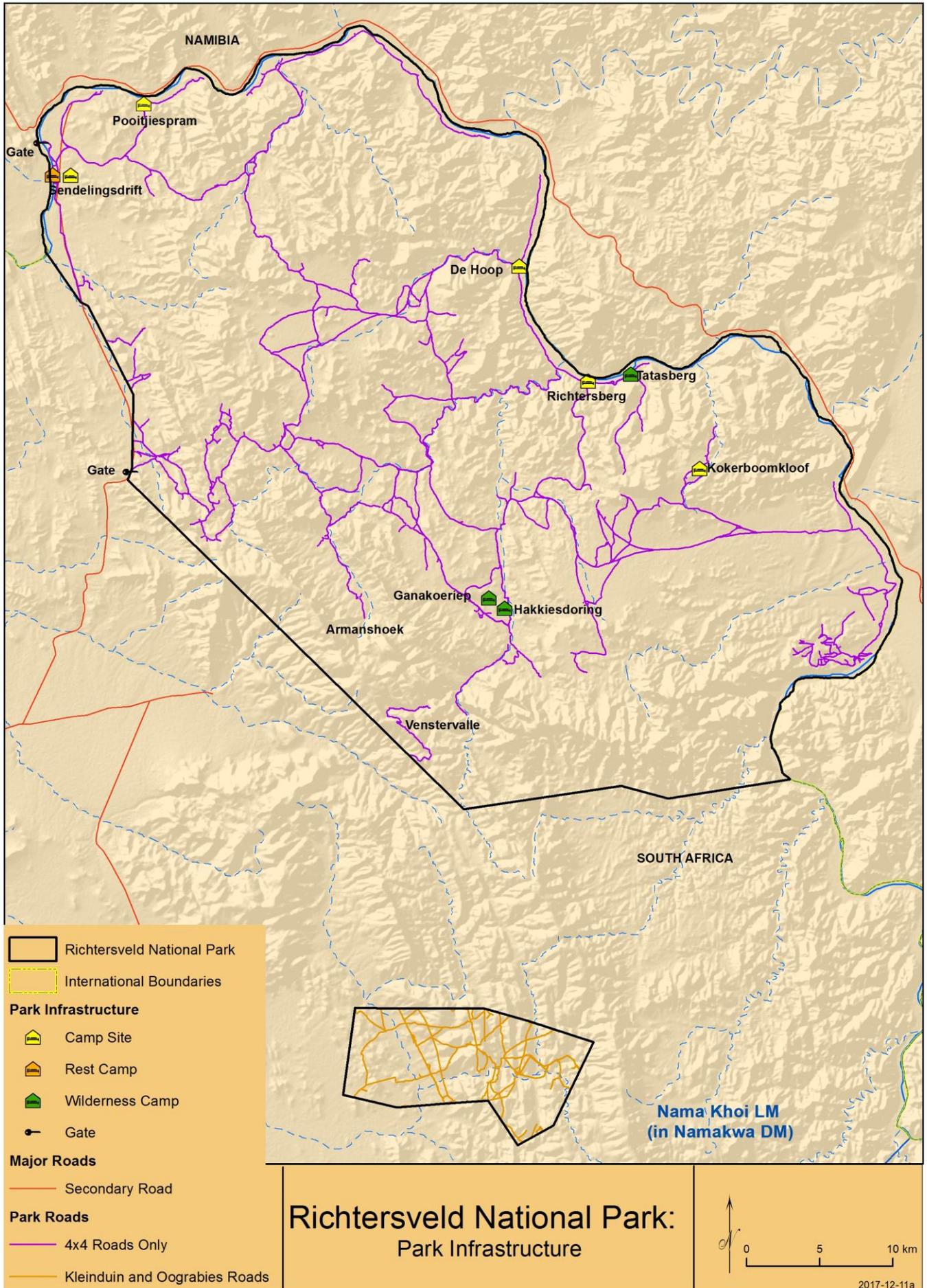
Map 4: Zoning



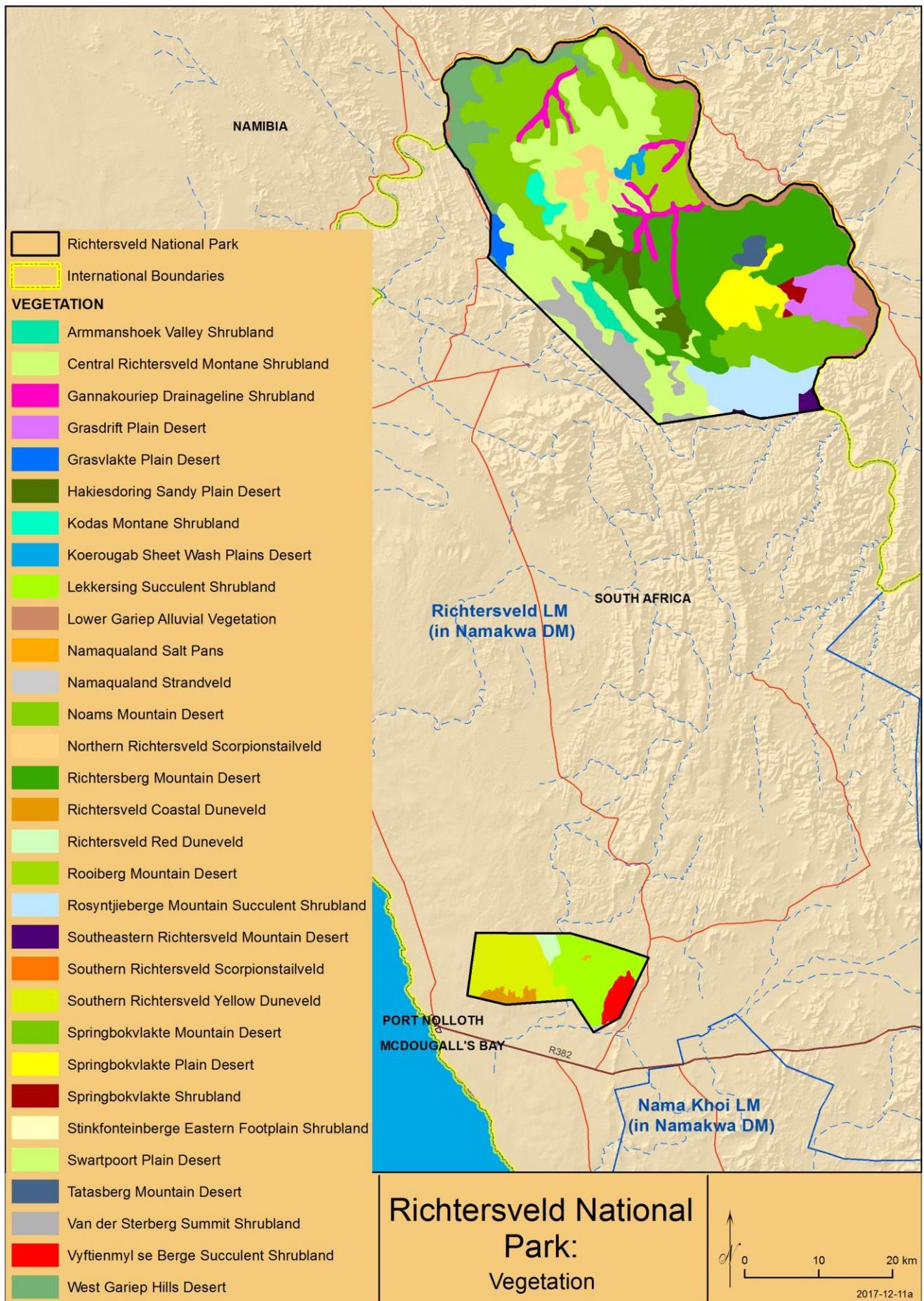
Map 5: Zoning and sensitivity



Map 6: Buffer zone



Map 7: Park infrastructure



Map 8: Vegetation