



Kruger National Park

Park Management Plan

**For the period
2018 - 2028**





Acknowledgement

This plan was prepared by Mr André Spies, with significant input and help from Mr Aurel Nyambi, Mr Blake Schraader, Ms Cathy Greaver, Ms Chenay Simms, Dr Corli Wigley-Coetsee, Mr Derek Visagie, Dr Eddie Riddell, Dr Marisa Coetzee, Ms Cathy Greaver, Mr Danny Thwala, Mr Danie Pienaar, Dr Danny Govender, Mr Ernest Daemane, Mr Glenn Phillips, Ms Guin Zambatis, Ms Helen Mheti, Mr Hendrik Sithole, Ms Hilda Mthimunye, Dr Hugo Bezuidenhout, Dr Izak Smit, Mr James Daniels, Mr Joep Stevens, Mr Johan Malan Ms Judith Botha, Mr Ken Maggs, Khethiwe Silubane, Mr Krawitz Dennison, Me Lerato Mathole Dr Llewellyn Foxcroft, Ms Louise Swemmer, Ms Lucia Hlatswayo, Ms Michelle van der Merwe, Ms Navashni Govender, Mr Piet Theron, Dr Peter Buss, Ms Purvance Shikwambana, Mr Reubin Ngwenya, Mr Robin Peterson, Dr Sam Ferreira, Ms Sharon Thompson, Mr Simon Marutha, Mr Solly Themba, Ms Tercia Strydom, Mr Thabo Kgomommu, Me Tracy Petersen, Mr William Mabasa, Mr Nhlanha Temba, Lindiwe Mbowane, Laura Mukhevo, the SANParks Planning Committee and the various stakeholders and focus groups that attended and contributed throughout the revision process.

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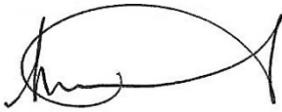
Section 1: Authorisation

This management plan is hereby internally accepted and authorised as required for managing the Kruger National Park (KNP) in terms of Sections 39, 40 and 41 of the National Environmental Management: Protected Areas Act No. 57 of 2003 (NEM: PAA).



Mr G. Phillips
Managing Executive: Kruger National Park

Date: 30 April 2018



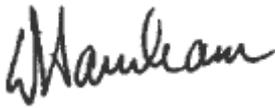
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Approved by the Acting Minister of Environmental Affairs



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Glossary

Aircraft	Means an airborne craft of any type whatsoever, whether self-propelled or not, and includes hovercraft and drones.
Catena	A sequence of different soil types in a distinct pattern following a hill slope gradient, i.e. from crest to valley bottom.
Contractual park	An area which has been declared as National Park through the Minister and which contributes to the objectives of a National Park, but of which SANParks is not the land owner. Contractual National Park agreements and/or co-management agreements are signed, and SANParks may be assigned to be part of a joint management authority through a range of possible institutional arrangements.
Co-operative arrangements	Institutional arrangements with a range of co-operative partners and/or sectors to contribute to common outcomes and collective impact, as guided by overarching principles and criteria, Norms and Standards, “best practice guidelines”, protocols, standard operation procedures.
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-STEEP 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.
Inselberg	An isolated outcrop, rock or hill which is elevated above the surrounding plains. Due to its high resistance to weathering, the surrounding geology had weathered and eroded to form flatter plains leaving the harder inselberg exposed.
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.
Local zones of increased vigilance	Animals in the wild will typically be vigilant about the environment and evolved mechanisms to respond to undesirable elements and stress as and when these occur.
Metapopulation	A “metapopulation” consists of a group of spatially separated populations of the same species which interact at some level.
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	MODIS (or Moderate Resolution Imaging Spectroradiometer) is a key instrument aboard the Terra and Aqua satellites. Terra MODIS and Aqua MODIS are viewing the entire Earth's surface every 1 to 2 days, acquiring data in 36 spectral bands, or groups of wavelengths, ranging in wavelength from 0.4 µm to 14.4 µm."
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.
Shale gas mining	Shale gas mining is a process that applies the technique of high-volume, horizontal, slick-water fracturing ('fracking' or 'hydraulic fracturing'). It involves pumping water, sand and chemicals into horizontally drilled wells under hydraulic pressure, to fracture the underground shale layers and release gas.
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, (Act No. 10 of 2004) (NEM: BA).
Strategic adaptive management	Strategic adaptive management integrates research, planning, management and monitoring in repeated cycles of learning how to better define and achieve goals. Built on the assumption that natural systems are complex, our knowledge is imperfect but we can learn from purposeful goals and actions.
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 desired long-term 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-STEEP	The values (social – including cultural heritage, technological, ecological, 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 aspects provide context and are used to develop a broadly acceptable vision for the future.



Acronyms and abbreviations

1	AMSL	Above Mean Sea Level
2	APNR	Associated Private Nature Reserves
3	ARC	Agricultural Research Council
4	APO	Annual Plan of Operations
5	BDU	Business Development Unit
6	BR	Biosphere Reserve
7	BSC	Balance Scorecard
8	BSP	Biodiversity Social Projects
9	CARA	Conservation of Agricultural Resources Act (Act No. 43 of 1983)
10	CBD	Convention on Biological Diversity
11	CDF	Conservation Development Framework
13	CH	Cultural Heritage
14	CITES	Convention on International Trade in Endangered Species
15	CM	Conservation Management
16	CMA	Catchment Management Agency
17	CPA	Community Property Association
18	CPF	Co-ordinated Policy Framework
19	CRMF	Corporate Risk Management Framework
20	CS	Communication Section
21	CSD	Conservation Services Division
22	CSIR	Council for Scientific and Industrial Research
23	CSM	Supply Chain Management
24	DAFF	Department of Agriculture, Forestry and Fisheries
25	DBE	Department of Basic Education
26	DCA	Damage Causing Animal
27	DEA	Department of Environmental Affairs
28	DEAT	Department of Environment Affairs and Tourism
29	DPW	Department of Public Works
30	DWS	Department of Water and Sanitation
31	EDRRP	Early Detection and Rapid Repose Programme
32	EE	Environmental Education
33	EIA	Environmental Impact Assessment
34	EMF	Environmental Management Framework
35	EMP	Environmental Management Plan
36	EPWP	Expanded Public Works Programme
37	EWR	Environmental Water Requirement
38	FEPA	Freshwater Ecosystem Priority Area
39	FPA	Fire Protection Association
40	FMD	Foot and Mouth Disease
41	FS	Finance Section
42	GG	Government Gazette
47	GKEPF	Greater Kruger Environmental Protection Foundation
48	GLC	Greater Lebombo Conservancy
49	GLTFCA	Greater Limpopo Transfrontier Conservation Area
50	GLTP	Greater Limpopo Transfrontier Park
51	GN	Government Notice
52	HIL	High Intensity Leisure
53	HRM	Human Resource Management
54	HWC	Human Wildlife Conflict

55	IAS	Invasive and Alien Species
56	IDP	Integrated Development Plan
57	IUCN	International Union for Conservation of Nature
58	JC	Joint Committee
59	JMB	Joint Management Board
60	JMC	Joint Management Committee
61	JOC	Joint Operational Committee
62	JPMC	Joint Park Management Committee
63	K2C	Kruger to Canyons
64	KIP	Kids in Parks
65	KNP	Kruger National Park
66	l	Litre
67	LED	Local Economic Development
68	LEDET	Limpopo Department of Economic Development, Environment and Tourism
69	LIL	Low Intensity Leisure
70	LLP	Lower Level Plan
71	LNP	Limpopo National Park
72	LUMS	Land use management scheme
73	LS	Legal Services
74	m	Metre
75	MaB	Man and Biosphere
76	MAJOC	Mission Area Joint Operations Centre
77	METT	Management Effectiveness Tracking Tool
78	MISA	Mpumalanga Independent Safari Association
79	MoA	Memorandum of Agreement
80	MoU	Memorandum of Understanding
81	mm	Millimetre
82	MTPA	Mpumalanga Tourism and Parks Agency
83	m/s	Millimeter per second
84	NEMA	National Environmental Management Act (Act No. 107 of 1998)
85	NDP	National Development Plan
86	NEM: BA	National Environmental Management: Biodiversity Act (Act No. 10 of 2004)
87	NEM: PAA	National Environmental Management: Protected Areas Act (Act No. 57 of 2003)
89	NFEPA	National Freshwater Ecosystem Priority Area
90	NHRA	National Heritage Resources Act (Act No. 25 of 1999)
91	NPAES	National Protected Areas Expansion Strategy
92	NPTSA	National Parks Trust of South Africa
93	NRMP	Natural Resource Management Programme
94	OHS	Occupational Health and Safety
95	OPEX	Operational Expenditure
96	P&C	People and Conservation Section
97	PDI	Previously Disadvantaged Individual
98	PPD	Park Planning and Development
99	PPP	Public Private Partnership
100	RENAMO	Resistência Nacional Moçambicana
101	RM	Risk Management
102	RS	Ranger Services
103	RT	Responsible Tourism
104	SAHRA	South African Heritage Resources Agency
105	SAIAB	South African Institute for Aquatic Biodiversity
106	SAM	Strategic Adaptive Management
107	SANBI	South African National Biodiversity Institute
108	SANParks	South African National Parks
109	SANS	South African National Standard
110	SAPS	South African Police Service
111	SDF	Spatial Development Framework
112	SED	Socio-Economic Development



113	SHEQ	Safety, Health, Environment and Quality
114	SHRs	SANParks Honorary Rangers
115	SMME	Small, Medium and Micro Enterprise
116	SOP	Standard Operating Procedure
117	SS	Scientific Services
118	SSC	Species of Special Concern
119	SSV	Skukuza State Veterinarian
120	T	Tourism
121	TOPS	Threatened or Protected Species
122	TPC	Threshold of Potential Concern
123	TS	Technical Services
124	UA	Universal access
125	UNESCO	United Nations Educational, Scientific and Cultural Organisation
126	VBR	Vhembe Biosphere Reserve
127	V-STEEP	Values - Social, Technological, Ecological, Economic and Political
128	VWS	Veterinary Wildlife Services

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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 the KNP, SANParks has reviewed the biodiversity conservation, Responsible Tourism and socio-economic components that make up its core business, whilst ensuring increased emphasis on strengthening stakeholder relationships and communication, continual learning, adaptive management and good governance.

An important objective for SANParks is to promote responsible experiential opportunities and products for visitors to appreciate and value National Parks. Whilst the primary mandate of SANParks is that of the conservation of biodiversity, it also recognises that Responsible Tourism also offers SANParks the best possible opportunity to supplement much needed funding for operational needs but also provides South Africa with an internationally recognised nature-based tourism destination of choice, further constituting an economically and culturally valuable asset to the region in which it occurs.

The desired state of the KNP is based on its vision, mission, vital attributes and objectives, whilst fully acknowledging that the park is embedded within a broader land use mosaic. It encompasses the characteristic biodiversity components, including ecosystem services, processes and associated cultural, historical and scenic features while facilitating the sharing of benefits with the neighbouring communities by creating a range of consumptive and non-consumptive benefits such as job opportunities, other forms of income generation, access to resources and other opportunities, while remaining informed and constrained by its biodiversity values. Programmes to achieve the desired state fall within eight categories, *i.e.* Regional Integration, Biodiversity Conservation, Wilderness, Responsible Tourism, Cultural Heritage, Socio-Economic Development, Stakeholder Relationships and Effective Park Management.

The focus on integrated land use over the next ten years will seek to deliver on the Great Limpopo Transfrontier Conservation Area Treaty which at its core seeks to drive collective action in pursuit of resilient communities and ecosystems whilst unlocking sustainable socio-economic benefits. To achieve this vision, the Management Plan can only be implemented through partnering with relevant sectors, organs of state, NGOs and communities, and as informed by the stakeholder engagement strategy. This will seek collaboration as guided by the Constitution, legal frameworks, National Development Plan, Provincial Growth Development Strategy, Great Limpopo Transfrontier Park Treaty bioregional plans and municipal Integrated Development Plans.

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 seeks not only to improve it but also to ensure that it remains relevant in a continually changing society. 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), whilst also incorporating the adaptive planning process adopted by SANParks. Stakeholders from local and district municipalities, other organs of state, traditional authorities, NGOs, local and metropolitan areas were consulted through public meetings, focus groups meetings, and written inputs (see Appendix 2).

Introduction

This Management Plan will provide the broad strategic and operational framework for the management of the park, thereby ensuring the protection of the SANParks values and achievement of the goals and objectives of the park within the context of the broader regional landscape over the next 10 years. The plan serves as the key driving document and 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 of Environmental Affairs in terms of sections 39 and 41 of NEM: PAA. It is intended to be implemented over a timeframe of 10 years after commencement but may be replaced earlier by a subsequently 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, 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; and
- **Appendices** to this plan contain further details such as declarations, stakeholder participation report, park development framework, internal rules, Gertenbach vs Venter land types and maps.



Section 2: Legal status

2.1 Name of the area

The name of the area is the Kruger National Park. The park was proclaimed on 2 September 1926 (Government Gazette No 1576 dated 2 September 1926). A full list of the declarations appears in Appendix 1.

2.2 Location

The park is situated in the north-eastern corner of South Africa bordering Mozambique in the east and Zimbabwe in the north (Appendix 7, Map 1).

2.3 History of establishment

The history of establishment can be briefly summarised as follows (Pienaar, U.de V., 1990; Joubert 2007):

- 1898 – proclamation of Government Game Reserve between Sabie and Crocodile rivers, but during the ensuing Anglo-Boer war (South African) the proclamation was nullified;
- 1902 – after the war the area was reproclaimed as the Sabie Game Reserve;
- 1903 – Shingwedzi Game reserve proclaimed between Letaba and Limpopo Rivers;
- 1916 – Sabie and Shingwedzi GRs consolidated; and
- 1926 – National Parks Act was promulgated and KNP was formally proclaimed.

Preceding proclamation hunter-gatherer communities of the Stone Age, including the San, left a rich heritage of rock paintings and other significant artefacts. The iron-age farmers, metalworkers and traders who followed were probably formidable hunters and utilised fire for various purposes. The era from the 12th century until around 1650 was characterised by active trade, first from Mapungubwe, along the Limpopo River to Mozambique and later from Thulamela situated in the north of the park.

The colonial and game preservation eras (1836 - 1925), followed by the establishment and early management-by-intervention eras are documented by Carruthers (1995), while Joubert (1986; 2007), Mabunda *et al.* (2003) and Venter *et al.* (2008) cover some of the more recent eras. The park also has a rich tourism history that spans more than a century and is well documented in various books, including "*Cameo of the Past*" (Pienaar 2012).

2.4 Contractual agreements

Contractual agreements remain one of the options available for communities and private landowners to become part of the park and improve the ecosystem services and -connectivity of the park, whilst contributions to other core functions such as Responsible Tourism, socio-economic benefits and management considerations e.g. safety and security, invasive alien species management and other risk factors are also considered. Table 1 below provides a summary of the privately-owned land that was contractually included into the park. The following land parcels were incorporated:

- Owner: South African Nature Foundation / South African National Parks Trust

SANParks has obtained land (properties known as, Kempiana, Lilydale, Spring Valley and Morgenzon) from Mr Hans Hoheisen in terms of an agreement entered into between the South African Nature Foundation and the National Parks Board, dated 12 June 1990. Further land (properties know as Vlakgezicht and Kempiana 90KU) was obtained from Mr Hoheisen through an agreement entered into between the South African National Parks Trust and the National Parks Board, dated 26 March 1992. The agreements remain in force in perpetuity (for the area to be managed as integral part of the park). The Kempiana Contractual Park area known as

Ngala Private Game Reserve (farms Vlakgezicht and Kempiana Portion 1), is being managed as a concession to enhance the operations and profitability.

- Owner: Makuleke Contractual Land

The area of land in question is called the Pafuri Triangle, stretching from the Limpopo River to the Luvuvhu River. In 1998 the Makuleke community was one of the first communities in South Africa to be awarded a land claim after the democratisation of the country in 1994. As part of the Settlement Agreement, the Makuleke community was given the rights to develop the area for the socio-economic benefit of the community, as long as it was used for conservation. SANParks is responsible for the conservation management of the area, a 50-year agreement governs the incorporation of the Makuleke land into the park, to be reviewed after 20 years. The Settlement and Co-Management Agreement are governed through the Joint Management Board (JMB), representing the Community Property Association (CPA) and SANParks, and operationalised through operational Joint Management Committees (JMCs).

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

Title deed	Farm name	Portion No	Extent (ha)	Owner	GG	Proclamation date	Period
T6866/1992	Vlakgezicht 75	Remainder of portion 1	863.8188	South African Nature Foundation / South African National Parks Trust	15540	1994/11/03	Remain in force in perpetuity, subject to possible transfer to SANParks.
T30743/1991	Lilydale 89	Portion 0	3,919.6874				
T30743/1991	Kempiana 90	Remainder	3,960.5422				
T30743/1991	Morgenzon 199	Remainder	2,114.3169				
T30743/1991	Spring Valley 200	Portion 0	3,838.1499				
T135289/1999	Makuleke 6	Portion 0	22,733.636	Makuleke community	19927	1999/04/16	50 years from 16 April 1999 with an option to review after 20 years.

2.5 Co-management agreements

The KNP is currently party to one co-management agreement. The Makuleke contractual park is managed according to the signed management agreement as well as the Management Plan for the area. It was agreed that the area would be managed through a co-management arrangement with the park. The Makuleke community established a Community Property Association (CPA) to acquire, hold and manage the land. In terms of the Makuleke land restitution settlement arrangement, ownership of the claimed properties was restored to the claimants and SANParks has concluded a contractual park and co-management arrangement with the community. The Makuleke community agreed to become part of the park, as a contractual park in terms of Section 2B(1)(b) of the National Parks Act, provided that in so doing, the community through the CPA, maintains active participation in the management of the land, its rights to determine what commercial activities may take place on the land and conduct appropriate commercial activities. The Makuleke Conservation Development Framework (2010) provides for resource use as hunting, pending compliance with the legal framework and as guided by the necessary protocols.

A Joint Management Board (JMB) that consists of three members from both parties (SANParks and the CPA) governs the management of the Makuleke contractual park in terms of the co-management agreement. Implementation of the Co-management Agreement is guided by the SANParks and KNP Policy framework, unless if reviewed and endorsed otherwise by the JMB. The Co-management Agreement provides for the sustainable use of specified natural resources, as governed by the legal framework and overarching protocols. The Makuleke Co-management agreement and institutional arrangements are currently under review, to seek further alignment with the Great Limpopo Transfrontier Conservation Area (GLTFCA) institutional review processes. This will seek to leverage transboundary tourism and socio-economic opportunities, whilst promoting broader landscape based and seamless conservation management operations.



2.6 Total area

The park is currently 1,919,430 ha in size, of this, 1,913,327 ha is declared and managed. 3,564 ha is declared but not managed due to the biophysical location of the land parcels (farms Ingrid, Vaalribbok, Rooiduiker) (Appendix 7, Map 3). 2,538 ha is undeclared as a result of land swops (farms Daannel, Phologolo) and / or land parcels included due to the location of the railway line on the south western boundary, between Matsulu and Numbi gate (Appendix 7, Map 3).

2.7 Highest point

The highest point in the park is Khandizwe hill at 839 m (2,751 feet) above mean sea level (AMSL). The latter is of note, for the airspace above the park up to 2,500 feet above the highest point, as per legislation, is also deemed National Park (Appendix 7, Map 2a-b). Thus, the park's airspace ranges from anywhere in the park (ground level) up to 1,601 m (5,252 feet) AMSL.

2.8 Municipalities within which the park falls

The park is situated within and/or adjacent to the following district and local authority boundaries:

- Ehlanzeni District Municipality:
 - Bushbuckridge Local Municipality;
 - Mbombela Local Municipality; and
 - Nkomazi Local Municipality.
- Mopani District Municipality:
 - Ba-Phalaborwa Local Municipality;
 - Greater Giyani Local Municipality; and
 - Maruleng Local Municipality.
- Vhembe District Municipality:
 - Musina Local Municipality;
 - Collins Chabane Local Municipality; and
 - Thulamela Local Municipality.

2.9 Land claims

To date (2018), there are 15 land claims registered against the park, of which six have been settled.

In 2008, Cabinet decided to provide the KNP land claimants alternative redress. The decision not to restore the land rights in the park, which is considered a national and international asset, was taken after careful consideration and is intended to strike a balance between the rights of the claimant communities and the interests of society as a whole. The Cabinet therefore;

- approved the use of equitable redress as the only option for the settlement of land claims against the park;
- approved that the Land Claims Commission and the Departments of Environmental Affairs and Tourism jointly inform the affected claimant communities of the above decision prior to any public statement on the matter;
- noted that the Commission on Restitution for Land Rights reserves the rights to assist claimants in any possible recourse by claimants; and
- Approved and instructed that the Minister of Agriculture and Land Affairs (now the Department of Rural Development and Land Reform) must submit a memorandum aimed at facilitating a strategic discussion on Land restitution.

Equitable redress refers to the awarding of alternative land and / or financial compensation in settlement of a valid land claim lodged against the State by an individual or a community. Financial compensation was envisaged to be the only option for the claimants in this case. The State will retain title to the land. The equitable redress option proposed by the State includes the awarding of financial compensation and / or alternative land, coupled with other benefits for claimant communities which will be informed by the guiding principles. This may include: access to ancestral and traditional sites and graves on agreed calendar days for traditional and ritual commemorations; acknowledgement of the history of communities when naming facilities and camps, access to environmental education (EE) and learning for children and youth; job opportunities; preferential procurement opportunities; introduction of a "community levy" from all visitors which is to be channelled into a Community Trust Fund to fund future community development projects; broad-based black economic empowerment opportunities and equity in commercial concessions. The additional benefits will be finalised subject to further engagement with the affected claimants, and through concluding post-settlement agreements. At this point in time (2018), six claimant communities have received payment regarding the settlement agreement. The negotiations and settlement processes for the outstanding land claims are continuing between SANParks, the Land Claims Commission and the claimants.

It is important to note that the land claims process has been re-opened until 30 June 2019 and this may result in further claims against the park.

2.10 International, national and provincial listings

The Great Limpopo Transfrontier Park (GLTP), which straddles the borders of Mozambique, South Africa and Zimbabwe constitutes a conservation area of 37,572 km², and includes Kruger National Park in South Africa, the Limpopo National Park (LNP) in Mozambique and Gonarezhou National Park in Zimbabwe. This area forms the core of the Great Limpopo Transfrontier Conservation Area (GLTFCA) measuring almost 100,000 km². This larger conservation area will also include Banhine and Zinave National Parks in Mozambique as well as various privately, community and state-owned conservation areas in Mozambique, South Africa and Zimbabwe bordering the GLTP.

The park is also part of the United Nations Educational, Scientific and Cultural Organisation (UNESCO) Vhembe and Kruger to Canyons (K2C) Biosphere Reserves (BR). The K2C BR straddles the Mpumalanga and Limpopo Provinces, and contains widely diverse landscapes, ranging in altitude from 300 m AMSL in the east to more than 2,000 m AMSL in the Drakensberg Escarpment where the plateau basin begins. It is of particular importance in relation to water catchment services. It contains three major biomes (distinctive biogeographic regions), namely dry savanna woodlands, Afromontane forest and Afromontane grassland. These climatic variations further add to the increase in ranges of habitats which favour species diversity. As the altitude (and consequently rainfall) increases from east to west, vegetation progressing from scrub and savannah in the east to South Africa's unique fynbos floral system, rainforests, and climax grasslands on the top of the Escarpment in the west.

The Vhembe BR holds a unique and extraordinary biological and cultural diversity represented in the Soutpansberg and Blouberg Mountains and the Mapungubwe World Heritage Site. The BR includes the high biodiverse northern part of the Kruger National Park, the Mapungubwe National Park and World Heritage Site, several Provincial Nature Reserves, two recognised centres of biodiversity and endemism (the Soutpansberg and Blouberg) and the Makgabeng Plateau with more than 1,000 rock art sites.

2.11 Environmental authorisations

Environmental authorisations have been issued for the developments listed below:

- Shangoni Gate development and activity hub;
- Skukuza Safari Lodge; and
- Phalaborwa Activity hub.

2.12 Biophysical description

2.12.1 Climate

2.12.1.1 Historic

The park's climate ranges from tropical to subtropical with high mean summer temperatures and mild, generally frost-free winters. Rainfall, delivered mostly through convective thunderstorms, is concentrated between October and April. A rainfall gradient stretches from an annual mean of about 750 mm in the



south-west, to 350 mm in the north-east, although strong inter-annual and roughly decadal cyclic variations exist, with droughts considered endemic. In the 50 years between 1960 and 2009, average minimum and maximum temperatures have both increased by about 0.85 °C at Skukuza (van Wilgen *et al.* 2016). In 2016 the hottest day recorded was 45.1 °C and the lowest temperature 2.6 °C. The dominant winds are from the southeast and northwest directions with the average wind speeds around 2.5 m/second. The mean humidity at midday in summer ranges from 50 to 53 % and in winter from 37 to 42 % (du Toit, Rogers and Biggs 2003).

2.12.1.2 Future

Recent measurement suggest that temperatures are increasing in the park. While an increase of 1 – 2 °C may seem small, it can have a dramatic effect on the number of extremes (hot days) experienced. For example, during the last two summers (2014 - 2016), half the days have reached or exceeded 35 °C, compared to just one quarter of summer days in the past (1960s). Further increases of between 1.3 °C (best case), 2 °C (intermediate) and 2.5 °C (worst case) are predicted by 2050 (DEA, 2013; Driver *et al.* 2012; Holness & Bradshaw, pers. comm.).

No changes in total rainfall were detected in the 90-year historical rainfall record for Skukuza. Future predictions for the Kruger area range from an increase of roughly 26 % to a decrease of roughly 38 % under the driest scenario for 2050 (DEA, 2013; Driver *et al.* 2012; Holness & Bradshaw, pers. comm.). Intermediate scenarios of change predict a minor decrease in rainfall. Although it is not yet clear which of the future scenarios is the most likely, most models favour the wetter scenarios in the east of South Africa. These predictions do not however include how predictable rainfall is likely to be. Generic climate change predictions forecast more erratic rainfall (high in some years, low in others, or more infrequent but heavier rainfall downpours instead of lighter steadier rain events which will lead to an increase in floods, such as was experienced in 2012 and 2013, and droughts as was experienced in 2015 and 2016). Unpredictable rainfall could have negative biodiversity consequences in the future, even if average (across years) rainfall increases or does not change.

While the predicted future scenarios all still reflect conditions typical of savanna systems in general, substantially different conditions prevail in wet and arid savannas and lower rainfall conditions may more closely resemble arid savanna. The effect of carbon ‘fertilization’ will also play a role. Atmospheric carbon dioxide (CO₂) has increased by approximately 40 % globally since pre-industrial times. Higher levels of CO₂ favour the growth of woody plants (shrubs and trees), and give them a competitive advantage over grassy plants, which can result in increased woody cover and bush encroachment. This bush thickening is already observed over large parts of the KNP with negative effects on species that prefer more open areas.

2.12.2 Topography

The park is part of the eastern Lowveld, the low-lying area below the foot slopes of the Drakensberg Great Escarpment and the Lebombo hills in the east. The Lowveld, which consists mainly of plains with low to moderate relief, forms part of a broad landform pattern which Kruger (1983) called the eastern plateau slope. On average the Lowveld lies at about 300 m AMSL and has a gentle slope towards the east. Five major landform types have been identified in the park (Venter 1990). The landform types are related to the various rock formations and reflect the differences in weathering ability of these rocks. They also reflect intensity of dissection in areas which flank the major rivers.

2.12.3 Geology and soils

The present day geological landscape of southern Africa resulted from an intricate combination of upliftment, deformations and planation processes which were initiated due to the creation of the African continent during the Cretaceous period when Gondwanaland separated (Du Toit,

1954; Venter and Bristow, 1986). The geomorphology of the eastern parts of South Africa, particularly the Lowveld region and KNP has been directly influenced by the broader geological processes which took place in southern Africa. As such, the current landscape morphology is largely influenced by geological structures and the differences in resistance to weathering by different rock types and formations (Venter & Bristow, 1986).

The park is underlain by a variety of igneous, sedimentary and metamorphic geological formations as well as unconsolidated sediments deposited over a time span of more than 3.5 billion years (Venter *et al.*, 2003). The most important litho- stratigraphic units that are present in the park include, the Basement Complex which consists of ancient granitoid rocks of Swazian age (>3,090 million years), sedimentary and volcanic rock of the Soutpansberg Group and the volcanic rock of the Karoo Supergroup (Venter, 1990). Geologically, the park is divided roughly into granites (coarse-grained igneous rock) on the west and basalts (fine-grained igneous rock) on the east. The regions of the park located above granitoid rocks are distinctly gentle to moderately undulating areas with noticeable inselbergs. These inselbergs are dome-like structures in the granitoid rocks with higher weathering resistance (Venter & Bristow, 1986). Roughly 60 % of the park's surface is underlain by various types of Precambrian granitoid rocks (Barton *et al.*, 1986). According to Barton *et al.* (1986), these rocks provided the basement on which the 1,800 million years old Soutpansberg Group and the 300 million years - 170 million years old Karoo sedimentary and Lebombo volcanic rocks, located north of the Soutpansberg and along the eastern boundary of the park, could be deposited.

In some areas where gabbro and dolerite intrusions strike through these granitic areas, the landscape features are flatter areas of relief (Venter & Bristow, 1986). The Malelane Mountains in the southwestern region of the park comprises of granite, gneiss and migmatite (Schutte, 1986). Due to the lithological strike in a north-south orientation, the geological succession changes from west to east. A narrow north-south stretch of sedimentary rocks separate the granitic and basaltic regions while a rhyolite band runs parallel on the eastern boundary of the park (Venter *et al.*, 2003). There is an assortment of geological material in the park which is evident from the Lebombo Mountains on the eastern boundary with Mozambique, the sandstone hills northeast of Punda Maria and the granitic rocky terrain in the southwest of the park between Pretoriuskop and Malelane (Mabunda *et al.*, 2003).

The topography in the park is also influenced by differences in the underlying geology's resistance to weathering and the intensity of dissection in locations that border the major rivers in the park (Schutte, 1986; Venter, 1990). Within the park, the Lebombo Mountains peaks at a maximum height of 497 AMSL while the Malelane Mountains in the southwestern region of the park averages about 800 AMSL. The remainder of the park is a gently undulating landscape between 200 m and 400 m AMSL with a gentle gradient to the east (Schutte, 1986; Venter, 1990). The Nwambiya Sandveld is a flat landscape situated just south of Pafuri consisting of old coastal deposits, including cobble stone layers and flattened sand dunes of the Cenozoic (Venter, 1990).

There is strong correlation between geology and soils of the park (Venter, 1990; Venter *et al.*, 2003). Soil profiles generally become shallower as rainfall decreases towards the north. This is particularly noted for the coarse-grained soils (sands and loamy sand) derived from the granitic materials, where soil depths decrease from approximately 150 cm in the Pretoriuskop area (rainfall 750 mm/yr) to 30 cm north of Phalaborwa (rainfall 350 mm/yr). In the southern granitic parts of the park, which are underlain by the granite / gneiss of the basement complex, there are numerous catenas throughout the landscape with the distinctive crest to valley bottom catenal sequence. From crest to valley bottom the soils usually occur in the following pattern: along the crest and midslopes sandy-hydromorphic (coarse grained) soils, duplex soils along the foot slopes and complex alluvial soils are found along the valley bottoms. The Karoo sequence (basalt) which is a predominantly flat landscape (low undulation) produces fine-grained soils that have high clay content with olivine-rich clay soils in the northern plains and olivine-poor soils in the southern plains. Alluvial soils occur along most of the drainage lines in the park, the extent of which increases as the size of drainage lines increase. Older river terraces and gravels also occur along the major rivers. The most extensive alluvial deposits are found along the Limpopo and Luvuvhu Rivers in the north of the park (Venter, 1986; Venter, 1990; Venter *et al.*, 2003).

Soil can be defined as a naturally-occurring body of unconsolidated material which supports functional ecosystems. This vital resource delivers very specific services to the ecosystem which varies between soil types. Soil properties such as depth, texture and structure control the movement and storage of water underground. These physical soil properties along with soil nutrients are evidently reflected in the biotic components of the ecosystem (Venter, 1986).



2.12.4 Freshwater ecosystem

2.12.4.1 Rivers

The park lies within the central region of two transboundary river basins, the Inkomati and the Limpopo systems. The Inkomati system is shared by South Africa, Swaziland and Mozambique, while the Limpopo system is shared by South Africa, Mozambique, Zimbabwe and Botswana.

At the broadest scale surface water is available throughout the year in the five perennial rivers that flow into the park and drain its seasonal and ephemeral streams with the exception being during extreme droughts. These rivers are the Luvuvhu, Letaba, Olifants, Sabie-Sand and the Crocodile. The diametrically opposed geologies of the Granites and the Basalts in the park have a strong influence on seasonal and ephemeral stream density with a significantly greater density on the granitic areas in the west. Whilst surface water availability in these channels is seasonal to intermittent, on the basalts in particular surface water is often present in local pools along the drainage network where these streams intersect the local groundwater table. On the granites, the seasonal streams that are characterised by deep sandy alluvium, have deep pools that persist for significant periods of time. The surface hydrology and river geomorphology of the perennial rivers of the park are well documented in scientific literature (Gaylard *et al.*, 2003; Rogers & O'Keeffe, 2003; O'Keeffe & Rogers, 2003; Cullum & Rogers, 2011). The hydrological processes of the smaller tributaries and drainage networks are documented in (Riddell *et al.*, 2015).

South Africa has adopted a 20 % conservation target for freshwater ecosystems and Freshwater Ecosystem Priority Areas (FEPAs) have been identified to satisfy this national target (Nel *et al.*, 2011). A substantial proportion of the river length in the park (50 %) has been selected as FEPAs making the park an important conservation area in achieving national freshwater ecosystem conservation goals. There are 19 river ecosystem types in the park of which, 82 % river length are in A/B class (natural or good ecological condition), 15 % in C class (moderate condition) and 3 % in D class (modified condition). 8 % River length has been identified as vital fish support areas.

2.12.4.2 Wetlands

Seasonal and temporal wetlands are common in the park with 10 – 15 % of the land surface area covered by areas with wetland features, most are associated with preferential water flows in river valleys, depressions or hill-slope seeps (Grootjans *et al.*, 2010). There are 59 wetland ecosystem types in the park of which 23 % of the wetland area classified as a FEPA.

The Makuleke Wetlands is a RAMSAR site declared in 2007. This wetland features a series of 27 floodplain pans encompassing 7,757 ha that straddles the Limpopo River within the Makuleke Contractual Park portion of the park as well as the Luvuvhu River floodplain of the Limpopo and Luvuvhu Rivers. The Makuleke Wetlands comprises several landscape features that include riverine forest, riparian floodplain forest, floodplain grassland, river channels and pans, which supports a high diversity of species, some of which have their centres of distribution in the area.

Spring Mires Wetlands that are fed by thermal water are globally rare (Grootjans *et al.*, 2010). The only place where these types of wetlands are formally protected in South Africa and possibly the world are in the park at Malahlapanga and Mfayeni, (Grundling, pers. comm. 2012). The Malahlapanga thermal spring mire is situated near the western boundary of the park on a small tributary stream, close to its confluence with the Mphongolo River. There are a few thermal spring mires (1 m – 20 m in diameter) present within an area of 4 – 6 hectares. The peat thickness is 1 m – 2.5 m, of which 1 m – 1.5 m is elevated above the surroundings. Based on peat thickness and accumulation rates at Malahlapanga, the domes are estimated to be 7,000 – 14,000 years old (Grootjans *et al.*, 2010).

2.12.4.3 Groundwater

The aquifer systems in the park consists of deep fractured aquifers composed mainly of crystalline material (igneous and metamorphic rocks) characterised by an intact and relatively unweathered matrix with a complex arrangement of interconnected fracture systems. Alluvial aquifers where alluvial material overlies or replaces the weathered rock create distinct intergranular aquifer types that can be found along major river systems (Fischer et al., 2008). The regional groundwater is typically recharged by 1 % of the mean annual precipitation and the perennial rivers of the park are strongly base flow dependent on the regional aquifer (Petersen, 2012). The groundwater chemistry is characterised by different hydro-chemical regions which are strongly associated with the underlying geology (Leyland & Witthüser, 2007).

2.12.5 Flora

There are close on 2,000 plant species in the park, including about 400 trees and shrubs, and 220 grasses. Numerous classification systems have been used to divide the park into various vegetation, physiographic and natural history zones, and composites of these.

At a very coarse level, the vegetation can be considered as falling into one of three zones (Appendix 6, Map 8). A lower nutrient, higher rainfall well-wooded area occurs in the southeast and important trees are bush willows, Combretum spp., especially *C. apiculatum*, knob thorn *Acacia nigrescens*, tamboti *Spirostachys africana* and marula *Sclerocarya birrea*. The southeast lies on basalts with palatable productive grasslands and some trees such as knob thorn, marula and leadwood *C. imberbe*. The northern half of the park is, broadly speaking, dominated by mopane *Colophospermum mopane* with more fertile open grasslands on the eastern basaltic half, and more undulating landscapes with woodlands including bush willow trees Combretum spp. in the northwestern quadrant. Despite a dominance of mopane, some very interesting vegetation can be found in the north. Lowveld Riverine Forest occurs along the major rivers in the north of the park with large specimens of fig trees, *Ficus* spp., fever trees *Acacia xanthophloea*, Ana trees *Faidherbia albida* and Nyala trees *Xanthocercis zambesiaca* forming part of this endangered vegetation type. Moving away from this riverine vegetation in the north, a more arid area is found with the spectacular baobabs *Adansonia digitata* and, common star-chestnuts *Sterculia rogersii* being just a few of the impressive species to be seen. Punda Maria is also a wonderfully rich botanical area and it is home to one of the endangered species in the park, the pepper bark *Warburgia salutaris*, so sought after for its medicinal qualities. The relatively rare sandveld vegetation type, Nwambiya-Pumbe Sandy bushveld, can be found to the east of Punda Maria.

At a finer scale, two important pieces of work have contributed to our understanding of vegetation patterns within the park. Although vegetation classification was not the main aim of these, the vegetation classifications obtained have been used to delineate the park into management units:

- Gertenbach (1983) delineated the park into 35 landscapes; a landscape is defined as “an area with a specific geomorphology, macroclimate, soil and vegetation pattern and associated fauna”. The vegetation component of the land types was mapped using descriptions by various SANParks staff (Van der Schijff, 1957; Van Rooyen, 1978; Coetzee, 1983; Gertenbach, 1987; Van Wyk, 1984), as well as 1,500 Braun-Blanquet plots.
- Venter (1990) proposed 56 land types (and these were amalgamated into 11 land systems) as a basis from which to plan management and ecological studies of the park. For the purpose of Venter’s work, land type is defined as “an area or group of areas throughout which a recurring pattern of topography, soils and vegetation can be recognized”. In order to delineate the land types, Venter thus classified vegetation, which was done at about 2,000 sites. The vegetation was described using an adapted Braun-Blanquet method following Coetzee and Nel (1978), cover was estimated using the scale of Coetzee (1983) and the structural classification followed the method of Gertenbach (1987).

The most recent classification of vegetation was done by Mucina and Rutherford (2006) during their revision of vegetation nationwide. The 21 vegetation types that fall within the park are summed up regarding cover within the park, geology and soils, landscape features, and vegetation in Table 2 below. In addition the relationship between the Gertenbach and Venter classifications is shown in Appendix 4.

Table 2. Vegetation types in the park.

Mucina & Rutherford vegetation types	% Cover	Geology and soils	Landscape	Dominant or interesting vegetation
Limpopo Ridge Bushveld (SV/mp 2)	2.2	Steep basalt slopes and shallow calcareous soils, rich in lime concretions.	Irregular plains with ridges and hills.	<i>Kirkia acuminata</i> on some ridges and <i>Adansonia digitata</i> on shallow calcareous gravel.
Cathedral mopane bushveld (SV/mp3)	1.5	Sandstone and shale of the Karoo Supergroup, soils often deep with high Na.	Flat to concave landscape.	High moderately closed tree savanna dominated by <i>Colophospermum mopane</i> 10-15 m tall.
Mopane Basalt Shrubland (SV/mp4)	14.8	Basalts of the Letaba Formation, soils deep with high clay content.	Plains and slightly undulating plains.	Medium to low shrubs dominated by 1-2 m <i>Colophospermum mopane</i> .
Tsende Mopaneveld (SV/mp5)	17.4	Letaba Basalts of the Karoo Supergroup, quartz-feldspar rocks of the Goudplaats Gneiss ^{Paraná}	Slightly undulating plains.	Medium to high shrubby savanna dominated by <i>Colophospermum mopane</i> but <i>Combretum apiculatum</i> increasing on less clayey soils
Lowveld Rugged Mopaneveld (SV/mp6)	5.6	Gneiss with some ultramafic metavolcanic rocks (e.g. amphibole, serpentine, etc.).	Slightly to extremely irregular plains with sometimes steep slopes and prominent hills.	Dense shrubs, occasional trees and sparse ground cover.
Phalaborwa-Timbavati Mopaneveld (SV/mp7)	4.5	Quartz-vekdspaar of the Makhutusi Gneiss with some granite; sandy soils on the uplands and clayey soils in the bottomlands.	Undulating plains.	Open tree savanna on the uplands dominated by <i>Combretum apiculatum</i> , <i>Terminalia sericea</i> and <i>Colophospermum mopane</i> , <i>Combretum apiculatum</i> decreasing on more clayey soils and <i>Senegalia nigrescens</i> becoming more common
Mopane Gabbro Shrubland (SV/mp8)	1.6	Gneiss intruded by dykes of gabbro; soils dark with relatively high clay content.	Slightly irregular to slightly undulating landscape with numerous outcrops of gabbro	Mainly a low shrub layer with two structural variations; shrubveld with very little trees and shrubveld with few larger trees
Makuleke Sandy Bushveld (SV/11)	3.5	Sandstone of the Waterberg system with diabase sills and dykes intruded. Cave sandstone forms prominent hills (koppies); deep sands to shallow sandy lithosols.	Variable landscapes from low mountains, slightly to extremely irregular plains to hills (koppies).	Tree savanna on deep sand and moderately to dense ground cover; different on stony ground where <i>Kirkia acuminata</i> , <i>Croton gratisisimus</i> , <i>Combretum apiculatum</i> and <i>Diplothrincus condylocarpon</i> can be found.
Nwambya-Pumbe Sandy bushveld (SV/12)	0.9	Cretaceous Malvernia Formation conglomerate with overlying sandstone and quaternary sands; soils deep sands and some shallow lithosols.	Flats with several pans.	Moderately open tall scrubland with few trees; <i>Xeroderis stuhlmannii</i> , <i>Xyia torreaana</i> and <i>Hugonia orientalis</i> important taxa.
Delagoa Lowveld (SV/14)	2.6	Karoo Supergroup shale and sandstone with sheets and dykes of dolerite; soils rich in Na and prone to erosion.	Terrain concave, low lying and quite flat with slight slopes.	Dense tree or tall shrub layer dominated by <i>Senegalia welwitschii</i> .
Sand forest (FOz8)	0.07	Dull brown/red-brown, deep arenosols, and dystyric regosols (soils contain very little clay and are acidic).	Flats.	Dense thickets (5-6 m) and poorly developed ground layer; <i>Baphia massalensis</i> , <i>Cleistanthus schlecteri</i> and <i>Gulbournia conjugate</i> most conspicuous trees in Nwambya, well developed shrub layer with <i>Eragrostis moorii</i> in ground layer



Mucina & Rutherford Vegetation types	% Cover	Geology and soils	Landscape	Dominant or interesting vegetation
Granite Lowveld (SV13)	16.8	Archaic gneiss and granite; sandy soils in uplands and clayey soils with high Na in lowlands.	Unique catenal pattern.	Tall shrubland with few trees to moderately dense low woodland on deep sandy soils (uplands), dense thicket to open savanna on lowlands with dense herbaceous layer. <i>Terminalia sericea</i> and <i>Eragrostis gummiflora</i> on seep lines (mid-slope).
Tshokwane-Hlane Basalt Lowveld (SV15)	11.8	Letaba Formation basalts; black, brown or red clayey soils, vertisols in low-lying areas.	Usually flat plains.	Open tree savanna, often dominated by <i>Sclerocarya birrea</i> and <i>Senegalia nigrescens</i> , moderately dense shrub layer and dense herbaceous layer.
Gabbro Grassy Bushveld (SV16)	3.8	Intrusions of gabbro; dark vertic clay soils that swell and shrink.	Flats and hills.	Open savanna with dense grass cover with few trees.
Pretoriuskop Sour Bushveld (SV110)	2.0	Granite and gneiss; shallow, leached red to yellow-brown sandy to sandy-loam soils.	Mainly uplands.	Open tree savanna dominated by <i>Terminalia sericea</i> and <i>Dichrostachys ciliaris</i> with few shrubs and dense tall grass layer dominated by sour thatch grasses.
Malelane Mountain Bushveld (SV111)	2.4	Granite and gneiss; shallow, coarse, sandy lithosols.	Hills with large boulders.	Open savanna on mountains and higher-lying slopes, with open to dense short mountain bushveld on rocky outcrops and lower lying areas.
Northern Lebombo Bushveld (SV115)	7.0	Rhyolite and basalt of the Lebombo Group as well as dykes of granophyre; stony shallow lithosols with some deeper soils.	Ridges and frequent rocky outcrops.	Open bushveld dominated by Combretaceae and many tree succulents.
Subtropical Salt Pans (AZ11)	0.02	Pans on Cenozoic alluvium, sand and calcrete, water recedes during drier periods and salt precipitates on banks.	Shallow depressions, often on old alluvial	Bank reeds, low herb-lands or macrophytic floating vegetation in perennial pans.
Subtropical Alluvial Vegetation (AZa7)	1.27	Subtropical Alluvial Vegetation (AZa7).	Flat alluvial riverine terraces.	Macrophytic vegetation, marginal reed beds, flooded grasslands, ephemeral herb-lands and riverine thickets.
Lowveld Riverine Forest (FOa1)	0.18	Recent alluvial deposits with deep, fine-textured soils.	Riverine vegetation subjected to flooding.	Tall forests fringing larger rivers and water pans, trees include <i>Yachellia robusta</i> subsp. <i>clavigera</i> , <i>Breonadia salicina</i> , <i>Diospyros mespiliformis</i> , <i>Faidherbia albida</i> , <i>Ficus sycamorurus</i> , etc.
Ironwood dry forest (FOz9)	0.24	Soutpansberg Group sandstone and quartzite, Lebombo Group Rhyolites and Cretaceous Malvernia Formation sandstones; red-brown to brown-red sand to sandy-loam soil.	Moderate to steep mountain slopes.	Dense forest (thicket) dominated by <i>Androstachys johnsonii</i> , <i>Croton pseudopulchellus</i> in understorey.



2.12.6 Fauna

The fauna is diverse, with 150 species of mammals, including many large charismatic predators and herbivores, roughly 50 fish, just over 500 bird, 34 amphibian and 120 reptile species.

Amphibians

All 34 amphibian species occurring in the park have a conservation status of “Least Concern”. Twenty-eight of these species are tropical, the more temperate region species occurring are common Caco *Cacosternum boettgeri*, common platanna *Xenopus laevis*, Natal sand frog *Tomopterna natalensis* and striped stream frog *Strongylopus fasciatus*. Most of these temperate species occur in the southwestern part of the park, with the Natal sand frog and striped stream frog occurring in the higher lying areas of Pretoriuskop (Pienaar *et al.*, 1976). The striped stream frog was collected in 1959 at Folly dam and has never been collected again; interestingly this frog species is a winter breeder (Minter *et al.*, 2004). To date raucous toad *Amietophrynus rangeri*, which is a grassland species and is widespread in the grassland areas of South Africa, has only been found in the Punda Maria area. The shovel-footed squeaker *Arthroleptis stenodactylus* is a widespread species north of South Africa, but in South Africa it has only been found in the Pafuri and Punda Maria area of the park and along the coastal plain of northern KwaZulu Natal (Minter *et al.*, 2004). This species prefers abundant leaf litter and sandy soils where the eggs are laid. During the dry season they shelter in hollow trees, moss and rotten wood and the base of trees (Loveridge, 1953).

As most frogs are very susceptible to environmental changes they are often regarded as good indicators of the health of the system in which they occur. Two *Xenopus* species occur in the park, common platanna *X. laevis* and tropical platanna *X. muelleri*, although these two species have been known to hybridise just west of the park (Fisher *et al.*, 2000) to date this has not been known to occur in the park.

Birds

Over 500 bird species have been recorded in the park, which equates to 57 % of the species found in the entire southern African subregion. Approximately half (49 %) of the bird species utilising the park can be classified as resident species and the remaining species are either breeding (23 %) or non-breeding visitors (28 %) to the park (Chittenden & Whyte, 2008).

The rivers and associated riverine forests, floodplains, pans, dams and vleis in the park are important for many water-dependent and associated species, such as Pel's fishing owl *Scotopelia peli*, white-backed night heron *Gorsachius leuconotus*, African finfoot *Podica senegalensis*, black stork *Ciconia nigra* and saddle-billed Stork *Ephippiorhynchus senegalensis* (Birdlife South Africa, 2015), all of which are categorized as Vulnerable or Endangered on the Eskom Red Data List (Taylor *et al.*, 2015).

The park is also a national and regional stronghold for vulture populations (Kemp, 1980), particularly the three large tree-nesting species viz. white-backed vulture *Gyps africanus*, white-headed vulture *Aegypius occipitalis* and hooded vulture *Necrosyrtes monac*, all of which have recently been categorised as Critically Endangered on the Eskom Red Data List and Endangered on the National Environment Biodiversity Management Act (NEM: BA) (Taylor *et al.*, 2015; NEM: BA, 2015). Other large birds of prey that are locally common in the park but categorised as Endangered on the Eskom Red Data list and NEM: BA include bateleur *Terathopius ecaudatus*, tawny eagle *Aquila rapax*, Southern ground-hornbill *Bucorvus leadbeateri* and martial eagle *Polemaetus bellicosus*, with the latter currently experiencing dramatic declines in South Africa (Taylor *et al.*, 2015).

Given the large size of the park, the generally unfavourable conservation status of large birds of prey in Africa, and the fact that these species are often more common in protected areas, the park is an internationally significant protected area for these species. Furthermore, several threats facing the park such as river system deterioration, loss of riparian vegetation, bush thickening and encroachment and loss of large trees can have drastic effects on bird populations. The increased poisoning of vultures is a major concern, posing risks to the vulture populations. This means that efficient and relevant long-term monitoring of bird populations both inside and outside the park is essential for the conservation of the park's avifaunal population.

Fish

The river systems and pans of the park support a high diversity of fish species. The park has a high species richness with 46 resident indigenous species (Russell, 2011). These include tigerfish *Hydrocynus vittatus*, bowstripe barb *Barbus viviparus*, southern barred minnow *Opsaridium peringueyi*, Lowveld suckermouth *Chiloglanis swierstrai*, Hamilton's barb *Barbus afrohamiltoni* to name but a few. Six species are likely to occur exclusively in the park, three of which occur in vleis and pans namely rainbow killifish *Notobranchius rachovii*, spotted killifish *Notobranchius orthonotus*, lungfish *Protopterus annectens* and three in rivers namely lowveld largemouth *Serranochromis meridianus*, orange-fin barb *Barbus eutaenia* and the pennant-tailed suckermouth *Chiloglanis anoterus*. Upstream dams have impacted on, and pose a major threat to the normal migration routes of fish species.

Invertebrates

There are more than 1,600 invertebrate species that have been identified within the park. They include about 600 butterfly, 150 spider, 90 ant, 50 dragonfly, more than 20 termite, 20 snail, 14 tick and other insect species (Mecenero, 2013; Dippenaar-Schoeman & Leroy, 2003; Sithole *et al.*, 2010; Tarboton & Tarboton, 2002; Davies *et al.*, 2012; De Kock & Wolmarans, 1998; Spicketti, *et al.*, 1991; Mawdsley & Sithole, 2008). Some of these species that have been collected within the park are housed in the Skukuza Biological Reference Collection (including about 290 moth, 160 dung beetle, 90 terrestrial and aquatic snail, 60 assassin bug, 40 net-winged insect, 40 millipede, 30 crustacea and 20 scorpion species). To date it has been shown that more than 35 insect species play vital roles in plant pollination (Warren *et al.*, 2010; Mawdsley *et al.*, 2016). The spiders identified in the park represent 17 % of the known South African spider species (Dippenaar-Schoeman & Leroy, 2003). There are also about five species of dragon fly endemic to the park (Clark & Samways, 1994) with new species discoveries continuing (e.g., termite species (Davies *et al.*, 2012) and a freshwater jellyfish *Limnocoeloides tanganyicae* in 2016).

Mammals

The diversity of landscapes in the park provides many different habitats and resources across a large scale for some 153 mammal species. Several mammal species live in these habitats and use the variety of resources. The mammal community is relatively intact with a wide range of antelopes (e.g. blue wildebeest *Connochaetes taurinus*, common duiker *Sylvicapra grimmia*, eland *Tragelaphus oryx*, impala *Aepyceros melampus*, kudu *Tragelaphus strepsiceros*, sable antelope *Hippotragus niger*, and steenbok *Raphicerus campestris*), mega-herbivores (e.g. African elephant *Loxodonta africana*, black rhinoceros *Diceros bicornis*, buffalo *Syncerus caffer*, hippopotamus *Hippopotamus amphibius*, giraffe *Giraffa camelopardalis* and white rhinoceros *Ceratotherium simum*) and large carnivores (African lion *Panthera leo*, cheetah *Acinonyx jubatus*, leopard *Panthera pardus*, spotted hyaena *Crocuta crocuta* and wild dog *Lycoan pictus*) present.

There is no discontinuity of body mass distribution in the park, a feature of relatively intact ecosystems, with body mass ranging from about 6 g for the pygmy mouse and 6,000 kg for the bull African elephant (Skinner & Smithers, 1990). Although much focus is on the charismatic species that tourists favour, the park abounds with rodent (25) (including records for Juliana's golden mole *Neamblysomus julianae*), shrew (5) and bat (44) species (Bronner *et al.*, 2003). In addition, rarely seen species such as armadillo *Orycteropus afer* and pangolin *Smutsia temminckii* also occur, with rangers and visitors recording occasional sightings more recently of brown hyaena *Hyaena brunnea*.

The complement of mammal species living in the park includes 8 endangered species, 7 vulnerable, 16 near threatened and 112 species of least concern (IUCN, 2009; Endangered Wildlife Trust, 2017). Even so, species abundance differs substantially between species. Overall, mammal biomass is dominated by the mega-herbivores such as African elephant, white rhinoceros, giraffe, buffalo, hippopotamus and black rhinoceros. These species are key role players in ecosystem dynamics within the park. Most of the large- and mega-herbivore populations have been stable or are increasing since 2008 except for black and white rhinoceros (due to poaching) and rare antelope species such as roan *Hippotragus equinus*.



The primary threats for large and mega-herbivores, as well as large carnivores currently is poaching for valuable wildlife products and disease to some extent. The recent distemper outbreak in a pack of wild dogs in the park, highlights that introduced or emerging diseases can threaten rare species with localised extirpation. Other aspects, which could also influence the suite of mammal species, include irresponsible tourism developments, inappropriate tourist densities in focal areas, inappropriate fire and water management and potential consequences of climate change (Endangered Wildlife Trust, 2017). Although the poaching of white and black rhinoceroses features prominently in the public domain, the legacy of social injustice remains as the primary challenge to address to ensure the intactness of the park's mammal assemblages in future.

Reptiles

The diversity of habitats and associated small mammal, bird and amphibians species result in a high richness of reptile species in the park. A diversity of geological features and variety of habitat structures provide ample places where reptiles can thrive. These features result in 56 snake, 27 lizard, 13 skink, 13 gecko, 3 tortoise, 3 terrapin, 3 agama and 1 chameleon species as well as the Nile crocodile *Crocodylus niloticus* (Pienaar *et al.*, 1983; Jacobsen, 1989).

Large venomous snakes such as the black mamba *Dendroaspis polylepis*, Mozambique spitting cobra *Naja mossambica* and puff adder *Bitis arietans* are part of the guild of snakes that have venom deadly to humans. Several constrictor type snake species also abound with the African rock python *Python sebae* being the largest. The water monitor *Varanus salvator* is the largest of the 27 lizards living in the park.

For nearly all the species, abundance and trends is not known. An exception is the Nile crocodile with 3,286 individuals recorded in the park during 2016. Crocodile abundance has varied over time with major die-offs of crocodiles during 2008 and 2009 in the Letaba and Olifants Rivers. This most likely resulting from multiple pollution sources acting synergistically to affect crocodile habitat and diets.

2.13 Archaeology and cultural heritage

The park has a rich suit of cultural heritage assets, including paleontological (sites with dinosaur fossils) and numerous archaeological sites covering the Early, Middle and Late Stone Ages, as well as the Iron Ages. Notable sites are Makahane, Masorini, Phabeni and Thulamela, as well as widespread San rock art sites. These contain, among other things, evidence of stone tool technology, early iron smelting technology and evidence of the spiritual practices of the early human inhabitants of the park.

It is estimated that the human population in the park may historically have peaked at 16,000 people, a number large enough to have had a considerable influence on the ecosystem— a driver that is largely missing in the current context. The park is also home to many historic sites covering more recent periods before and after the establishment of the park. Ancient trade routes that connected populations such as those of the Mapungubwe Kingdom to Indian Ocean traders traversed the park. Many 18th and 19th Century traders such as De Cuiper, De Buys, Albasini (as evidenced by the Albasini ruins), das Neves, Mauch, Erskine and others (Joubert, 2007) traded within and across the park.

Sites associated with the Mfecane disturbances that reorganised the settlement patterns of African communities have been found in the park. The arrival of the Voortrekkers (Van Rensburg, Trichardt, Potgieter and Bronkhorst) is also evidenced by several sites in the park (Joubert, 2007; Bulpin, 1989). There are also sites associated with the establishment of the park, most of these relate to personalities such as Kruger and Stevenson- Hamilton. Historic

sites associated with continual park establishment include sites such as the many mass graves (mounds) of herds of cattle that were found and shot on entering the park to prevent diseases that could be spread between wildlife and livestock. There are many sites related to early rangers and wardens including notable personalities like Wolhurter and Helfas Nkuna (a monument commemorating rangers who died in the line of duty has recently been erected). There are also sites / graves of traditional leaders who inhabited the park prior to its establishment. Graves of ordinary early inhabitants are found throughout the park and some are clearly marked and identifiable.

Sites related to the park as one of the prominent arenas during the liberation struggle are also present in the park. These relate to the African National Congress and other South African Liberation movements' attempts to infiltrate the Republic and the then South African Defence Force's attempts to stop the infiltration. There are also recorded activities relating to Mozambique's Resistência Nacional Moçambicana (RENAMO) (House of Memory, 2011).

2.14 Socio-economic context

The park has peri-urban to urban development on its western and southern boundaries with the densest development occurring along the southwestern section of the park. This includes sugarcane plantations to the south of the Crocodile River, the rural areas of Bushbuckridge, forestry along the escarpment and the cityscape of the Nelspruit area, with further prospecting and mining threats in this region. This potentially brings further challenges such as urban sprawl impacting on the borders of the park through more development applications. Private and provincial nature reserves, informal conservation areas, and community subsistence farming compatible with conservation land use practices are found along the western boundary of the central- and northern sections of the park. These create good ecological interface areas between environmental and developmental issues. Mines such as the largest open pit mine in the southern hemisphere at Phalaborwa, pose challenges to the ecological integrity of ecosystems downstream. Further north the landscape becomes more rural with former homelands, meaning that the land is mostly occupied by rural villages with limited economic opportunities, large subsistence agricultural areas and high unemployment rates. The highest general poverty index and dependency on natural resource use is within the Mutale and Greater Giyani Local Municipalities. The historic imbalances in South African society resulted in the majority of people living without land and housing, access to potable water and sanitation for all, affordable and sustainable energy sources, illiteracy, poor quality of education and training and poor and inaccessible health services.

Limpopo's population increased to 5.77 million in 2017, whilst the share of the national total remained constant at 10.2 % (Stats SA, 2017a). According to Statistics South Africa's Quarterly Labour Force Statistics (Stats SA 2017b), the unemployment rate in Limpopo was 38.2 % at the beginning of 2017. Limpopo, recorded the fourth highest unemployment rate amongst the nine Provinces. In July 2017, the number of grant payments in Limpopo stood at 2,448,580 or 14.1 % of the total number of grant payments. Limpopo registered the fourth highest number of social grant pay-outs in the country (SASSA, 2017). The latest population estimates by Statistics South Africa states that Mpumalanga's population increased to 4.44 million in 2017, whilst the share of the national total remained constant at 7.9 % (Stats SA, 2017a). According to Statistics South Africa's Quarterly Labour Force Statistics (2017b), the unemployment rate in Mpumalanga was 39.4 % at the end of 2015. Mpumalanga, recorded the third highest unemployment rate. Mpumalanga's human development index stands at 0.694 as measured in 2014. Mpumalanga recorded the fourth highest human development index level among the nine provinces in 2014. In July 2017, the number of grant payments in Mpumalanga stood at 1,451,304 or 8.4 % of the total number of grant payments. Mpumalanga registered the sixth highest number of social grant pay-outs in the country (SASSA, 2017).

Given the high levels of unemployment and poverty in many of the communities located along the park boundary, the park is one of the most important sources of local economic injection. The increasing visitor numbers (over 1.81 million visitors in 2016 / 17) are therefore felt beyond the boundaries of the park. In the 2016 / 17 financial year the park recorded a total income of close to R 825 million. Most of the employees from the park originate from the surrounding communities, and a large component of the Human Resource expenditure is channelled to these areas and households through the payment of salaries. The numerous hotels, lodges, guesthouses and Bed&Breakfasts in the Lowveld area are indicative of the attraction force of the park for tourists to the Lowveld. Hence a study by Saaiman *et al.* (2010) showed that the total economic multiplier value of the park is in the region of R 2 billion per annum. Current studies are in process to review the multiplier effect.

By partnering with neighbouring district and local municipalities, various external donors and neighbouring local communities, the park has made satisfactory progress towards enabling previously disadvantaged individuals and small micro-medium enterprises (SMMEs) better access to park-related opportunities. These opportunities include biodiversity conservation projects (*e.g.* alien eradication through the Biodiversity Social



Projects: Working for Water programme), selling arts and crafts to the concessions programme, outsourcing catering and transport services to neighbouring communities of the park, the provisioning of local products and fresh produce to the park and concessions, and business development opportunities within the park and at the gate activity hub developments.

2.15 Strategic and collaborative partnerships

The park acknowledges and strive to foster co-operative multi-institutional and sectoral approaches that engender co-operation and collaboration with a range of partners in areas of common interest that include conservation and environmental management, socio-economic beneficiation, safety and security, transboundary access, pursuing collective funding opportunities. This ongoing process will also address risks associated with a variety of partners being part of a landscape-level conservation initiative and will seek to capitalise on opportunities that exist within the collective that include joint buying-power, lobbying for reasonable legislative and policy changes as part of a collective, joint destination marketing, and collective socio-economic beneficiation. The institutional collaboration will be guided through a broader Greater Kruger integrated development approach and associated institutional arrangements, with a focus on issues of compatible land use development adjacent to the conservation network (promoting a range of stewardship and compatible agricultural practices), value-added chains, youth programmes, education and awareness, safety and security within communities and wildlife, policy processes, leveraging responsible and sustainable funding and business opportunities *etc.* Implementation will be done in geographical clusters / nodes, formalising cross-sectoral partnerships that share a joint vision, interest and mandate within these clusters, further facilitating that resources are directed towards collective outcomes. Such partnering will be (but not limited to) with the biospheres, private, state and community conservation areas and entities, NGOs, bioregional programmes (e.g. Global Environmental Facility Protected Area Programme, GEF 6, WWF Khetha), sectors within the Rural Development plans, Corporates *etc.*

This collaboration will be guided by the Constitution, legal framework, National Development Plan (NDP), Provincial Growth Development Strategy (PGDS), Great Limpopo Transfrontier Park Treaty (GLTP Treaty), bioregional plans, Rural Development Plans, and municipal Integrated Development Plans (IDPs).

2.16 Tourism

Tourism became a feature in the park as early as 1923 when the “Round-in-Nine” tour ran through the park on the Selati Railway Line. It was only after the park was proclaimed on 31 May 1926, that the first (three) tourist cars entered with 27 guests in 1927.

Since then tourism has become well established in the park and in line with SANParks’ approach to offers a range of products. SANParks primarily operates the self-catering range of accommodation and currently there are 27 camps varying from large camps such as Skukuza that sleeps more than a thousand guests to the more rustic and intimate wilderness trail base camps that accommodate eight guests at a time. SANParks manages a total of 4,243 beds in the park which comprise 618 or 14,6 % in the budget (communal ablution & kitchen) category, 3,368 or 79,4 % in the economy (ablution facilities en-suite) and 257 or 6,0 % beds in the premium (up-market) category. In addition, a total of 3,840 guests can be accommodated in campsites in 13 of the camps. Together with the 104 guests that can be accommodated on the backpack wilderness trails and the 4x4 eco-trails, the park offers capacity for 8,187 guests per night in SANParks operated products. The park further boasts seven game lodges operated by contracted concessionaires, providing for the full-service luxury market. The current capacity is 302 beds. Finally, there are five game lodges operated on community owned and contracted land providing 392 beds. The park overnight guest capacity therefore totals 8,881. The construction of the Skukuza Safari Lodge is progressing well and the 250-bed three star full

facility aims to complement the existing Nombolo Conference Centre in SANParks endeavour to attract the MICE market. Furthermore, the new lodge aims to provide to the needs of a new, mainly black overnight visitor market (locally) as well as international guests.

During the 2016 / 2017 financial year 1,817,724 guests entered the park of which 71,3 % were SA residents while 78,4 % were day visitors. Of the foreign guests, 26,6 % were from Germany, 12,7 % from France, 10,7% from the UK, 8,1% from the USA and 6,7 % from Holland.

Various activities are offered at camps and gates in Kruger, including day walks, game drives and wilderness, backpack and 4X4 trails. Additionally, mountain bike trails are offered from Olifants Camp. Significant scope exists for growth and diversification of activities with the emphasis on cultural heritage related products and experiences.

The SANParks 2022 Responsible Tourism Strategy (SANParks, 2012) provides guidance on both the development and responsible operations of new and existing facilities and activities in KNP. Moving forward emphasis will be placed on enhancing visitor management and interpretation, increased focus on enhancing positive customer feedback and ensuring sound management, maintenance of infrastructure and governance.



Section 3: Policy framework

3.1 Introduction

SANParks, like all protected area management authorities, is subject to the Constitution of the Republic of South Africa, international agreements and treaties, legislation, national policies and government priorities. The Protected Areas Act (Act 57 of 2003) states the following: The purposes of the declaration of areas as protected areas are (a) to protect ecologically viable areas representative of South Africa's biological diversity and its natural landscapes and seascapes in a system of protected areas; (b) to preserve the ecological integrity of those areas; (c) to conserve biodiversity in those areas; (d) to protect areas representative of all ecosystems, habitats and species naturally occurring in South Africa; (e) to protect South Africa's threatened or rare species; (f) to protect an area which is vulnerable or ecologically sensitive; (g) to assist in ensuring the sustained supply of environmental goods and services; (h) to provide for the sustainable use of natural and biological resources; (i) to create or augment destinations for nature-based tourism; (j) to manage the interrelationship between natural environmental biodiversity, human settlement and economic development; (k) generally, to contribute to human, social, cultural, spiritual and economic development; or (l) to rehabilitate and restore degraded ecosystems and promote the recovery of endangered and vulnerable species.

Section 41 of the NEM: PAA requires that management plans be nested within the context of a coordinated 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;
 - Responsible 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.

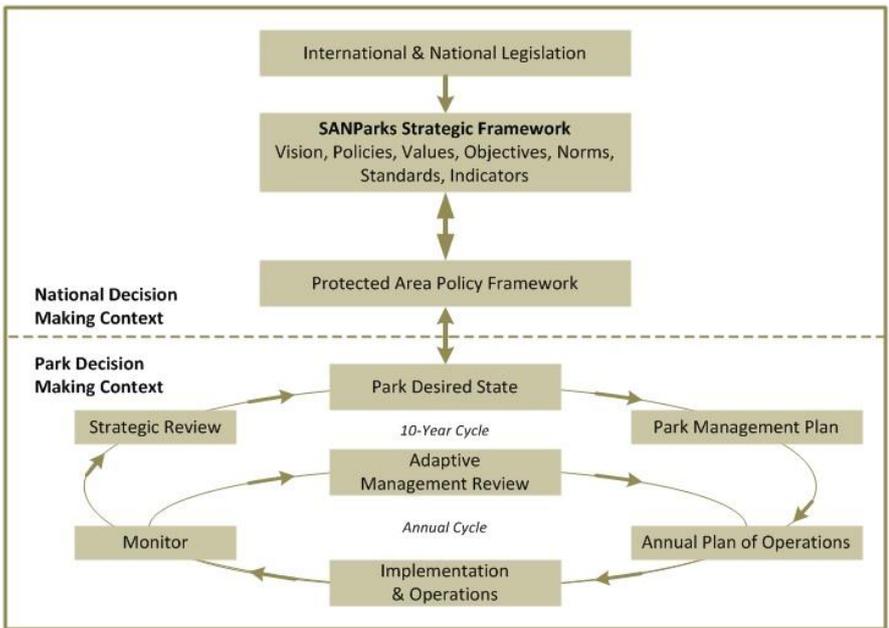


Figure 1. SANParks protected area planning framework.

3.2 Strategic adaptive management

Protected areas are increasingly viewed as complex socio-ecological and -economic systems. Such systems acknowledge multiple interactions that take place between people and natural landscapes – even fenced-off protected areas are influenced by external socio-economic issues. These systems are regarded as complex because the results of interactions between the socio-economic 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).

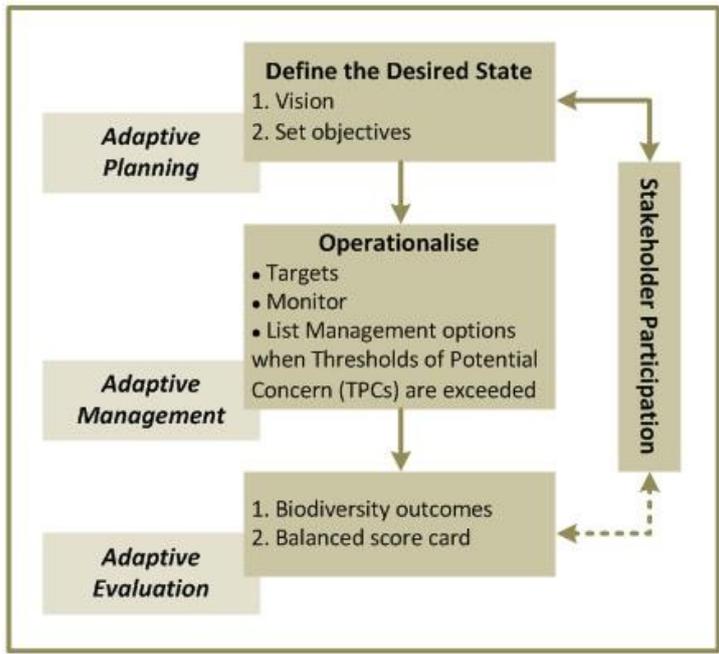


Figure 2. Steps in the adaptive management cycle as used by SANParks.



SAM begins with determining the desired future state of a particular socio-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 socio-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-STEEP) influences. Description of the future state is further enriched by deliberating the distinctive and special features (called vital attributes) of the park.

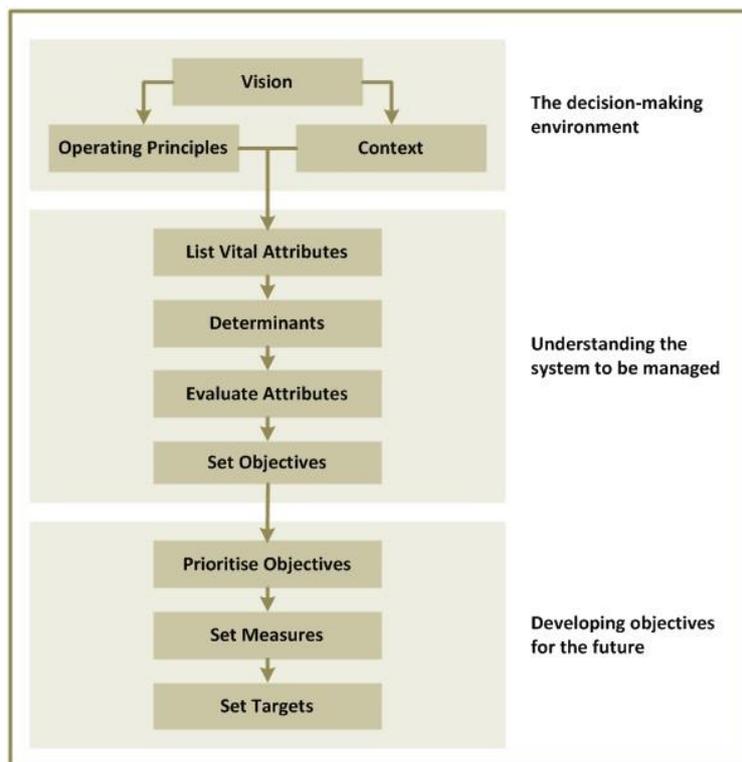


Figure 3. The adaptive planning process as used by SANParks.

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. One central construct of SAM within SANParks over the last 18 years has been that of thresholds of potential concern (TPCs) (Biggs & Rogers, 2003). The challenge with TPCs has been that even if a state change is predicted, the approach does not always link the TPC to the hypothesised mechanisms of change explicitly (Ferreira *et al.*, 2011), and does not always consider the complex social and economic drivers affecting the ecological parameters and are often merely social preferences rather than ecological thresholds. TPCs are therefore

now used in more predictable fields, such as alien biota, river biotic responses and fire management and are coupled with a mechanisms approach in other instances.

3.3 Park-specific framework

The Managing Executive: KNP reports to the CEO of SANParks. 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, supply chain management, Tourism and marketing, review and auditing services. The park also receives support from functions such as park planning and development, veterinary wildlife service, scientific services *etc.*

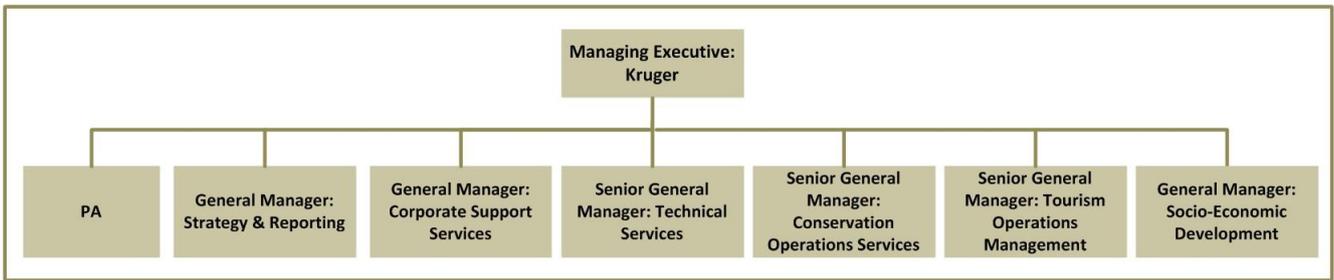


Figure 4. Kruger National Park organogram.



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 National Environmental Management: Protected Areas Act No. 57 of 2003 as amended by the National Environmental Management: Protected Areas Act No. 21 of 2014.

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.

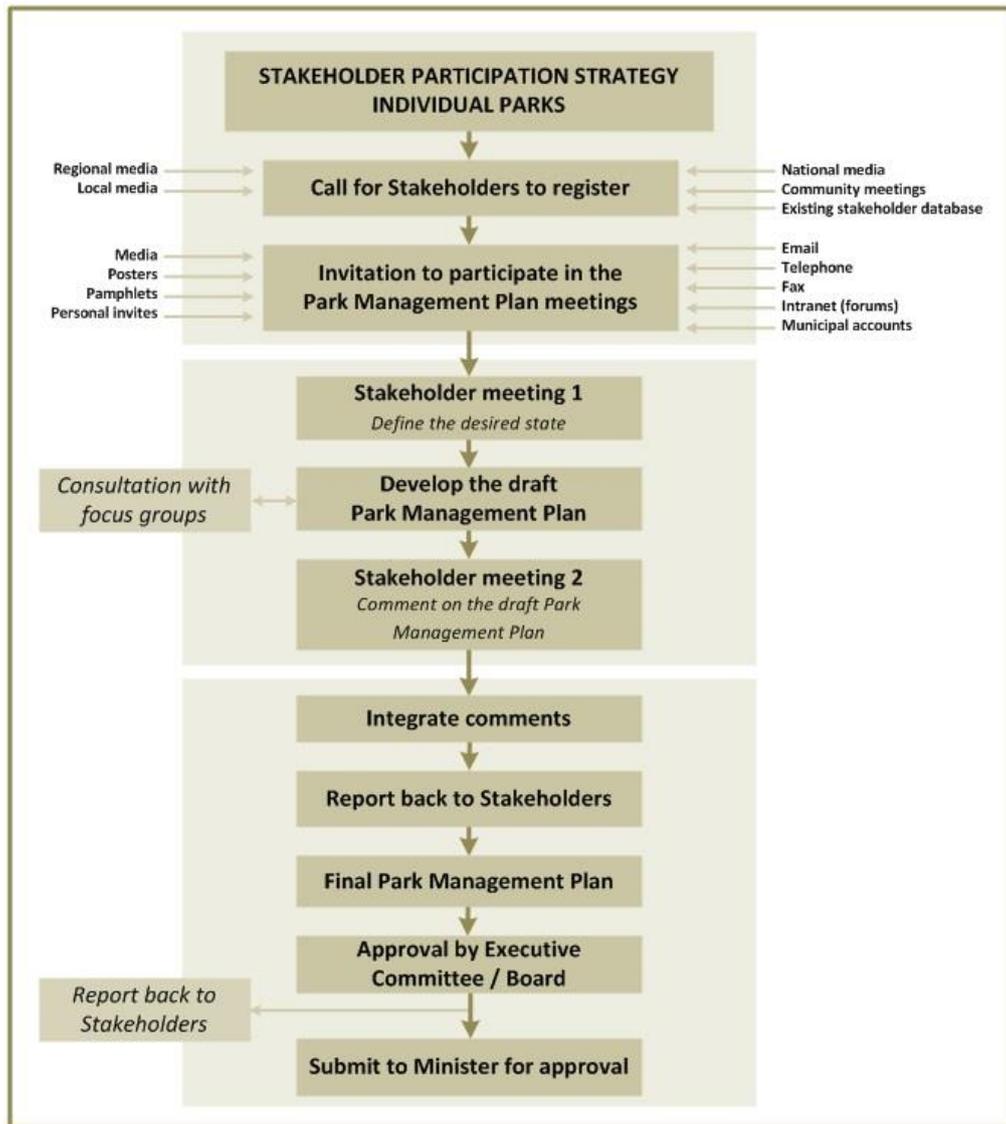


Figure 5. SANParks stakeholder participation process.

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, neither in the first gazetted declaration nor in any subsequent additions. However, the initial motivation prepared by Mr R.K. Lovedale, for establishing the initial Government Game Reserve 26 March 1898, was for the protection of wildlife, due to the concern of declining wildlife numbers as result of rinderpest and unregulated hunting. The KNP was declared in 1926 for the protection and conservation of wildlife, vegetation, and objects of geological, ethnological, historical and scientific interest, in the interest of, and to the benefit and enjoyment of residents of the country ("Union"), (Proclamation notice 197 published in the Gazette Extraordinary, No 1578 of 10 September 1926). 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

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 and surrounding regional 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 key 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 and the landscape within which it is embedded. In this way, the management plan is customised according to its regional and 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 KNP, 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 extensive consultation with stakeholders during 15 public workshops and 12 thematic focus groups workshops:

MISSION

"To conserve, protect and manage biodiversity, wilderness qualities and cultural resources, provide a diverse and responsible visitor experience, contributing towards social, ecological and economic resilience and well-being whilst strengthening constituency within a unique regional landscape".

5.2.2 SANParks strategic plan

The SANParks' Strategic Plan is focused on all aspects of management of the organisation from the core areas of the mandate to corporate governance and business operational support management. The Balanced Scorecard performance (BSC) management approach has been followed to ensure consistent, effective and efficient execution of the organisational strategy and performance management regime. The strategic plan sets out the organisation's key strategic objectives necessary for the effective and efficient delivery of the organisation's mandate along the BSC perspectives. Park management must ensure an integrated approach is followed regarding the implementation of the SANParks Strategic Plan and the Management Plan.

5.2.3 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:

Kruger North does not have a potential to generate income comparable with that of the South, and its cultural heritage value is slightly higher than that of the South. In other respects, the two are similar. Because of its transfrontier status it has significance in the bioregional and regional context. There is potential to generate additional income over the next ten years. Socio-economic impact could improve through implementing sustainable post settlement land claimant packages which could generate economic benefits for communities. The GLTFCA Co-operation Agreement between state, private and community partners is further seeking to leverage responsible conservation compatible socio-economic opportunities and impact by unlocking transboundary access, tourism, marketing, branding, and development opportunities. There is potential to set an example through the GLTFCA Co-operative arrangements, a legacy to demonstrate strategic partnerships and partnering enhancing and harmonising diversified livelihood practices. It is anticipated that the next 20 years will see an increased impact on biodiversity because of global environmental change. Risks to biodiversity are high, especially poaching, diminished water quantity and quality and impacts of development in the buffer zone.

5.2.4 Operating principles or values

SANParks has adopted eleven corporate values which 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 principles or values are:

Corporate values:

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**; and
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; and
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.



5.2.5 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.

5.2.6 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. Together with stakeholders, the park identified 12 attributes that are vital to the approach by which it is managed. These are:

1. A flagship South African wildlife attraction and iconic local experience;
2. Diverse and unique visitor experiences across a local and international range of conservation-friendly land uses;
3. The park is a catalyst for tourism and economic development in the region;
4. An international recognised brand and global tourism destination for a unique African wildlife experience in a safe, large protected area;
5. The park uniquely located in a diverse regional landscape with multiple land uses;
6. Multiple, diverse rivers across the park, promoting biodiversity and regional socio ecological connectedness;
7. Largely intact biota and ecological processes;
8. The park is one of the last remaining protected areas in South Africa which contains large undeveloped areas contributing to a wilderness qualities sense of place;
9. Rich and unique natural, historical and cultural heritage;
10. Well-developed infrastructure;
11. Internationally recognised long-term institutional management experience and reputation affording insight and foundations which support management decisions; and
12. Diverse stakeholder relations and co-operative governance.

5.2.7 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. A flagship South African wildlife attraction and iconic local experience.	
Determinants: Diversity of products and activities over a range of prices and experiences – day visitors, self-catering and 5-star lodges, aaccessible and affordable wilderness destination, long term constituency, SANParks week, pensioners discount, Wild card, room rates – seasonal and competitive pricing and rates, discounted community park entry rates, environmental education and community outreach, Greater Kruger, sense of place.	
Threats	
<ul style="list-style-type: none"> • Excessive price increases • Uncertainty on how to apply community discount system • Trade-off between low-volume high-income and high-volume low-income 	<ul style="list-style-type: none"> • Perceptions of exclusivity created by private concessions • Facilities not broad scale family friendly • Lack of infrastructure to accommodate increasing visitor numbers

2. Diverse and unique visitor experiences across a local and international range of conservation-friendly land uses.	
Determinants: Diversity of products and activities (including differentiated / specialised products), size of the pristine natural area, wilderness, wildlife and diversity – Big 5, birding, rivers, scenery and landscape, self-drive experience, sense of place, wilderness, tranquillity and serenity, safety, open space, relaxation, cultural heritage, private and protected land uses, adjacent open conservation areas, access including cross border, gates, air access, road networks, including access roads to park, largest self-catering self-managed tourism organisation.	
Threats	
<ul style="list-style-type: none"> • Not meeting expectations / not delivering on standards • Inappropriate communication • Criminality • Poaching and anti-poaching measures and impacts (e.g. noise) • Noise and reputational risk (link to anti-poaching activities) • Traffic congestion • Unsustainable tourism development • Light / noise pollution • Lack of visitor management e.g. density and distribution management 	<ul style="list-style-type: none"> • Lack of maintenance of infrastructure / budgetary implications (poor refurbishment funding) • Environmental degradation • Not effectively managing trade-offs between tourism experiences and products; and products and the environment • Incompatible tourism products • Incompatible peripheral developments • Problem animals • External drivers e.g. floods, droughts, disasters • Local unrest, service delivery strikes, political instability

3. The park is a catalyst for tourism and economic development in the region.	
Determinants: Access by Open Safari Vehicles, contractual parks (Makuleke), community reserves, private game reserves, private concessions and other PPPs (Public Private Partnership), suppliers and contractors, community guides, permanent and temporary employment, Biodiversity Social Projects (BSP), gate hubs, franchises, skills development, airports – flights directly into the park and as feeders to other conservation areas, increasing visitor numbers, sustainability, stability of the region, integrated planning, diverse tourism and products, NDP and IDPs, SMMEs, existing well developed infrastructure (and driver for further), branding, safety, market including established and untapped, potential interlinks with non-conservation economies (e.g. Sabie-Sand entrepreneur plan), opportunities to maximise value-adding products (local to national scale), biodiversity economy, bio-physical template that supports the ecosystem services, relative easy access, acknowledgment of history and how history has driven the value of this area (TFCA now creating opportunity for access), diversity of benefits and beneficiaries.	
Threats	
<ul style="list-style-type: none"> • Trade-off between increasing economic development and conservation impacts • Ineffective communication • Lack of Provincial and Municipal support • Over development due to public demand: <ul style="list-style-type: none"> - integrated planning (poor consensus on regional objectives, siloing of functions, operationalisation and implementation of plans, auditing culture, processed based planning needs outcomes based) - over-emphasis on big five, tourism products not linked to biodiversity economy, lack of buying into local markets, national economic status (bread&butter of SANParks sustainability is domestic market), social legacy and wrongs of the passed created lag, rapid socio and political change) - abuse of the brand for other uses - corruption and nepotism, lack of accountability - instability of region (regional geo-politics, and political advantage through tribalism) 	<ul style="list-style-type: none"> • Over development due to public demand • Over-dependence on donor programmes (Expanded Public Works Programme (EPWP) for implementation, and Honorary Rangers) • Challenges in managing trade-offs in and between stakeholder groups: <ul style="list-style-type: none"> - Climate change - Over utilisation - Illegal resource use - Growth and Demand - Political instability - Natural processes (fire / heavy rains, baboons, etc.) - Budgets • Contrasting value systems • Sighting congestion • Noise pollution • Increased foot print • Community protests • Lack of understanding of how sharing benefits leads to conservation constituency building



4. An international recognised brand and global tourism destination for a unique African wildlife experience in a safe, large protected area.

Determinants: Good marketing, self-drive experience, predominant land-use form of the park (ecotourism) is compatible with biodiversity conservation, well managed conservation area – infrastructure, diversity of accommodation options and products, accessibility, affordability for a broad income range of international visitors, infrastructure / airport and transport options, favourable exchange rate, events e.g. international conferences, benefit flows of tourism between the park and TFCA partners, elevated tourism status through the TFCA alliance and the Greater Kruger alliance and Big Five experience.

Threats

<ul style="list-style-type: none"> • Health and safety measures • Security (poaching) • Malaria and global disease outbreaks • Global terrorist events • Decline in tourist numbers • Disruption of support services • Lack of facilities and activities for children 	<ul style="list-style-type: none"> • Losing sense of place through overdevelopment • Inappropriate commercialisation • Negative relationships with the community as neighbours • Organisation reputation damaged by policy decisions • Sporadic community protests • Inadequate ease of access between the TFCA components
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5. The park uniquely located in a diverse regional landscape with multiple land uses.

Determinants: Institutional arrangement and co-operative governance and partnership at all spheres from local to international scale, GLTFCA branding and relations, landscape size, diversity of compatible land uses, expectations, land tenure, proprietorship, maintain and protect landscapes, catchment and ecosystem processes, connectivity (west-east gradient), re-establishing connectivity through corridors to attain the afore-mentioned, compatible land uses creating sustainable conservation, economic and social outcomes without impacting on the ecosystem integrity.

Threats

<ul style="list-style-type: none"> • Apathy and budgets • Lack of enabling institutional arrangements and governance • Lack of collective vision and ability to attain common goals • Lack of joint operational interest • Conflicting land use and land expectations / interest becoming a barrier for ecosystem connectivity • Complexity of integrated land use approaches – multiple partners and participation at various scales and institutional levels 	<ul style="list-style-type: none"> • Political buy-in • Political and social instability • Champions to drive these approaches • Security and elicit wildlife trade • Inconsistent security capacity (norms and standards) • Poor and non-prioritised integrated planning, conflicting policy framework at all spheres and levels • Lack of buy-in for integrated approaches and ability to maintain it • Distrust • Unrealistic expectations
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6. Multiple, diverse rivers across the park, promoting biodiversity and regional socio ecological connectedness.	
Determinants: Long history of institutional collaboration (river forums and catchment agencies), river habitat creates rich diversity, tropical climatic conditions provide habitat for more species, mixture of seasonal and perennial rivers, integrated water resource management, enabling legislation and wetlands.	
Threats	
<ul style="list-style-type: none"> • Pollution (mining, refuse, waste water treatment works) • Lack of political will • Lack of external institutional capacity • Inappropriate water allocation and developments • Invasive species • Sedimentation • Inappropriate land use • Erosion and incision 	<ul style="list-style-type: none"> • Unnatural flow regimes • Knowledge gaps • Increased water demand (extraction) • Lack of Integrated Water Resources Management (IWRM) • Non compliance • Impoundments (affecting migration of species) • Loss of riparian veg • Inter-basin transfers (abstraction)

7. Largely intact biota and ecological processes.	
Determinants: Vast landscape and size (cross border) across gradients including topography, rainfall and geology, SANParks providing appropriate management, system driver species (<i>i.e.</i> elephants important for processes, predator-prey interactions), large infrequent disturbances (<i>i.e.</i> drought, floods, fire), rivers and wetlands, broad public support for biodiversity conservation.	
Threats	
<ul style="list-style-type: none"> • Inappropriate resource utilization (incl. culling) • Poaching (incl. staff involvement) • Indiscriminate development • Exotic diseases • Inappropriate Management and knowledge gaps (<i>e.g.</i> fire, water, speeding) • Changing priorities (<i>e.g.</i> single species focus) • Time lags between decision making, implementation and effect • Poisoning (non-intentional and deliberate) 	<ul style="list-style-type: none"> • Invasive alien species (incl. pests) • Regional political instability - Southern African Development Community (SADC) • Climate change (incl. regional nutrient deposition) • Mining (inside and outside the park) • Incompatible land use in the buffer (incl. population growth) • Lack of closure on the land claim process • Scale mismatch between impact and action (<i>e.g.</i> the scale of climate change is global vs. the action locally) • Unsolvable problems

8. The park is one of the last remaining protected areas in South Africa which contains large undeveloped areas contributing to a wilderness qualities sense of place.	
Determinants: Large size of the park (intact ecological / natural system), appropriate implementation of the wilderness zonation and restoration plan, limited development, maintain natural processes, controlled access within wilderness zones, unique wilderness products <i>e.g.</i> wilderness trails create an appreciation and support for wilderness, sense of place.	
Threats	
<ul style="list-style-type: none"> • Pollution (lights, noise, water) • Mining • Incompatible land use in buffer • Invasive alien species • Potential outcomes from land claims • Cost / exclusivity of wilderness experience • Diversification of ecotourism products <i>e.g.</i> game drive outfitters 	<ul style="list-style-type: none"> • Uncontrolled development in the park due to financial pressures • Changes in individual value systems based on generation, culture history financial and social capital • Lack of societal desire for wilderness • Lack of recognition of colonised elements of the wilderness concept



9. Rich and unique natural, historical and cultural heritage.

Determinants: Ethos, effective cultural site management plans, development and management of databases, documentation and interpretation of cultural history through multiple lenses, historical occupation sites, languages, groups, cultures, resources, free access (cultural heritage rituals), knowledge transfer and integration with the curriculum, co-operation and harmony within and between communities, social ability space (braai sundowners *etc.*), national biodiversity legislation, tranquillity and quietness, diversity of landscapes, size and viewsheds, big open spaces, diversity, variability and aesthetics, cleanliness, dark spaces with no light pollution, spiritual, simplicity, a unique place to diverse cultural groups allowing people to connect to nature.

Threats

<ul style="list-style-type: none"> • Misbehaving tourists • Poor capacity and non-compliance to legislation • Over utilisation of natural resources (e.g. traditional medicine) • Negative community relations • Not celebrating our heritage • Ineffective communication • Various plans not in place or not being implemented • A limited interpretation of history which impacts negatively on transformation • Curation and security of artefacts 	<ul style="list-style-type: none"> • Land claims, inappropriate integrated land-use, differential expectations of stakeholders) • Over development • Pollution in all its forms • Conflict with emerging markets for future conservation growth, homogenisation of tourism experience • Challenge in managing different value systems with regards to natural and cultural heritage • Natural heritage damaging cultural heritage • Limited human capital
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10. Well-developed infrastructure.

Determinants: Education centres, road network, research and conservation facilities, range of commercial infrastructure, self-generated revenue, logistics (staff housing and transport), major historic government investment, facilities and asset management, maintenance programmes and infrastructure development programmes.

Threats

<ul style="list-style-type: none"> • Natural disasters e.g. floods • Inefficient and inability to implement financial regulations • Financial sustainability • Lack of effective maintenance of infrastructure • Externally funded over-development and lack of funds to maintain the resources • Infrastructure not environmentally friendly and high cost to retro-fit to a green standard • Procurement process lengthy 	<ul style="list-style-type: none"> • Increasing back log in maintenance • Gaps between available funding and maintenance requirements • Cheap, low quality infrastructure coupled to poor workmanship leading to higher maintenance costs and customer complaints in the long term • Internal expertise not retained • Trade-off between developing tourism infrastructure and increasing revenue and maintenance of the infrastructure
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11. Internationally recognised long-term institutional management experience and reputation affording insight and foundations which support management decisions.

Determinants: Long history of management and research, effective devolvement of decision making powers, long term data systems across a spectrum of park functions, long serving staff, consensus adaptive management approach, decision support systems across a spectrum of park functions, scientific knowledge base, learning, collaboration with external experts and networks, well skilled human capital and skills across a relevant spectrum of functions, training and skills development, ethos of customer service, long retention of skilled staff, staff well-being, diversity of specialist skills, learnerships and bursary opportunities, resources and historical knowledge affording research, learning and education around ecological and social systems, well-developed research infrastructure (research accommodation, laboratory, herbarium, veterinary support), park infrastructure (e.g. well-developed road network), in-house human capital (e.g. scientists, rangers, bio-technicians, research assistance), science management engagement, long term datasets exist, long term experiments, affording insight and foundations which support management decisions, well-established research networks and intact biological systems.

Threats	
<ul style="list-style-type: none"> • Change in management approaches • Incompatibility of data sets – redundancy of reporting formats and technology • Lack of record keeping • Lack of archiving and disjunctive archiving • Stagnant vision of management objectives • Lack of succession planning and loss of knowledge • Insufficient funding • Loss of institutional memory (e.g. poor succession planning) • Inappropriate knowledge management • Challenging resource allocation (e.g. helicopter availability for census or collaring etc.) 	<ul style="list-style-type: none"> • Staff well-being (e.g. welfare and health) • Staff retention • Corruption and nepotism • Incompetency • Moratorium on filling posts • Inappropriate allocation of decision making • Staff morale and sense of value and being misinformed • Staff undervalued as ambassadors for the park’s core business • Disjunction between biodiversity generation and biodiversity knowledge sharing • Perceptions of regional and departmental favouritism • Poaching (e.g. access to research sites due to hot spots) • Loss of biodiversity



12. Diverse stakeholder relations and co-operative governance.

Determinants: Legislative environment (international, national, corporate, local), co-ordinated policy institutional arrangements and partnerships (formal agreements and co-operative partnerships), transparency; effective communication, political buy-in / will, societal buy-in, value and support for environmental protection and combatting illicit wildlife trade, responsible and sustainable environmental management and protection, political stability, investing and buy-in for collective Vision and joint outcomes, shared understanding and appreciation of multiple / diverse sustainable land uses contributing to the broader Vision and Outcomes, policy framework with clear norms and standards around range of conservation land use models enhancing expansion of the conservation estate and compatible to the values and objectives of a National Park, integrated monitoring and evaluation and resourcing, polycentric governance; spectrum / diversity of sustainable and compatible land use scenarios.

Threats

- | | |
|---|---|
| <ul style="list-style-type: none"> • Conflicting jurisdiction – Common law and other legal mandates (e.g. Provincial authorities, other sectors) • Apathy and budgets • Lack of capacity and will to enforce and regulate Corporate and Institutional arrangements • Lack of enabling institutional arrangements and governance • Lack of collective Vision and ability to attain common goals • Lack of joint operational interest (across sectors and land tenure) • Agreements not formalised and / or not enforced, through enabling / binding legal environment and through norms and standards securing “best practice” land use approach • Lack of self-regulation / governance and polycentric governance | <ul style="list-style-type: none"> • Lack of political buy-in • Political and social instability • Lack of champions to drive these approaches • Security and illicit wildlife trade • Inconsistent security capacity (norms and standards) • Poor and non-prioritised co-ordinated planning, conflicting policy framework at all spheres and levels • Lack of buy-in for co-ordinated policy approaches • Complexity of integrated land use approaches – multiple partners and participation at various scales and institutional levels • Distrust • Unrealistic expectations • Self-interest |
|---|---|

5.2.8 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:

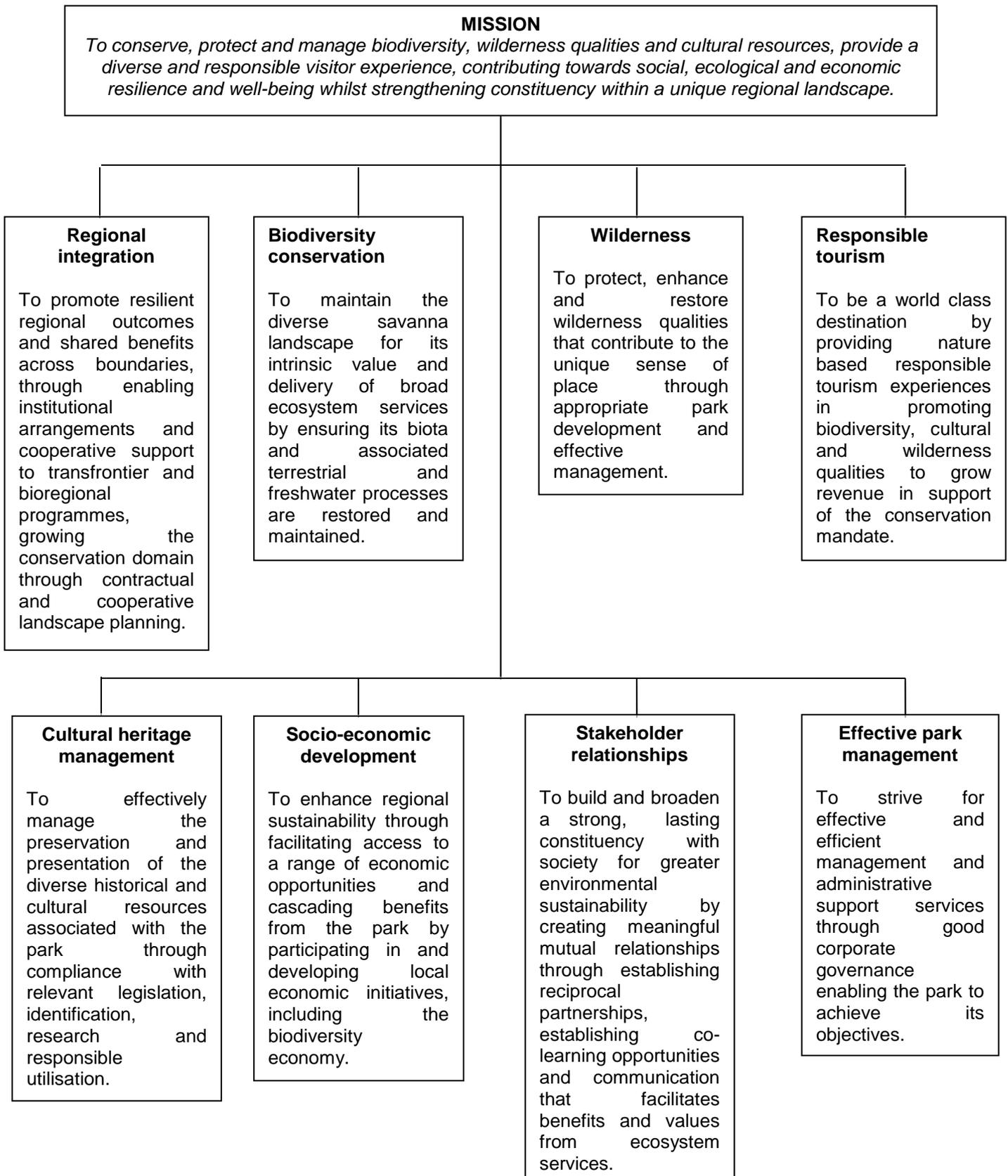


Figure 6. Park high-level objectives.

5.2.9 Unpacking the high-level objectives

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



1. Regional integration high-level objective: To promote resilient regional outcomes and shared benefits across boundaries, through enabling institutional arrangements and co-operative support to transfrontier and bioregional programmes, growing the conservation domain and contractual and co-operative landscape planning and management.

1.1 Integrated land use and bioregional planning and management objective: To improve and maintain healthy ecosystems that promote responsible biodiversity economies beyond the boundaries of the park, through implementing a range of co-operative “buffer mechanisms” within the municipal, biosphere and bioregional planning processes, and through natural resource, protected area, environmental and wildlife economy programmes.

1.2 GLTFCA and conservation area contractual and co-operative arrangements objective: To secure and improve ecosystem processes and associated socio-economic benefits through the consolidation of vast landscapes, by re-connecting ecological systems and the expansion of the GLTFCA conservation estate, conservation areas open and adjacent to the park, through a range of co-operative, contractual and stewardship models.

1.3 Integrated catchment management objective: To take a holistic view of catchment and water resources management in the catchments and draining through the park, to protect freshwater ecosystems whilst maximising the developmental water management potential of the resource.

Figure 7. Regional integration high-level objective and supporting objectives.

2. Biodiversity conservation high-level objective: To maintain the diverse savanna landscape for its intrinsic value and delivery of broad ecosystem services by ensuring its biota and associated terrestrial and freshwater processes are restored and maintained.

2.1 Herbivory objective: To restore and maintain herbivores as a key driver of environmental heterogeneity and associated biodiversity by establishing and maintaining gradients of resources used by herbivores, informed by ongoing monitoring and evaluation while minimizing risks to the ecological role of herbivores.

2.2 Habitat rehabilitation objective: To restore the natural ecosystem health and functioning of the KNP landscape by implementing rehabilitation and restoration programmes.

2.3 Invasive alien species programme: To minimise the impact and maintain the integrity of biodiversity and ecosystem services within the park landscape by anticipating, preventing entry and where possible controlling invasive alien species.

2.4 Fresh water objective: To ensure the persistence of freshwater systems and associated biota by maintaining and restoring ecological processes.

2.5 Species of special concern objective: To restore and maintain the benefits of species of special concern by managing threats as far as possible.

2.6 Predation objective: To restore and maintain predators as a key driver of environmental heterogeneity and associated biodiversity and tourism experiences by ensuring the role of large predators, restoring meso-predators and managing the role of small predators while minimising the risks of predation threats and their assets.

2.7 Fire objective: To mimic the role that fire plays in maintaining African savannas, whilst specifically considering fire-elephant interactions, by evaluating and responding appropriately to fire threats facing infrastructure and human lives.

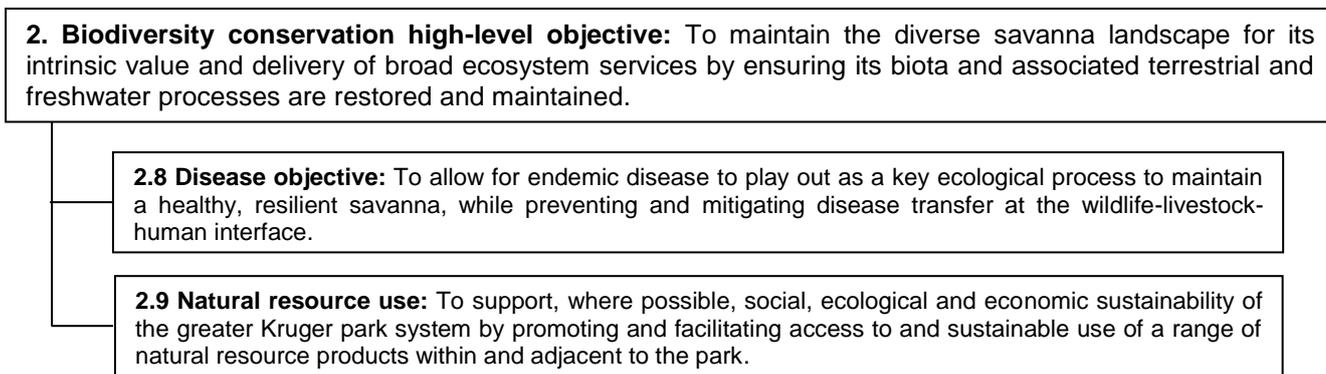


Figure 8. Biodiversity conservation high-level objective and supporting objectives.

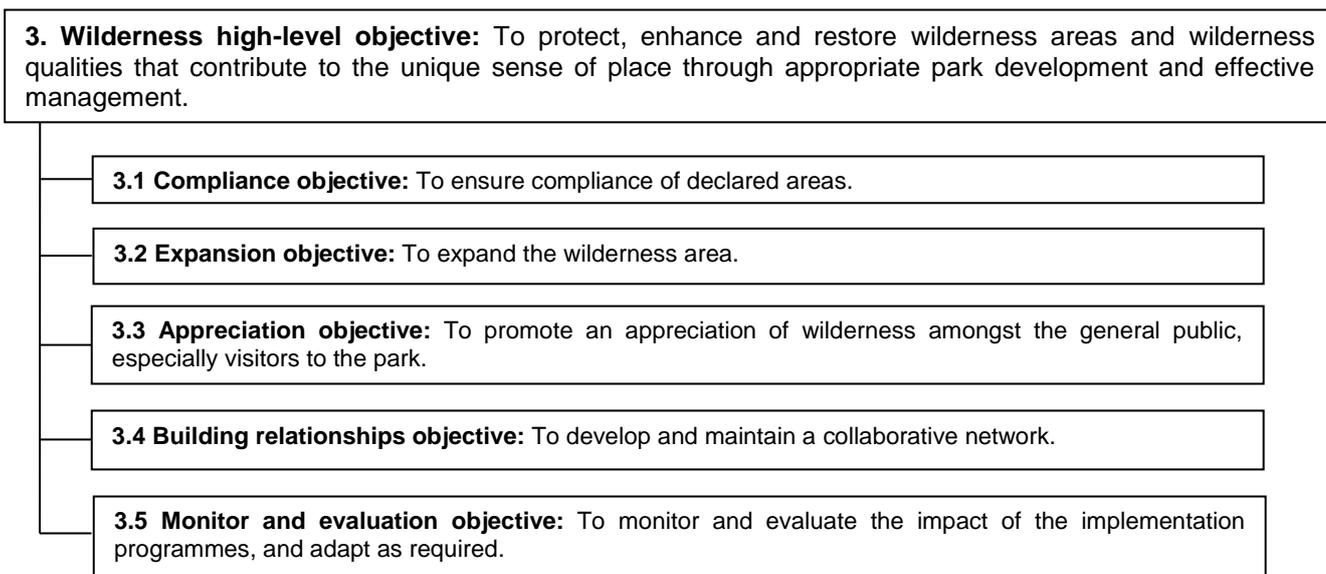


Figure 9. Wilderness high-level objective.



Figure 10. Responsible tourism high-level objective and supporting objectives.



5. Cultural heritage management high-level objective: To effectively manage the preservation and presentation of the diverse historical and cultural resources associated with the park through compliance with relevant legislation, identification, research and responsible utilisation, for the benefit of society.

5.1 Inventorisation objective: To compile and maintain a comprehensive inventory, and grading, of all cultural heritage resources, inclusive of oral history through continuous identification and effective documentation.

5.2 Conservation objective: To conserve the tangible and intangible cultural heritage resources, through effective management.

5.3 Interpretation, awareness and utilisation objective: To enable the access, interpretation, awareness and responsible use of heritage resources, including cultural assets and oral history, by broader society, through research, knowledge management, sharing and product development.

5.4 Capacity building objective: To enable effective management of all cultural heritage resources by developing appropriate skills and encouraging research.

5.5 Monitoring and evaluation objective: To evaluate outcomes of management interventions by developing and reviewing implementation and monitoring plans.

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

6. Socio-economic development high-level objective: To enhance regional sustainability through facilitating access to a range of economic opportunities and cascading benefits from the park by participating in and developing local economic initiatives, including the biodiversity economy.

6.1 Wildlife economy objective: To facilitate the transformation of the wildlife sector through land access and support programmes for new emerging black game farmers.

6.2 Bioprospecting objective: To facilitate the transformation of the bioprospecting sector through direct involvement of communities and traditional knowledge holders.

6.3 EPWP objective: To facilitate job creation in local communities through the implementation of EPWP and other infrastructure development initiatives.

6.4 Enterprise and supplier develop objective: To ensure participation of emerging and qualifying micro enterprises through various initiatives.

6.5 Social legacy objective: To develop and implement a comprehensive environmental education and social legacy programmes that will address the needs of multi stakeholder groups.

6.6 Land claim objective: To facilitate and support the settlement and implementation of land claims in the park through the beneficiation scheme initiatives.

Figure 12. Socio-economic development high-level objective and supporting objectives.

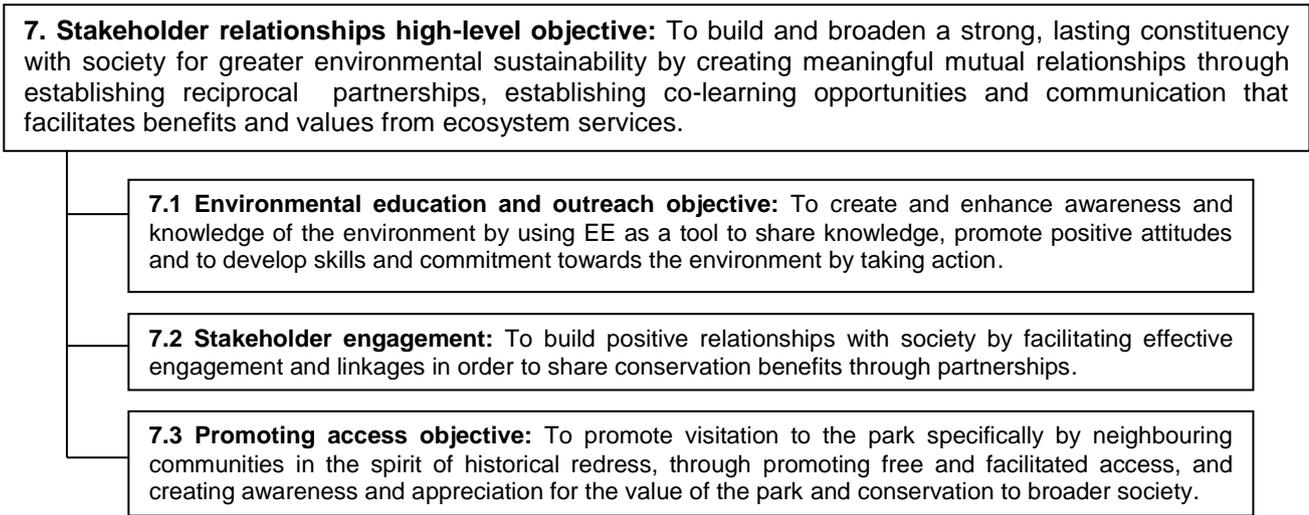
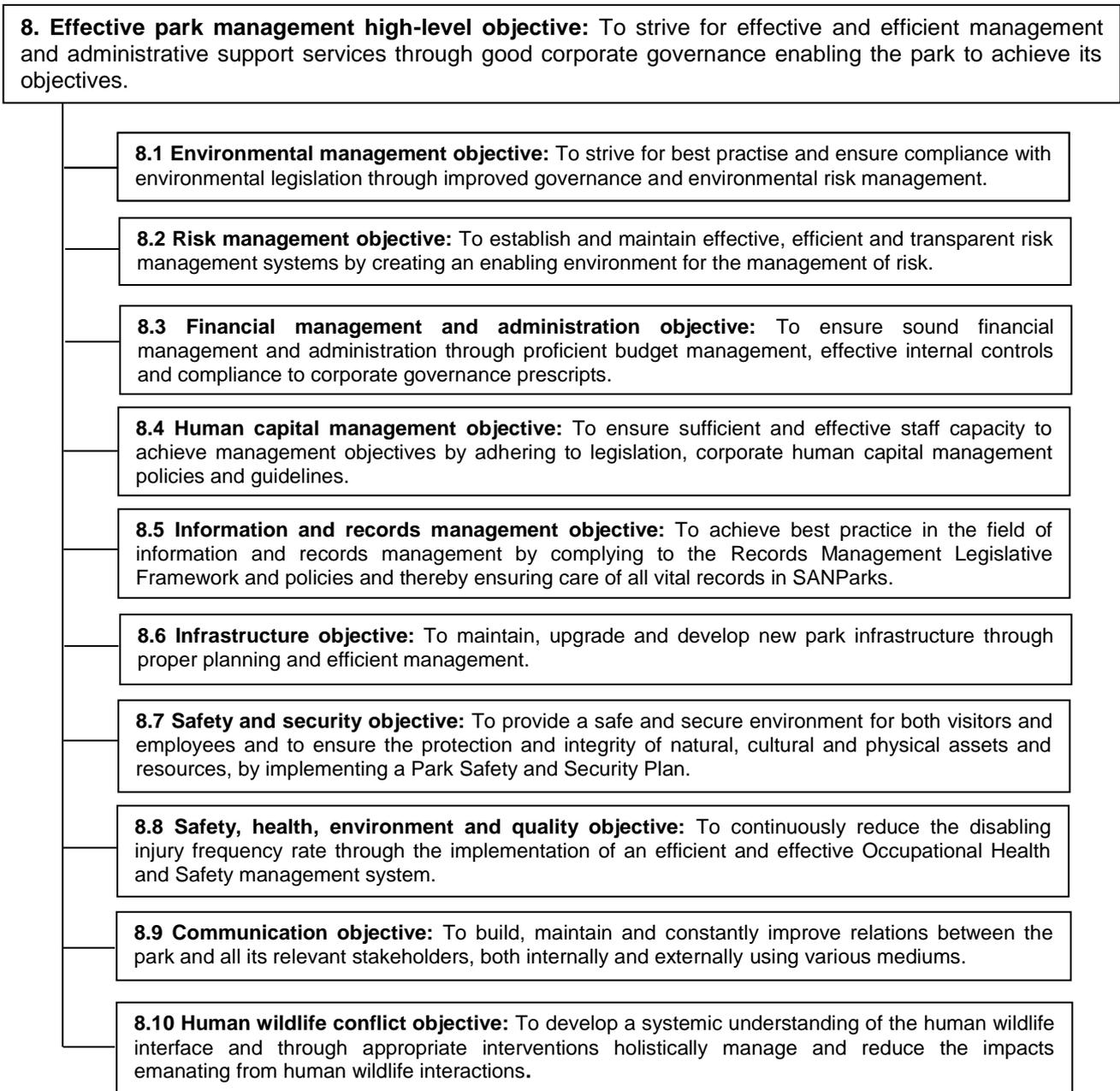


Figure 13. Stakeholder relationships high-level objective and supporting objectives.





8. Effective park management 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.

8.11 Disaster management objective: To ensure that all disaster situations that may occur in the park are addressed and managed through pre-determined contingency plans and pre-planned actions.

8.12 Veterinary wildlife services objective: To ensure ethical and professional veterinary and wildlife services by providing capture, holding, translocation and research initiatives pertaining to wildlife.

8.13 Climate change: To understand and recognise climate change effects and its consequences on biodiversity in the park by assessing park management options under predicted climate change scenarios which is supported by continuous climate monitoring.

8.14 Research, evaluation and co-learning: To provide broad-based scientific support in order to ensure science underpins management actions, decision making and communication by conducting and facilitating appropriate research and monitoring projects, growing capacity, creating co-learning opportunities and translating and communicating science whilst maintaining and contributing to the park's scientific history and reputation.

Figure 14. Effective park management high-level objective and supporting objectives.

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Section 6: Zoning

6.1 Introduction

The primary objective of the park's zoning plan is to establish a coherent spatial framework in and around the park to guide and co-ordinate conservation, tourism and visitor experience initiatives (Appendix 7, Maps 4a-c). The zoning plan plays a key role in minimising conflicts between different users of the park by separating potentially conflicting activities such as game viewing, recreational activities and tourism accommodation, whilst ensuring that activities and uses continue in appropriate areas and do not conflict with the park's values and objectives.

Zoning for protected areas is distinct from municipal land use zoning in terms of both role and legal status. Protected Area zoning is legally required in terms of section 41 (2) of NEM: PAA which stipulates that a protected area management plan must contain "a zoning of the area indicating what activities may take place in different sections of the area and the conservation objectives of those sections." Municipal zoning records all land-use rights on properties in the area of jurisdiction of that municipality and includes regulations and restrictions on how those rights can be exercised. It should be noted that the management and development of National Parks is an exclusive functional area of the national government and therefore outside the jurisdiction of municipalities.

Changes made to the use zones during this 2017 review, linked to the sensitivity layer but also had strong emphasis on the preservation of the intangible attributes such as solitude, remoteness, wildness, and serenity, which are key to the sense of place of the park. The update of the sensitivity analysis (Appendix 7, Maps 5a-c) of the park, considered the biophysical, heritage and scenic resources; assessed the regional context, and the park's current and planned infrastructure and tourism products, all interpreted in the context of park objectives; whilst recognising the distinctiveness of the park as a large, open and fairly natural system.

The zoning plan identifies visitor experiential Use Zones and is extracted from the full Conservation Development Framework (CDF) that will be prepared as an outcome of the 2018 Park Management Plan. The CDF sets out the rationale for use zones and development nodes in more detail, describing these and providing management guidelines for each of the zones and sites.

The park's movement network has been categorised in the CDF as Transit, Tourist and Management routes for which the characteristics, route and guidelines are set out to ensure that the experiential qualities of the zone which the routes may traverse, is upheld.

6.2 Synopsis of updates to the 2011 zonation

The zonation for the 2008 management plan was reviewed and adjusted in 2011 and it is this adjusted 2011 zonation that was used as the basis for the 2017 review. The zonation presented in this document has several departures from the amended 2011 zonation. The updates and adjustments included:

- The most notable adjustments were that the full extent of the Makuleke - and Kempiana Contractual Parks have been added. Their zonation is an extension of that within the park and follows the same guidelines;
- In addition, the Peripheral use zones have been removed and zoning is now more in line with the standard SANParks zonation scheme. This Peripheral use zone was initially added to encourage developments on the periphery of the park but extensive urban developments on the boundaries with these zones have made them unfeasible. The principle of peripheral development is however still retained and will be adhered to as far as possible; and

- Adjustments to the roads and infrastructure zoning were done. Improved accuracy and resolution of park roads and infrastructure mapping have prompted minor adjustments to zone boundaries. All current management roads, including disused roads, are now zoned (Primitive). Operational infrastructure and smaller camps, such as Punda Maria airstrip, bomas, trails camps and concession fly camps that were not zoned in the previous zonation have now been added.

Rezoning of areas took place in several locations:

- The Low Intensity Leisure (LIL) zone north of Phalaborwa Gate (Burn Block N159C) that was previously set aside for the Letaba Concession area has been moved east off the boundary to also include Burn Block N159. This was done to allow for developments in and possible cross boundary linkages with Letaba Ranch. This LIL zone is acting as placeholder for the concession camp and does not represent the full concession area. Once the concession camp location has been finalised the camp area will be rezoned based on its infrastructure and the rest of the LIL zone will revert to a Primitive zone;
- Primitive zones south and east of Phalaborwa Gate (Burn Blocks N172A & N174A) have been rezoned to LIL;
- Primitive zones north east of Satara (Burn Blocks C022 & C024) have been rezoned to LIL;
- Portions of the Primitive zone north-west of Tshokwane (Burn Block C074) have been rezoned to LIL;
- The Wilderness zone due south of Tshokwane (Burn Block C092) has been rezoned to Primitive;
- The Salitje Road (S30) has been identified as a possible option for implementing traffic mitigation measures in the south of the park. This LIL zone has been widened and rezoned to High Intensity Leisure (HIL) to allow for this;
- The Primitive block east of Afsaal (Burn Blocks S063 & S086) have been rezoned to Remote; and
- The following Burn blocks or portions thereof, have been upgraded to Remote zone:
 - N187, N011, N013, N007, N016, N020, N024, N022, N035, N034, N034A, N032, N132, N117, N141, N142, N157, N165, N174A, N174B, N176, C001, N176A, C001B, C009, C017, C025, C034, C033, C026, C091, C107B, S062, C107A, C109, S011A, C110, S062B, S012A, C111, S006, S003, C108, S066A, S066, S068, S054, S072, S090, S093, S091, S092, S102, S100, S101, N009, N012, N015A, N040A, N013A, N013A, S105, S105, S107, S107, N173C, N177A, N036, S055

6.3 Guiding principles underpinning the Conservation Development Framework

The principles underpinning park zonation, as listed below, were informed by the SANParks CDF manual, the guidelines for strategic environmental assessment in South Africa, integrated environmental management and the 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);
- Recognises that the mandate of SANParks is to conserve biodiversity and heritage resources of national and international significance, in terms of the NEM: PAA and the National Heritage Resources Act (NHRA) No. 25 of 1999 as well as the Convention on Wetlands;
- 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;



- Does not zone the airspace, however, the park's airspace (as described in Section 47 of the NEM: PAA) will not be open for tourism related aerial activities. Aerial access for management purposes and through designated commercial air corridors, as stated in section 7.3 or new ones, will however be allowed;
- Emphasise the need for peripheral development as the first option;
- Recognises that park boundaries are not static in time and 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, and 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, potentially conflict with and compromise this primary function. Use zoning is the primary tool to ensure that visitors can have a wide range of quality experiences without comprising the integrity of the environment.

Furthermore, the expectations and recreational objectives of people that visit the park may differ. Some people are visiting the park purely to see wildlife as well as natural landscapes. Others wish to experience intangible attributes such as solitude, remoteness, wildness, and serenity (which can be grouped as wilderness qualities), while 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 or 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

Potential developments were first situated in suitable zones within the existing zonation. Where no suitable locations in such zones were found modification to the existing zonation areas was done using the sensitivity analysis to inform the appropriate use of different areas of the park, as well as the park's current infrastructure and tourism products. The regional context, especially linkages to other conservation areas open to the park, neighbouring community areas and impacts from activities outside the park were also taken into consideration. Planned infrastructure and tourism products were then accommodated where these were compatible with the various informants. These were all interpreted in the context of the park objectives and undertaken in an iterative and consultative process.

The 2011 zoning of the park was based on an expert analysis of the biophysical, and scenic resources of the park with strong emphasis on the preservation of the intangible attributes such as solitude, remoteness, wildness, and serenity which are key to the sense of place of the park. The 2017 update of the sensitivity analysis of the park included not only the changes to the

biophysical context but now also included the heritage resources, an assessment of the regional context; and an assessment of the park’s current and planned infrastructure and tourism products.

The analysis and mapping of the sensitivity examined the biophysical characteristics of the park 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 pans and floodplains); visual sensitivity (sites where infrastructure development could have a strong aesthetic impact; and topographic and soil sensitivity (areas vulnerable to soil erosion). In addition, the heritage value and sensitivity of sites were examined (mostly archaeological and cultural aspects).

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

- Use zones covering the entire park; and
- A buffer zone surrounding the park.

6.6 Overview of the use zones

The zoning plan for the park is summarised in Table 3 below. Full details of the use zones, including high-resolution maps, the activities and facilities allowed in each zone, the experiential and conservation objectives of each zone, the limits of acceptable change, the zoning process and the underlying landscape analyses are included in the 2018 KNP CDF.

The use zones applied in the 2018 KNP CDF were: Wilderness; Remote; Primitive; Low Intensity Leisure and High Intensity Leisure. The zones are intended to provide visitors with a range of quality nature related experiences offering different degrees of ‘wildness’ associated with a national park (Appendix 7, Maps 4a-c).

Overall the visitor use zones can be grouped into two broad categories:

- Those zones which have intrinsic qualities that offer an experience that promotes solitude and provides a ‘close to nature’ experience; and
- Zones that offer a more structured and social outdoor natural experience.

The conservation orientated zones that offer a ‘close to nature’ experience are the Wilderness, Remote and Primitive zones. Activities in these zones are more dependent on the quality of the natural environment and less dependent on the availability of visitor / tourism support facilities. Its primarily recreational activities are non-motorised and rustics in which the visitor needs to be more self-reliant.

The tourism orientated zones that offer an outdoor experience are the LIL and HIL zones. Activities within these zones tend to be at a more localised scale and are more dependent on visitor facilities. Access and movement through these areas are through a network of tar and gravel roads and a variety of accommodation and other tourist infrastructure make for a comfortable visitor experience.

The extent of these tourism orientated zones does not imply that the entire area is earmarked for development. A buffer is added around developments to mitigate impacts such as noise and light on surrounding zones. Space is also included for recreation and leisure activities. All new developments that are planned for these zones also must meet the guidelines for those zones (Table 3) as well as adhere to the development guidelines of the park.



Table 3. Use zones and use zone characteristics for the park.

Primary Zone	WILDERNESS	REMOTE	PRIMITIVE	LOW INTENSITY LEISURE	HIGH INTENSITY LEISURE
General Characteristics	Meets the legal definition of Wilderness . Retains an intrinsically wild appearance and character (no infrastructure) or capable of being restored to such.	Retains an intrinsically wild appearance and character (essentially no infrastructure) or capable of being restored to such.	Generally, retains wilderness qualities but with basic self-catering facilities. Access is controlled. Provided access to Remote and Wilderness Zones and can serve as a buffer to them.	The underlying characteristic of this zone is motorised self-drive access to small basic self-catering facilities. The number of visitors is higher than that in the Wilderness, Remote and Primitive zones. Camps have a peaceful feel without large commercial facilities such as shops and restaurants. Access points are without large commercial facilities.	The main characteristic is high-density tourist development node, with commercial amenities, where more concentrated human activities are allowed. Camps have a relatively natural feel whilst providing activities and commercial facilities such as shops and restaurants. Access points may include large commercial facilities.
Experiential Qualities	Wildness, quiet, remoteness, solitude, serenity, peace, harmony, opportunity for reflection and self-appraisal and awe inspiring natural characteristics	Wildness, remoteness, solitude and awe-inspiring natural characteristics.	Relaxing, serenity with minimal impact to experience wilderness qualities	Comfortable facilities in a relatively natural environment.	Comfortable and sophisticated facilities while retaining a relatively natural ambiance.
Interaction between user groups	None	None to very low.	Low	Moderate to high	High
Types of Access	Controlled access, guided non-motorised.	Controlled access, guided non-motorised.	Controlled access. Unaccompanied motorised and guided non-motorised.	Motorised self-drive and guided access	Accessible by motorised transport (car / bus) on high volume transport routes, including delivery vehicles. Air access via commercial airport and airstrips.
Type of Activities	Limited guided non-motorised activities such as hiking in small groups.	Hiking in small guided groups, possibly other guided non-motorised activities.	Hiking, 4x4 drives, game viewing possibly other guided non-motorised activities.	Motorised self-drive game viewing, picnicking, guided activities, low intensity access points.	Motorised self-drive game viewing, picnicking, guided activities. Additional sophisticated infrastructure. Larger, organised adventure activities. Dining at restaurants.
Type of Facilities	Undeveloped and roadless	Essentially undeveloped and roadless.	Small, basic self-catering. Distributed to avoid contact between users or limited concessions with limited numbers. 4x4 routes & guided hiking trails.	Facilities limited to basic self-catering picnic sites, ablution facilities, information / education centres, parking areas. Small non-commercial entrance gates with basic facilities as well as small self-catering 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.	High-density tourist camps and entrance gates with commercial amenities. Footpaths, transport systems, accommodation, restaurants, curio and refreshments stall, information / education centres. High volume roads.
Limits of acceptable change: Biophysical	Deviation from a natural / pristine state should be minimized and existing impacts should be reduced.	Deviation from a natural / pristine state should be minimized and existing impacts should be reduced.	Deviation from a natural / pristine state should be small and limited to restricted impact footprints. Existing impacts should be reduced.	Deviation from a natural / pristine state should be minimized and limited to restrict 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.	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.
Limits of acceptable change: Aesthetics and recreational	Activities which impact on the intrinsically wild appearance and character of the area will not be tolerated.	Activities which impact on the intrinsically wild appearance and character of the area will not be tolerated.	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. Noise and light pollution should be kept to a minimum.	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.	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.

Guidelines for management infrastructure	Ideally there should be no management infrastructure but low impact temporary infrastructure, may be present only where needed to limit biodiversity loss.	Ideally there should be no management infrastructure, but low impact temporary infrastructure may be present only to limit biodiversity loss. Low spec strategic management roads are allowed.	Small, isolated, permanent but low spec infrastructure (such as dirt roads & low spec airstrips making use of existing road footprints) may be present. This may be to help manage biodiversity or service tourist facilities.	Where this is anticipated to be a high usage zone in the park, management infrastructure should be concentrated here as far as is feasible thus allowing management to efficiently make use of existing high-volume infrastructure. To limit impacts management infrastructure should be placed close to the park boundary.	Where this is the highest usage zone anticipated in the 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.
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The sensitivity map (Appendix 7, Maps 5a-c) 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. As in most cases the boundaries between zones are based on the burn blocks. The environmental sensitivity within the entire burn block does not always map precisely to the zone.

Table 4 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 81.5 % of the park is covered by zones that are strongly conservation orientated in terms of their objectives. The table demonstrates some correlation between the spatial distribution of environmentally sensitive areas and conservation-orientated zones, with 71.8 % of highly sensitive areas in the conservation orientated zones. Conversely, the tourist orientated zones covers 18.6 % of the park yet contains approximately 28.6 % of sensitive areas.

Table 4. 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	42.46	28.54
	Remote	16.27	20.95
	Primitive	22.68	22.29
Tourism orientated	Low intensity leisure	8.75	11.76
	High intensity leisure	9.84	16.46

6.6.1 Wilderness zone

Objectives

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. The park also has extensive scope to provide a true wilderness experience as defined in the NEM: PAA.

To allow for management actions, to secure biodiversity assets and to make these wilderness areas more accessible to suitable tourism products, the existing roads bisecting the large Wilderness blocks will be maintained. The resulting Wilderness clusters will be governed by cluster guidelines as defined in the CDF.

Characteristics

This is a zone retaining an intrinsically wild appearance and character, or capable of being restored to such a state, and which is essentially undeveloped and roadless. The primary characteristic of this zone is the experience of wilderness qualities with the emphasis on solitude and remoteness. Access is controlled in



terms of number, frequency and size of groups and allows for guided non-motorised access and basic pack-in pack-out activities. If present at all, sight and sound of human habitation and activities are barely discernible and at a far distance. This zone further serves to protect sensitive environments and / or endangered biota from disturbance.

Visitor activities and experience

Activities: Access is through guided non-mechanised means and is controlled in terms of number, frequency and size of groups. Activities include non-mechanised activities such as hiking or birding. Visitors need to be self-reliant as no infrastructure, either temporary or permanent, is allowed in the zone, as the nature of the experience is heavily dependent on the quality of the Wilderness zone. The duration of any overnight accommodation is strictly limited, based on the “pack-in pack-out” basis, with no permanent alterations to the site (such as bush clearing).

Interaction with other users: There should be zero interaction between different groups, including any sound or sight. 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 and where unavoidable limited to essential operational infrastructure in existing impact footprints. Existing impacts and infrastructure should be reduced through rehabilitation projects. Specifications of existing roads and essential infrastructure should be such that it limits 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 (*i.e.* solitude, remoteness, wildness, serenity, and peace) should be restricted. This includes light and noise pollution.

Facilities

Type and size: No facilities are allowed. Should overnight facilities be required to serve this zone, these should be placed in suitable adjoining zones.

Sophistication of facilities: “Pack-in pack-out” activities only, with visitors making use of self-carried tents.

Audible equipment and communication structures: None within the zone and the impact of such structures in surrounding zones must be considered for new installations.

Access and roads: No roads and mechanised access are allowed within the designated Wilderness blocks. Access to the Wilderness cluster is through existing roads, zoned Primitive, bordering the Wilderness blocks. Access is controlled and for a limited number of vehicles. This is to allow for operational activities or for guided access to a specific location from which visitors walk into the block. Low volume access 4x4 routes could be accommodated in or through the Wilderness clusters using the Primitive Road zone. Heavy machinery such as trucks or large numbers of vehicles is only allowed under exceptional circumstances for operation purposes. No infrastructure may be erected along the access routes.

Location in park

The Wilderness zone (made up of several parcels) comprises 42.5 % of the park and were designated to protect large relatively intact areas with exceptional wilderness qualities as well as

sensitive biodiversity areas from human activity. Controlled access trail areas (such as the Olifants wilderness trail) traverse this zone.

Guidelines on management infrastructure and utilisation

Existing permanent management infrastructure, such as artificial water points or ranger pickets, is permissible in this zone, but these should be earmarked for rehabilitation back to a pristine state. In exceptional circumstances such as when required for protection of wildlife assets, additional semi-permanent infrastructure such as lightly used “twee spoor” management tracks, ranger outposts, and helipads can be added, with the onus on park management to co-ordinate this in such a way that tourists do not encounter management infrastructure in this zone, and that this infrastructure is removed as soon as is viable.

6.6.2 Remote zone

Objective

The objective of this conservation orientated zone is to protect areas of the park that are relatively unimpacted by human developments to provide an experience of relative solitude. Sights and sounds of human impacts may be more obvious but encounters with other visitors will be limited as far as possible. The focus of management in this zone is to conserve areas of unique and / or endangered biodiversity. A reasonable level of self-reliance is necessary to access this zone. The nature of the experience is dependent on the quality of the natural environment and the impact of people should remain unobtrusive and be subservient to that of nature. There may be some signs of infrastructure mainly of a management, heritage nature and roads that traverse the area. The zone generally provides for non-motorised recreational activities such as hiking, mountain biking, horse-riding, *etc.* along designated routes.

To allow for management actions, to secure biodiversity assets and to make these Remote areas more accessible to suitable tourism products, the existing roads bordering the Remote blocks will be maintained.

Characteristics

This is an area retaining an intrinsically wild appearance and character, or capable of being restored to such a state, and which is essentially undeveloped and road less. There are no permanent improvements or any form of human habitation. The emphasis of this zone is the experience of wilderness qualities with opportunities for solitude with natural and scenic characteristics. Sights and sounds of human activities and development both inside and outside of the park may be present in this zone but should be limited.

Access is controlled in terms of number, frequency and size of groups and allows for guided non-motorised access and basic pack-in pack-out activities.

This zone further serves to protect sensitive environments and / or endangered biota from disturbance.

Visitor activities and experience

Activities: Access is through guided non-mechanised means and is controlled in terms of number, frequency and size of groups. Several groups may be in area at the same time, but if necessary densities and routes should be defined so that groups are unaware of each other. Visitors need to be self-reliant as no permanent infrastructure is allowed in the zone as the nature of the experience is heavily dependent on the wilderness qualities of the zone. The duration of any overnight accommodation is strictly limited on a “pack-in pack-out” basis with no permanent alterations to the site. Specially arranged once-off events such as a mountain bike race on the roads surrounding the zone may involve higher visitor numbers for a brief limited period, but these events are not the norm.

Interaction with other users: There should be limited 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 small and as far as possible limited to essential operational infrastructure in existing impact footprints. Existing impacts and infrastructure should be reduced through rehabilitation projects. Any facilities constructed in these areas, and activities undertaken here should be done in a way that it limits environmental impacts. Specifications of existing roads and essential infrastructure should be such that it limits impacts.



Aesthetics and recreational environment: Activities which impact on the intrinsically wild appearance and character of the area, or which impact on the wilderness qualities of the area (*i.e.* solitude, remoteness, wildness, serenity and peace) should be restricted. This includes light and noise pollution.

Facilities

Type and size: No facilities are allowed. Should overnight facilities be required to serve this zone, these should be placed in suitable adjoining zones.

Sophistication of facilities: “Pack-in pack-out” activities only with visitor making use of self-carried tents.

Audible equipment and communication structures: None within the zone and the impacts of such structures in surrounding zones must be considered for new installations.

Access and roads: No roads and mechanised access are allowed within the Remote Zone. Access to the zone is through existing roads, zoned Primitive, bordering the Remote blocks. Access is controlled and for a limited number of vehicles. This is to allow for operational activities or for guided access to a specific location from which visitors walk into the block. Low volume access 4x4 routes could be accommodated. Heavy machinery such as trucks or large numbers of vehicles is only allowed under exceptional circumstances for operation purposes. No infrastructure may be erected along the access routes.

Location in park

The Remote zone comprises 16.3 % of the park and was designated to protect sensitive areas from high levels of tourist activity as well as areas with extensive wilderness qualities. Controlled access trail areas (such as the Wolhuter and Bushman trails) traverse this zone.

Guidelines on management infrastructure and utilisation

Ideally there should be no management infrastructure, and natural processes should be allowed to function without management intervention. Any infrastructure occurring in the zone should be earmarked for rehabilitation back to a pristine state. In exceptional circumstances, such as when required for protection of wildlife assets, additional semi-permanent infrastructure such as “twee spoor” management tracks, ranger outposts, and helipads can be added with the onus on park management to co-ordinate this in such a way that tourists do not encounter management infrastructure in this zone, and that this infrastructure is removed as soon as is viable.

6.6.3 Primitive zone

Objective

The main objective of this conservation-orientated zone is to provide a relative sense of solitude and relaxation in an environment that maybe exposed to some sights and sounds of human activities. Although it is a place of quietness and naturalness, there will be more interaction between users than in the Remote zones. The zone is easy to access through mechanised means on access-controlled roads. The quality of the experience is less dependent on the quality of the natural environment with the provision of small, low impact accommodation with some activities.

Key management objectives of this zone are biodiversity restoration within the context of

heritage, resource and recreational use. Development is limited and reflects and respects the natural environment.

Characteristics

This zone is mainly characterised by accompanied non-motorised access, mainly on foot, for a wide range of experiences. However, limited self-drive access and activities are also allowed. Access roads are low key, gravel roads and / or tracks to provide a more natural experience. Large busses are strictly limited and open safari vehicles are only allowed on designated routes.

A larger number of visitors are allowed here than in the Remote zone and minimal contact between visitors may occur. Within this zone, more sensitive areas should be protected by precinct level planning, which should direct development and utilisation to more robust areas. This zone can also provide non-motorised access from low and high intensity leisure zones or to Remote and Wilderness zones.

Visitor activities and experience

Activities: Provides for a range of recreation activities such as self-drive game viewing, birding and guided hiking and mountain biking which can be undertaken in designated areas and along designated routes.

Interaction with other users: Interaction between groups of users is low.

Limits of acceptable change

Biophysical environment: Some deviation from a natural / pristine state is allowed, but care should be taken to restrict the development footprint. Infrastructure, especially paths and viewpoints should be designed to limit the impacts of visitors on the biophysical environment.

Aesthetics and recreational environment: Activities which impact on the relatively natural appearance and character of the area should be restricted, though the presence of visitors and the facilities they require, may impact on the feeling of “wildness” experienced in this zone. Ideally, visitors should only be aware of the facility or infrastructure that they are using, and this infrastructure / facility should be designed to fit in with the environment within which it is located to avoid aesthetic impacts. Noise and light pollution should be kept to the minimum with green technologies such as solar power encouraged.

Facilities

Type and size: Small, basic self –catering accommodation or concessions with limited numbers (<80 beds) that is well distributed to avoid contact between users. 4x4 Routes and guided hiking trails. No day visitor facilities are allowed in the camps within this zone and tourist facilities such as bird hides, whilst allowed, should rather be in the LIL or HIL zones for more general use.

Sophistication of facilities: Basic camp facilities or low impact camps that provide a good level of comfort whilst still providing a sense of wildness and solitude.

Audible equipment and communication structures: Allowed, but should be managed to retain a relative level of solitude.

Access and roads: Roads zoned as Primitive need to adhere to the regulations of the zones they traverse. Access controlled tourist roads and management access are allowed within the Primitive Zone. Access to the zone is through existing roads, with the option of new roads (though only after the appropriate workflow has been followed). Access is for a low number of vehicles at a time to allow for operational activities or for guided and self-drive activities. Low volume access 4x4 routes could be accommodated. Heavy machinery such as trucks or large numbers of vehicles is only allowed in designated areas and along designated routes for seasonal mobile tented camps or operation purposes. Limited infrastructure may be erected along the access routes for alight-from-vehicle points or heritage sites.

Location in park

The Primitive zone comprises 22.7 % of the park with the focus on areas allowing ease of access due to their proximity to infrastructure such as tourist roads and entrances. All the management roads and the access-controlled tourist and concession roads are zoned as Primitive. Most of the boundary of the park is zoned Primitive to allow for a management interface with neighbouring areas.



Guidelines on management infrastructure and utilisation

Permanent tourist and management infrastructure is permitted in this zone, but tourist access along the roads should be minimised as far as possible in keeping with the relatively unspoilt nature of the zone.

Infrastructure may include hard surfaces (paved or tarred roads) if road vehicle usage is restricted to light vehicles with limited access by trucks or heavy machinery. If possible, efforts should be made to reduce noise and air pollution from operations vehicles in this zone during tourist usage, so as not to impact too negatively on visitor experiences. Low spec airstrips making use of existing road footprints may be present.

6.6.4 Low Intensity Leisure zone

Objectives

The objective of this tourist-orientated zone is to provide infrastructure for day and overnight visitors in a natural environment. These zones are well patronised areas that provide accessible, safe, natural areas with a range of accommodation and recreational or leisure activities. Group interaction and socialisation are an integral part of the experience, which depends more on the quality of the facilities provided than on a completely natural environment. Impacts on the surrounding areas are restricted through intensive landscaping and vegetation management. Limited, sympathetic development is permitted in these areas, linked specifically to tourism, recreation and management of the park.

While large game viewing areas may be zoned LIL as placeholders to allow for flexibility in siting new camp developments, in reality, development footprints should be localised, with some areas having more of a primitive zone “feel”.

Characteristics

The underlying characteristic of this zone is motorised self-drive access, with a range of accommodation options from basic self-catering facilities to luxury concession lodges. Small or seasonal commercial or catered facilities could be accommodated; however, these should be small and still align with the general ambiance of the zone. Numbers of visitors are higher than in 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, gravel roads and / or tracks to provide a more natural experience. Large busses may be permitted subject to certain restrictions. Major facilities along roads are generally limited to basic self-catering picnic sites with toilet facilities though tourist sites such as bird hides, with or without overnight accommodation, historical sites and other alight-from-vehicle points are also allowed.

Visitor activities and experience

Activities: Self-drive motorised game viewing, guided game drives, picnicking, walking / hiking, cycling.

Interaction with other users: Moderate to high

Limits of acceptable change

Biophysical environment: Deviation from a natural / pristine state should 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 activities and facilities will impact on the wild appearance and reduce the wilderness characteristics of the area (solitude, remoteness, wildness, etc.), these should be managed and limited to ensure that the area still provides a relatively natural outdoor experience.

Facilities

Type and size: A range of small to medium self-catering (including camping) and catered accommodation options (<360 beds). Camps have a peaceful feel without large commercial facilities such as shops and restaurants. Additional facilities could 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, such as kiosks or tea gardens as well as tented concession camps could be provided. However, these should still fall within the general ambiance of the zone. Larger commercial facilities and larger concession restaurant operators (e.g. Cattle Barons, Mug-and-Bean), should rather be placed in the High Intensity Leisure (HIL) zone.

Sophistication of facilities: Mostly comfortable self-contained self-catering accommodation units with bathroom facilities. Luxury catered options may also be accommodated. Low impact campsites mostly include ablution and kitchen facilities but with limited additional facilities. Tourist facilities should not include permanent commercial facilities such as shops, convenience stores or restaurants.

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 sedan car access (traditional game viewing) on designated gravel roads. Large busses are restricted to high volume roads designed to accommodate them. These roads are dictated as such.

Location in park

The LIL zone comprises 8.8 % of the park with the focus on areas allowing for ease of access of fairly high volume of visitors and has a good network of tourist infrastructure such as tourist roads, tourist sites and entrances. All LIL roads are open access gravel roads. LIL areas were only designated around existing small to medium camps, operational infrastructure and high-volume tourist sites with the exception of the new placeholder sites identified in section 6.2 as well as the existing ones in Burn blocks C059, N175, N106, N106A, N107, N081, N100 & N100A.

Guidelines on management infrastructure and utilisation

The placement of permanent management infrastructure is allowed in this zone, as this is a high-level use zone in the park. However, attempts should be made to rather concentrate the development of park management and operational infrastructure in the HIL zone of the park, where feasible. Where it is possible management infrastructure should be located on the periphery of the park and make use of existing tourist access routes and infrastructure. Types of operational infrastructure that could be accommodated here include park offices and administration, or standard entrance gates.

6.6.5 High Intensity Leisure zone

Objective

The main objective of this tourist orientated zone is the concentration and containment of commercial, tourism, managerial and operational park activities in a restricted and designated area, which is robust enough to tolerate development, and where these diverse activities can piggyback off multi-use infrastructure (roads, plumbing, power), thus reducing their overall footprint. This zone allows for higher density tourism development with modern commercialised amenities and a concentration of visitor facilities. The quality of the visitor experience is heavily dependent on the quality of the facilities which enable the visitor to experience the environment with a minimum of effort.

The focus of management is to ensure high quality visitor facilities and experience whilst ensuring that the activities have a minimal impact on the surrounding natural environment. As impacts and particularly cumulative impacts are higher, where possible the HIL zone should be placed on the periphery of the park, and in areas that have low sensitivity values, and are robust enough to tolerate development. Staff not



directly associated with tourism facilities should be accommodated outside of the park if possible. All new industrial type facilities such as laundries, abattoirs, maintenance depots and workshops, should ideally be located close to the park boundary or, if possible, outside of the park.

In all cases, HIL zones should reflect the ethos and character of the park.

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. HIL 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 more sophisticated infrastructure, such as large picnic and day visitor sites 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 still retains a level of ecological integrity consistent with a protected area.

Aesthetics and recreational environment: 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 (solitude, remoteness, wildness, etc.), these should be managed and limited to ensure that the area generally still provides a relatively natural outdoor experience.

Facilities

Type and size: High-density camps (>400 beds) providing a range of tourist accommodation with diverse modern amenities. Restaurants, shops, education / information centres, view sights, ablation facilities, parking areas. Day visitor sites are provided outside of rest camps where possible. 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 should be made to concentrate these sites close to the access points of the park. Staff villages and administrative centres should be restricted to core staff. Non-essential staff housing, administration and industrial infrastructure should be positioned outside of or close to the periphery of the park were possible.

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 that are 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

The HIL zone comprises 9.8 % of the park with the focus on areas allowing for ease of access of high volume of visitors and has a good network of tourist infrastructure such as air access, tourist roads, tourist sites and entrances. All open access tar roads are zoned as HIL. HIL areas were only designated around existing medium to large camps, operational infrastructure and high-volume tourist sites.

Guidelines on management infrastructure and utilisation

Management guidelines that apply to LIL apply to HIL as well. Generally, HIL indicates higher or more intense utilization 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 should be located in an area of low sensitivity, the development of management and operations infrastructure in this zone should be favoured. In the park, most operations and administration infrastructure are situated in the existing and well-established HIL tourist node at Skukuza Rest camp near the periphery of the park.

6.7 Park buffer zone

The buffer zone, also known as the integrated land use zone, as per the Buffer zone strategy has been identified as part of the park's integrated land use strategy.

The buffer zone, in combination with guidelines, will serve as a basis for:

- Identifying the focus areas in which park staff should respond to development application;
- Helping to identify the external impacts that would adversely affect the park;
- Integrating long term protection of the park into the Spatial Development Frameworks (SDFs) of municipalities and other local authorities, as per the Land use management scheme (LUMS);
- Identifying the focus areas in which park management need to consolidate or expand within compatible land uses through a range of contractual and cooperative agreements;
- Guide management interventions to address risks and threats such as invasive alien species management, restoration programmes, safety and security management;
- Support catchment and rangeland management programmes through cooperative partnerships; and
- Identifying the focus areas for community beneficiation projects and sustainable economic development opportunities such as the wild activity developments at entry gates.

The park will endeavour to forge closer collaborative relationships with neighbouring communities in the buffer zone, both on the western and eastern boundary. 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 the EIA response, the buffer zone serves largely to raise red-flags and do not remove the need for careful consideration of the exact impact of a proposed development. They do not address activities with broad regional aesthetic or biodiversity impacts.

In the park's case, there are three categories within the park buffer zone: the priority natural area, catchment protection area and the viewshed protection area (Appendix 7, Map 6).

6.7.1 Priority natural areas

The buffer zone comprises both the park's conservation expansion and land consolidation footprint, which further serves as a defensive buffer to the park. The land use buffer zone is inclusive of the priority natural areas required for the long-term persistence of biodiversity in and around the park through the protection of patterns and processes. Additionally, priority natural areas typically include areas identified for future park consolidation, ecological and climate change corridors and linkages as well as reasonably natural areas of high biodiversity value. The integrated land use zone allows for protection to core biodiversity areas. Inappropriate development and land use not compatible with conservation should be opposed in this area.

6.7.2 Catchment protection

Catchment protection areas are landscape level areas important for maintaining key hydrological processes within the park. Inappropriate development (dam construction, loss of riparian vegetation *etc.*) that will negatively affect the hydrological processes should be opposed. Control of alien vegetation and soil erosion



as well as appropriate land care should be promoted.

6.7.3 Viewshed protection

Viewshed protection areas aim to preserve the aesthetic quality of the visitor's experience in a park. Within these areas, any development proposals should 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, at a fine scale many areas within this zone would be perfectly suited for development. In addition, major projects with large-scale regional impacts need to be addressed even if they are outside the viewshed protection zone.

6.7 Future improvements

Whilst the zoning plan forms the basis on which future developments are identified, the full CDF sets out the guiding principles for use zones and development nodes in more detail. By providing these management guidelines for each of the zones and development nodes, the desired visitor experience and adherence to the vital attributes can be ensured.

The CDF will be prepared as an outcome of the 2018 Park Management Plan within Year 1. Specific emphasis in the CDF will be the definition of potential new Wilderness areas and the gazetting of these areas (See Wilderness programme, Section 10.4).

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Section 7: Access and facilities

7.1 Public access and control

The park can be accessed from all major hubs, with the nearest significant towns being Nelspruit, Phalaborwa and Thohoyandou. Approximate travel times by road to the park are as follows:

- 2.5 hours from Louis Trichardt to Punda Maria gate (via N1, R524);
- 2.5 hours from Polokwane to Phalaborwa gate (via N1, R71);
- 5 hours from Pretoria to Kruger gate (via N4, R40) and
- 4.5 hours from Johannesburg to Malelane gate (via N4)

The park has nine entrance gates, namely:

- Crocodile Bridge entrance gate;
- Kruger entrance gate;
- Malelane entrance gate;
- Numbi entrance gate;
- Orpen entrance gate;
- Pafuri entrance gate;
- Phabeni entrance gate;
- Phalaborwa entrance gate; and
- Punda Maria entrance gate.

There are also two non-commercial border crossings into Mozambique:

- Giriyondo Port of Entry; and
- Pafuri Port of Entry.

7.2 Areas with restricted access

The access gates are manned by SANParks officials and the gate opening hours are set out under point 9 in Appendix 5 (late arrivals and early departures need to be arranged in advance).

All vehicles entering or leaving the park are subjected to routine inspections. Various management and veterinary gates are in existence but do not offer access to the general public.

All guests are restricted to the designated tourist roads. Accommodation facilities are for the use of overnight guests only, whilst management tracks are marked with no entry signs.

7.3 Airfields and flight corridors

Section 47 (2) of the NEM: PAA states that no aircraft may enter the park's airspace or make use of any airstrip or helipad without getting prior permission from park management. The park has nine airfields which are predominantly utilised by SANParks for operational purposes. These are located at:

- Letaba – S23° 51' 7.2", E031° 34' 9.6";
- Mopani - S23° 31' 03.0", E031° 23' 52.0";
- Olifants - S24° 0.0' 09.6", E031° 44' 10.8";
- Pafuri – S22 24'53", E031 12'46.73";
- Punda Maria – S 22 46'10.55", E031 00'37.04";
- Satara – S 24 22'37.53", E031 46'35.59";
- Shingwedzi - S23° 06.0' 54.0", E031° 25' 39.1";

- Skukuza – S24 57'47.28", E031 35'23.69"; and
- Tshokwane – S24° 46' 35.4", E031° 51' 18".

Exceptions to this are the airfields at Skukuza, Satara, Punda Maria and Pafuri that are also being used by Airlink (only Skukuza) and the concessions (Singita and The Outpost) for guest drop-offs and pick-ups. Flight paths for access to the above-mentioned airfields have been delineated (Appendix 7, Map 2a-b). All flights to and from the above-mentioned airstrips must route along the defined corridor to avoid over-flying of sensitive areas and negatively impacting existing operations.

The park also has 13 helipads which are predominantly utilised by SANParks for operational purposes. These are located at:

- Crocodile Bridge - S25° 21.0' 16.92", E031° 53.0' 35.3";
- Letaba - S23° 51.0' 07.45", E031° 34.0' 40.76";
- Lower Sabie - S25° 07.0' 11.64", E031° 54.0' 55.44";
- Malelane - S25° 28.0' 17.22", E031° 30.0' 33.44";
- Pafuri - S22° 26.0' 58.74", E031° 18.0' 46.66";
- Pretoriuskop - S25° 10.0' 7.46", E031° 16.0' 12.97";
- Phalaborwa - S23° 56.0' 33.86", E031° 09.0' 57.13";
- Punda Maria - S22° 41.0' 30.12", E031° 0.0' 58.32";
- Olifants - S24° 0.0' 16.16", E031° 44.0' 17.74";
- Satara - S24° 23.0' 49.99", E031° 46.0' 35.94";
- Shingwedzi - S23° 07.0' 03.43", E031° 25.0' 55.7";
- Skukuza – S24° 58.0' 09.30", E031° 35.0' 37.28";
- Stolsnek – S25° 19.0' 18.77", E031° 23' 33.65"; and
- Tshokwane - S24° 47.0' 6.36", E031° 51.0' 26.14".

7.4 Administration and other facilities

All the facilities utilised for operational purposes enabling the park to fulfil its' legal mandate are listed in section 1 in Appendix 6. Maps 7a-c in Appendix 7 depicts the infrastructure in the park.

7.5 Visitor facilities

Visitor facilities including all non-commercial facilities and points of interest available to visitors, are listed in section 2 in Appendix 6.

7.6 Commercial activities

For the purposes of this management plan, commercial activities include all income-generating facilities, products and services offered, and are divided into those operated by the park and those operated by third parties, for example concession lodges.

7.6.1 Accommodation

The accommodation facilities in the park are listed in section 3 in Appendix 6.

7.6.2 Public private partnerships

The current PPPs facilities in the park are listed in Table 5 below.

Table 5. Accommodation facilities available in the park.

Infrastructure	No of units	Status	Zone
Crocodile ranger section – Shishangeni			
Main lodge	22	Operational	HIL
Shawu	5		LIL
Shonga	5		



Infrastructure	No of units	Status	Zone
Kingfisherspruit ranger section – Imbali			
Imbali safari lodge	12	Operational	LIL
Hamiltons	6		Primitive
Hoyo-Hoyo	6		
Ngala Safari lodge	56		HIL
Malalane ranger section - Lukimbi			
Lukimbi lodge	16	Operational	LIL
Nwanetsi ranger section – Singita			
Lebombo	17	Operational	LIL
Sweni	8		
Skukuza ranger section – Lion Sands / Tinga			
Tinga main lodge	10	Operational	LIL
Narina	10		
Stolsnek ranger section – Jock of the Bushveld			
Main lodge	17	Operational	LIL
Patrick Fitzgerald fly camp	3		
Tshokwane ranger section – Rhino walking safari's			
Rhino post lodge	16	Operational	LIL
Plains camp	8		Primitive

7.6.3 Retail and other facilities

The park has commercialised 11 shops, 10 restaurants and 2 picnic sites in the park. The following shops in the park are currently operated by Tourvest: Berg en Dal, Crocodile Bridge, Letaba, Lower Sabie, Mopani, Olifants, Orpen, Pretoriuskop, Satara, Shingwedzi, Skukuza and Punda Maria. The restaurant facilities at Berg en Dal, Letaba, Lower Sabie, Mopani, Olifants, Pretoriuskop, Satara, Shingwedzi, Skukuza (x2) and Punda Maria are currently operated by various private operators. In addition, the Afsaal and Tshokwane picnic sites are operated by private operators while the park operates Nkuhlu picnic site. Many of the main camps also have small staff shops in the staff villages.

The Skukuza rest camp has a spa facility that is outsourced to AM Lodge.

7.6.4 Activities

There are various income generating activities available in the park, and these are listed below:

- Backpacking trails;
- Birding;
- Eco-trails;
- Golf;

- Guided game drives (morning, sunset and night);
- Guided walks (morning and afternoon);
- Mountain bike trails;
- Self-drive game drives;
- Wilderness trails;
- SANParks Honorary Rangers (SHRs) Kruger trail;
- SHRs Mokhohlolo Wilderness Camp and associated activities; and
- 4x4 adventure trails.

There are also several annual events, arranged by and generating income for the SHRs, which indirectly benefit the park through investment in park projects. These include:

- Annual Skukuza marathon;
- Annual golf day; and
- Birding day events.

7.7 Cultural heritage sites

Several sites, as listed in Table 6 below, are accessible to visitors.

Table 6. Cultural heritage sites available in the park with tourism potential.

Sites	Status	Zone
Crocodile ranger section		
Duke's windmill	Interpretation at site	LIL
Francois De Cupier attack		HIL
Hippo pool rock art	Natural	LIL
Sardeli trading post	Interpretation at site	HIL
Kingfisherspruit ranger section		
Rabelaise hut museum	Interpretation at site	LIL
Letaba ranger section		
Anna Ledeboer grave	Interpretation at site	LIL
Das Nerves' cross		HIL
Engelhard plaque		LIL
Steinaecker horse display		HIL
Lower Sabie ranger section		
Albasini trading post	Interpretation at site	HIL
Prospectors grave		HIL
Mahlangueni ranger section		
Joubert grave	Interpretation at site	LIL
Malalane ranger section		
Alf Robert's Trade store / Thengamanzi	Interpretation at site	LIL
Fihlamanzi Outspan plaque		Primitive
General Viljoen attack		LIL
George Meade grave		
Herold Trollope hut		
Jock of the Bushveld plaque		
Nellmapius Drift		
Mooiplaas ranger section		
Shilowa heritage site	Guided walk	Primitive
Pafuri ranger section		
Baobab Hill	Interpretation at site	HL
Crooks Corner		LIL
Hyena's cave rock art	Guided walk	Wilderness
Bvekenya Barnard's drift, Klopperfontein	Interpretation at site	HIL



Sites	Status	Zone	
Pafuri ranger section			
Madzaringwe	Guided walk	Primitive	
Makahane			
Old Pafuri camp TEBA	Interpretation at site	HIL	
Pafuri Picnic			
Thulamela	Guided walk	LIL	
Phalaborwa ranger section			
Masorini Iron Age site and museum	Guided walk	LIL	
Pretoriuskop ranger section			
Albasini ruin	Interpretation at site	HIL	
First concrete dam		LIL	
Jock of the Bushveld's memorial		HIL	
Jock of the Bushveld's birthplace		LIL	
Jock of the Bushveld's plaque		HIL	
Joe Ludorf memorial		LIL	
Josinkulu		LIL	
Manungu's kop		HIL	
Pretorius grave		HIL	
Transport riders ox wagon		HIL	
Wolhuter hut museum	Interpretation at site, hut museum	Primitive	
Punda Maria ranger section			
Bronkhorst-Potgieter journey memorial	Interpretation at site	HIL	
Dzudzwini		LIL	
Information centre		HIL	
Skukuza ranger section			
De Laporte's windmill	Interpretation at site	HIL	
Dog memorial			
Founders Statue			
Headstone for fire disaster victims of 2000			
Papenfus Clock Tower			
Paul Kruger Statue			
Pontoon crossing			
Ranger's memorial			
W.A. Campbell hut museum			
Selati railway			
Shirimantanga Plaque			LIL
Stevenson-Hamilton grave			HIL
Stevenson-Hamilton memorial library			
Wolhuter's outspan		HIL	
Shingwedzi ranger section			
Dipeni dip tank	Interpretation at site	LIL	
Redrocks		HIL	

Sites	Status	Zone
Stolsnek ranger section		
Jock of the Bushveld and Sable statue	Interpretation at site	LIL
Outspan Plaque		
Thomas Hart grave		
Tshokwane ranger section		
Orpen tablet	Interpretation at site	HIL
Kruger tablet		
Lindanda Wolhuter memorial		
Trichardt memorial		LIL
Wolhuter attack plaque		Primitive

7.8 Community use

Community members visit the park for the following purposes:

- Cultural: To perform rituals at ancestral sites;
- Spiritual: Mountains, boulders and hot springs are associated with spiritual powers, communities visit these sites to pray and pay respect;
- Resource use: To harvest and collect natural resources as per the agreement (e.g. collection of lala palm leaves and Mopani worms);
- Education: To learn more about certain plant and animal species that are associated with their totems and improving their general knowledge.

7.9 Mining

Other than gravel pits and river sand abstraction used for maintenance purposes, there is no commercial mining taking place in the park. No mining rights / permits have been issued on park property.

7.10 Servitudes

There are no servitudes registered against the park, however, a few agreements are in place giving Eskom access to maintain their infrastructure.



Section 8: Expansion / Consolidation

The consolidation of the park remains a national priority for SANParks given its recognised biodiversity, its landscape interface, regional social-economic importance and contribution to securing and maintaining important ecosystem services. The consolidation also addresses several objectives within the Convention for Biodiversity, and national objective SO1.1 of the National Biodiversity Strategy and Action Plan (NBSAP). The expansion programme is informed by SANParks policy regarding land inclusion (SANParks, 2015b; Knight *et al.*, 2009), the National Protected Areas Expansion Strategy (NPAES) (DEA 2016), the National Biodiversity Assessment (Driver *et al.*, 2012) and the KNP Land Inclusion and Co-operative and Contractual Agreement Protocol (SANParks, 2017). The consolidation programme aims to contribute to NPAES that recommends expansion towards 12 % of the terrestrial area and 25 % of the marine inshore areas for South Africa.

An integrated spatial analysis identified important ecological infrastructure, focussing on critical biodiversity areas. Key areas of natural and semi-natural habitat important for delivering ecosystem services (Appendix 6, Map 3). The spatial prioritisation further included livelihood-, climate change-, socio-economic-, existing protected area management, regional and bioregional institutional and zonation layers (such as the GLTFCA, K2C and Vhembe biospheres). The layers collectively inform integrated spatial priorities for the land consolidation, park expansion and buffer / integrated land use zone approach. The park will not purchase land but pursue further conservation compatible expansion through a range of contractual and co-operative conservation arrangements in partnership with the Provincial conservation authorities, private and community owners / land right users, within the enabling GLTP Treaty and GLTFCA arrangements. The broader GLTFCA expansion (including all the GLTFCA countries) totals to 2,664,757 ha. The western boundary area of expansion and consolidation, inclusive of the conservation compatible areas and corridors for areas open and adjacent to the park amounts to 811,665 ha. This includes current conservation and protected areas open to the park, as well as corridors and community areas for potential expansion. It can be further broken up as follows: 329,071 ha of open conservation / protected areas part of the consolidation / regularisation process; 84,777 ha for immediate adjacent community and land use areas (inclusion pending the KNP Land Inclusion, Contractual and Co-operative Agreement Protocol); and 397,819 ha for broader corridor expansion.

The primary focus for the expansion will firstly be the conservation, protection, and the unlocking of associated sustainable socio-economic benefits of integrated spatial priority areas of important biodiversity and ecological connectivity value, such as the Madimbo corridor (Limpopo River system and associated wetlands), Makuya Nature Reserve, Mutale towards Soutpansberg corridor (these areas securing the Mutale and Luvuvhu River systems), Letaba Ranch / Mthimkulu complex (Letaba River system), Olifants -, Selati -, Blyde River corridors (Associated Private Nature Reserves complex, and the Selati, Karongwe, Makalalli corridor) and the Croc-River gorge corridor to the south of the park (linking to Barberton Mountain lands region) (the Inkomati: Crocodile River system).

The further inclusion of community and other conservation compatible areas adjacent to the park will be strictly guided by the SANParks Land Acquisition Policy, and the KNP Land Inclusion Protocol, providing clear biodiversity-, land use-, socio-economic-, management-, governance- and risk criteria. SANParks may consider land inclusion on a contractual basis and / or co-operative arrangement as per the NEM: PAA framework. A range of protected area and conservation models may be considered.

The primary focus for land consolidation will be on protected and conservation areas (not formally declared as protected area) open and adjacent to the park but not managed by the park, promoting good co-operative governance, whilst unlocking mutual biodiversity and socio-economic local and regional benefits through the expanded and diversified conservation estate. These will be pursued through the GLTFCA Co-operative arrangements and GLTP Treaty. Central to this will be the regularisation and management of conservation areas party to the

GLTFCA Co-operative Arrangement guided by the standardised GLTFCA “Norms and standards” as per legislative National frameworks of respective GLTFCA countries (South Africa, Mozambique, Zimbabwe), “best practice” guidelines and incentive frameworks. The park is bordered by private, community and state owned / managed protected and conservation areas on the western boundary, such as several different reserves structures within the open Associated Private Nature Reserves and / or adjacent conservation area complex (Timbavati Nature Reserve, Klaserie Game Reserve, Umbabat, Thornybush, Balule, Kapama), Mjejane, Mthethomusha, Sabie Sand Wildtuin, Mala Mala, Manyeleti and the adjacent Andover Reserves, Letaba ranch-complex, Makuya Nature Reserve, Makuleke Contractual Park, a range of other areas managed for primarily conservation objectives (e.g. Marloth Park, Sabie Park etc.) and conservation compatible communities areas (e.g. Lisbon, Gidjana, and community areas northwards from Gidjana to Punda Maria gate, community areas southwards from Shangoni towards the Letaba ranch complex). The consolidation and possible contractual or co-operative arrangements for areas such as Daannel, Phologolo (Mdluli Traditional authority) will be guided by the policy framework.

Park management will engage with relevant parties, as per SANParks Land Inclusion Policy and KNP Contractual and Co-operative Agreement Protocol to inform possible scenarios for the declared and not managed land (Ingrid, Vaalribbok, Rooiuiiker) and the undeclared and managed land (Daannel, Phologolo, land slithers south of Numbi gate).

The approach that the park will follow can be found in section 10.2.2 on page 89.



Section 9: Concept development plan

9.1 Long term development plan

Tourism development in the park has always played a significant role in the success and sustainability of KNP (and SANParks as a whole). To remain relevant, development has to a large degree been focused on meeting both changing visitor needs and expectations. Development has steadily brought in more comfort and convenience.

Moving forward it is expected that this development trend will continue with specific focus on emerging market needs as well as the increasing demand for meaningful experiences and adventure. It must be stated that development is not considered lightly and will only be embarked on to meet a very real operational need or opportunity. All development must be conducted in a responsible and sustainable manner, be aligned to the zonation plan of the park and is dependent on the availability of funds. Apart from development currently in the pipeline or under development, all major future developments should be based on the periphery of the park close to access facilities.

Further to this there will be a specific focus on small rustic type development and mobile tented facilities as well as self-sufficient camping facilities. Events that focus on the adventure market will also be explored including cross border products. Visitor experience and management will play an important role in guiding where development should take place or not. All camp upgrades and refurbishment will be done within the existing footprints and according to the camp master plans. During the upgrade emphasis will be placed on ensuring that Universal Access and family / child friendly requirements are incorporated.

Importantly, a decision has been taken that no further accommodation development (apart from the current and approved future developments) will take place south of the Sabie River. Additional limited scale tourist facilities with basic retail infrastructure, such as day visitor and picnic sites, will still be considered in this region. The concept of activity hubs at main gates may also be applied in this region.

SANParks will continue with the commercialisation strategy as guided by the zonation plan and principles for new developments through PPP's, which could include various tourism and other functions in a quest to become any of the following: (a) more profitable, (b) optimise service delivery and / or (c) to contribute to successful land claimant post settlement packages with land in the park remaining under conservation (SANParks, 1999).

From a Responsible Tourism Perspective, green building methods, energy efficiency technology and water savings measures will be implemented and monitored in both existing and new infrastructure.

9.2 Development nodes

The primary development nodes remain the main rest camps, with limited expansion in several 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 around camps.

9.4 Service supply routes

No new developments are envisaged.

9.5 Infrastructure development proposals

All infrastructure development proposals, including activity development, are presented in Tables 7 - 11 below.

9.5.1 Administration and other facilities

The facilities set out in Table 7 below will be utilised for operational purposes.

Table 7. Proposed administrative infrastructure development in the park.

Infrastructure	Zone	Probability
Various – as per camp master plans	Various	To be determined

9.5.2 Visitor facilities

Visitor facilities include all non-commercial and commercial facilities and points of interest available to visitors are set out in Table 8 below.

Table 8. Proposed visitor facility development in the park.

Infrastructure	Status	Zone	Probability
Bulweni platform hike	Non existent	To be determined	Medium
Doispane picnic spot		Primitive	High
Dzundzwini viewing platform - with ablution facilities, bush stop		LIL	Medium
Hippo Pools bird hide		HIL	High
Hlanganini Dam lookout point		LIL	
Matambeni lookout point		HIL	
Mathekenyane picnic site		Primitive	
Nsemani bird hide		LIL	
Renosterkoppies bird hide		LIL	
Shabeni lookout point		LIL	
Shangoni gate		LIL	

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 those currently in operation 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. Following these studies, identified opportunities may be excluded from potential development. 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 9 below.

Table 9. Proposed accommodation development in the park.

Infrastructure	Status	Zone	Probability
Camp close to Satara	Non existent	Various	Medium
Makhadzi Mouth overnight hide		LIL	



Infrastructure	Status	Zone	Probability
Makhadzi rustic tented camp	Non existent	LIL	High
Phalaborwa hub		HIL	
Phambi wilderness trails camp		Primitive	Medium
Shangoni tented camp / lodge		LIL	High
Tsendze confluence overnight hide		HIL	
Tshokwane tented camp		To be determined	

9.5.3.2 Public private partnerships

The current restaurant and shop concession, is coming up for review in 2023. The envisaged concession development is listed in Table 10 below.

Table 10. Proposed concession development in the park.

Infrastructure	Status	Zone	Probability
Letaba concession	Non existent	LIL	High
Malelane Safari Lodge		HIL	
Nkuhlu concession	In existence	HIL	
Phabeni Education Centre	In progress	HIL	
Phalaborwa safari lodge	Non existent	LIL	
Selati Bridge concession	In progress	HIL	

9.5.3.3 Retail and other facilities

No new retail facilities have been identified, though the option to add basic retail facilities at the proposed picnic sites, activity hubs and Shangoni gate will be explored.

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 considerations 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, 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. The new activities identified are listed in Table 11 below.

Table 11. Proposed activity development in the park.

Activities	Status	Zone	Probability
Phambi wilderness Trail	Non existent	To be determined	Medium

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 for possible interpretation in Table 12 below.

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

Sites	Current status	Zone	Probability
Malalane ranger section			
Rock art trail	Currently (2018) not in use	Wilderness	High
Pafuri ranger section			
Baobab hill	Currently (2018) not in use	HIL	High
Chief Mugagula-Makuleke ruin		LIL	
Fernandez shop		HIL	
Old Nyala tree		Remote	Medium
William Pye and Hartman grave		Primitive	
Shikumbu sacred mountain	Currently (2018) not in use	HIL	High
Pretoriuskop ranger section			
Chief Mattafin grave	Currently (2018) not in use	Wilderness	High
Chief Nyongane grave		LIL	
Mass cattle grave		HIL	
Pretorius grave			
Tlapa la Mokoena			
Punda Maria ranger section			
Gumbandebvu sacred mountain	Currently (2018) not in use	Primitive	High
Shantagalala rock art			
Tshokwane ranger section			
Tshokwane picnic site	Currently in use	LIL	High
Vlakteplaas ranger section			
Babalala picnic site	Currently in use	LIL	High



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:

- Regional integration;
- Biodiversity conservation;
- Wilderness;
- Responsible Tourism;
- Cultural heritage;
- Socio-economic development;
- Stakeholder relationships; 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.

In most cases a detailed LLP supports the individual programmes. These LLPs could be reviewed on a frequent basis depending on the changing circumstances and requirements.

The commitments outlined in the various programmes under section 10 are aligned with the performance management system of the operational staff. Progress and impact will be tracked, and the work plan will be reviewed annually to prioritise implementation activities, to be responsive to emerging matters and to inform the risk response strategy.

10.2 Regional land use integration

Regional integration promotes resilient regional outcomes across boundaries and catchments, through enabling institutional arrangements and co-operative support to transfrontier and bioregional programmes, growing a conservation domain through contractual and co-operative landscape planning and management, for sustainable benefits, socio-economic upliftment of communities and peace and stability in the region. An Integrated Regional Land Use approach requires a systemic approach for the integration of National Parks into the broader economic and social landscapes through appropriate strategies, mechanisms and incentives and through encouraging complementary economic activity. It promotes and improves conservation and ecosystem services, transboundary catchment management, allows for sustainable natural resource use, whilst unlocking direct commercial benefits to communities, and developing the necessary skills and capacity.

However, such integrated approaches need to be guided by consistent and transparent guidelines, enabled by the legal framework, operationalised through appropriate Protocols and Standard Operating Procedures, and supported through appropriate cooperative governance arrangements with the GLTFCA, UNESCO Man and Biospheres; relevant international, national, provincial and local government structures; non-governmental organisations and land owner groups.

10.2.1 Integrated land use and regional planning and management programme

The purpose of this programme is to inform multi-sectoral local and regional integrated development land use planning and management processes compatible and in support of the park, by strengthening enabling partnerships, and through the implementation of co-operative programmes in pursuit of sustainable environmental and socio-economic outcomes.

The ecological landscape is a continuum between the park and the surrounding regions. The viability of the park is thus dependent upon the extent to which such regions are socially, economically, and ecologically integrated. The various pressures facing the park *i.e.* housing and estate developments, invasive alien species, mining, pollution and poaching demands both reactive and proactive involvement in the adjacent land use zones. The main integrated land use mechanisms to achieve positive outcomes to date have been: planning alignment; commenting on development applications; facilitating private or community protected area / environment establishment; low cost park expansion through off-set negotiations; conservation management support; human-wildlife conflict management; legal and regulatory compliance monitoring; alien clearing; fire management; research; eco-tourism promotion; and support to the wildlife economy. Park management needs to become adept at reaching out influentially, in an organised and practical way, to a host of outside partners in the landscape. The real linkages are currently still being built, but considerable progress has been made by the park in regional river management and in somewhat softening the social boundary on the South African side through activities of the People and Conservation Department within the Department of Socio-economic Development.

An integrated regional land use approach challenges the conventional methodology. Park management believes a systemic approach for its integration into the broader economic and social landscapes through appropriate strategies, mechanisms, incentives and complementary economic activity will result in numerous positive results for all role-players. The integrated land use approach provides the opportunity to the park to align the park objectives with key priorities and processes within the regional land use zone. This requires an alignment with the legislative and guiding frameworks such as, the National Buffer Zone Strategy (Gazette Notice 102 of 2012), and internal SANParks' policies such as: the Integrated Regional Land Use Approach; the Land Inclusion Framework for Park Expansion and Regional Linkages; the draft Socio-Economic Beneficiation Strategy; Integrated Wildlife and Natural Resources Livelihood Diversification Economy Strategy; People and Parks and the Convention on Biological Diversity; Framework for Developing and Implementing Management Plans for National Parks; and Guidelines for Stakeholder Participation.

A regional land use approach challenges the conventional methodology of park planning and management, being integrative with other local, bioregional, regional and sector planning and management approaches. This requires engagement, planning and implementation into relevant planning processes such as municipal and bioregional planning, to encourage the adoption of the integrated land use zone of the park as a special management area to discourage or mitigate negative land use development and economies. Park management will engage with local municipalities and three district municipalities, and will be involved in the revision of their SDFs, Integrated Development Plans (IDPs) and Environmental Management Frameworks (EMFs). Furthermore, park management will develop robust and innovative approaches towards regional stewardship support, park incorporation and land consolidation, utilising different models to forge partnerships with the provincial conservation agencies, communities and the private sector.



Ultimately, park management needs to ensure that engagement with external stakeholders is responsive to deal with issues, including the broader economic and integrated land use. The park splits rural populations to its east and west, and human migration routes across the park represent both undeniable cultural-historical patterns, and security challenges. This will require engagement through various relevant mediating forums with communities and interest groups.

Lastly, having a broad understanding of the regional economy in which the park is located and how it can be more integrated within this economy, the focus will be to increase its contribution to development goals such as: economic participation, economic growth, local procurement, job creation, skills development, small business development, a low carbon economy, and spatial integration to name but a few. The park will through its social and economic activities contribute to the above-mentioned goals and community beneficiation in general.

A detailed lower level plan outlining the rationale and operational approach supports this programme. This programme links with high-level objective 1 and objective 1.1 on page 48. To achieve the purpose of this programme, the actions listed in the table below will be implemented.

INTEGRATED LAND USE AND REGIONAL PLANNING AND MANAGEMENT PROGRAMME					
High-level objective: To promote resilient regional outcomes and shared benefits across boundaries, through enabling institutional arrangements and co-operative support to transfrontier and bioregional programmes, growing the conservation domain and contractual and co-operative landscape planning and management.					
Objective: To improve and maintain healthy ecosystems that promote responsible biodiversity economies beyond the boundaries of the park, through implementing a range of co-operative “buffer mechanisms” within the municipal, biosphere and bioregional planning *processes, and through natural resource, protected area, environmental and wildlife economy programmes.					
Sub-objective	Actions	Responsibility	POE	Timeframe	Reference
To develop enabling institutional arrangements, sector planning and compatible land use management reports.	Conduct and continuously update the institutional mapping of co-operative arrangements and sector plans within the Greater KNP integrated land use zone.	CM	Document	Year 2, 5, 8	NDP, GLTP treaty, NEM: BA, NEM: PAA, Sector plans, Municipal bylaws, National Buffer zone strategy
	Promote enabling strategic and institutional partnerships and opportunities, formalise and review agreements.		Document	As required	
	Participate in multi-sector planning processes that will promote compatible land use management impacting on the Greater KNP integrated land use zone.		Minutes, reports	As required	
	Inform relevant policy and legislative processes, including local, provincial, National, GLTFCA and International arrangements.	CM, LS, all relevant departments	Reports	As required	
	Formalise the GLTFCA Co-operative and Integrated land use Agreements with Strategic partners.	CM, LS	Document	Year 2	

INTEGRATED LAND USE AND REGIONAL PLANNING AND MANAGEMENT PROGRAMME

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Objective: To improve and maintain healthy ecosystems that promote responsible biodiversity economies beyond the boundaries of the park, through implementing a range of co-operative “buffer mechanisms” within the municipal, biosphere and bioregional planning processes, and through natural resource, protected area, environmental and wildlife economy programmes.

Sub-objective	Actions	Responsibility	POE	Timeframe	Reference
To develop a rapid systemic spatial assessment for landscape interventions in the Greater Kruger land use zone, integrating climate change, social requirements, water resource requirements, ecosystem services and biodiversity.	Develop and periodically review guidelines to determine integrated spatial priorities – ecological, economic, social, climate, institutional arrangements.	CM, SS, SED	Document	Year 1, as required	All LLPs
	Spatial delineation of the Greater Kruger zonation and land use priorities, and the development of products for inclusion into the municipal land use buffer, SDF, Biospheres, GLTFCA, park expansion / co-operative buffer, Bioregional plans.	CM, SS	Report	Year 2	SPLUMA
	Develop integrated land use scenarios and modelling, including the mapping climate change and ecosystem services priority areas and associated livelihood options.		Report	Year 3	Climate change adaptation plans for SA biomes, EBA strategy
	Support the delineation of the GLTFCA on the western park boundary.		Report	Year 3	GLTP Treaty, Biodiversity Sector Plans, KNP Land inclusion protocol
	Update and archive protected area expansion and other spatial information within the Greater Kruger / GLTFCA footprint.		CM	Database	Annually
To align with and inform relevant municipal planning processes.	Develop and periodically review guidelines to inform Municipal engagement and formalise necessary agreements.	CM	Documents	Year 1, 4, 7, 10	Spatial Planning and Land Use Management Act 2013, Municipal Systems Act. 2000, National Buffer zone strategy (2012)
	Establish baseline status of the district and local municipal land use planning processes.		Report	Year 1	
	Co-develop land use guidelines with local authorities, as per LUMS and KNP land use buffer		Guidelines	Year 1	
	Incorporate and harmonise land use plans, products and developments in IDP, SDF, LUMS and LED processes.		Documents	Year 2	
To improve protected area management effectiveness at the park and regional Greater Kruger conservation network levels.	Co-develop and periodically review guidelines to inform management effectiveness tracking at the reserve, co-operative and protected area network level, and inform strategic adaptive management responses at all levels.	CM	Documents	Year 1, 6	NEMA, NEM: PAA, NEM: BA, UNESCO, MaB, GLTP Treaty, IUCN Tracking tools
	Conduct a land audit of the conservation network and land use open and adjacent to the park.		Report	Year 3	
	Develop a monitoring, evaluation and learning toolkit at co-operative protected area network level.		Toolkit	Year 2	



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Sub-objective	Actions	Responsibility	POE	Timeframe	Reference
To support, manage and monitor sustainable resource use through a range of co-operative arrangements.	Develop a baseline understanding of resource use, including species use, abiotic use and priority geographical areas.	CM, RS, SS, SED	Report	Year 3	NEM: BA NEM: PAA Provincial legislation SANParks Resource use policy
	Develop, formalise and periodically review overarching co-operative agreements, guidelines and protocols guiding resource use and management in shared systems, e.g. hunting and animal off-takes.		Documents	Year 2, as required	
To promote responsible natural resource management and restoration of land.	Establish the baseline status informing NRMP and rangeland priorities within in the Greater Kruger footprint.	CM	Report	Year 2	
	Develop and periodically review guidelines to inform priority natural resource management and rangeland management priorities and programmes, implemented through co-operative partnerships.		Documents, maps	Year 1, 4, 7, 10	Biodiversity Sector Plans BSP strategy NEM: BA
	Implement priority co-operative rangeland improvement (restoration, IAS clearing, bush encroachment clearing)		Reports, documents, programmes	Year 2, as required	
	Assess a continuum of viable rangeland and agricultural practices, implications for livelihood options, land use and scenario planning to inform range of conservation compatible land use practices	CM, SED, SS	Documents, Models	Year 2	SED strategy LUMS
	Develop and periodically review an integrated “ecological infrastructure”, climate change adaption and livelihood plan and implementation programmes with co-operative partners.		Document, programmes	Year 3, 7	Biodiversity sector plans
	Engage with neighbouring stakeholders through FPA, and through technical engagement opportunities, fire management plans and compliance, formalise agreements, and provide technical support to communities as required wrt fire management in rangelands	CM, SS	Minutes of meetings, documents	Ongoing	Fire management LLP, National Veld and Forest Fire Act, NEM: BA
	Develop guidelines, criteria and programmes to support co-operative waste management programmes within adjacent communities, including linkages to environmental education and feasible socio-economic development initiatives	SED, CM, SS	Guidelines, Minutes of meetings	Ongoing	NEMA, SED LLP

INTEGRATED LAND USE AND REGIONAL PLANNING AND MANAGEMENT PROGRAMME

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Objective: To improve and maintain healthy ecosystems that promote responsible biodiversity economies beyond the boundaries of the park, through implementing a range of co-operative “buffer mechanisms” within the municipal, biosphere and bioregional planning processes, and through natural resource, protected area, environmental and wildlife economy programmes.

Sub-objective	Actions	Responsibility	POE	Timeframe	Reference
To promote responsible natural resource management and restoration of land.	Develop and review a BSP strategy for the park buffer and implement collaborative programmes.	CM, SED	Document	Year 1, as required	National Buffer zone strategy SED LLP
	Enter into co-operative conservation / stewardship agreements and partnerships for responsible and holistic land use management, rangeland and livestock management (including DCA monitoring), developing incentives.	CM, SED, SS	Agreements, framework	As required	NEM: PAA, NEM: BA
	Participate in NRMP, IAS and other relevant regional forums and policy processes.	CM, SS, SED	Reports, minutes of meetings	As required	NEM: BA
To respond to environmental developments through effective collaboration with competent authorities.	Develop a database capturing and tracking development applications and authorisations.	CM	Database	Year 1	NEMA
	Develop land use and prioritisation guidelines, processes and systems for responding to development and mining applications within the Greater KNP land use zone.		Documents	Year 1, as required	NEM: PAA, SPLUMA
	Respond to development and mining applications within the Greater KNP land use zone, including engagement with relevant parties, and tracking outcomes	CM, SS, RS	Reports	As required	NEMA NEM: PAA NWA SLPUMA
To promote bioregional planning and integration through promoting co-operative partnerships with biospheres.	Develop and periodically review guidelines to inform co-operation with the K2C and Vhembe Biospheres.	CM	Document	Year 1, 4, 7, 10	UNESCO MaB
	Identify and periodically review the enabling governance arrangements and programmes supportive of joint park and MaB strategic and operational priorities.		Documents	Year 1, annually	K2C and Vhembe Constitutions and strategic documents
	Align and incorporate relevant park priorities into the Strategic and operational work plans of the K2C and Vhembe BR and vice versa.		Documents	As required	National Buffer Zone Strategy, SED LLP
	Identify, implement and participate in collaborative programmes, including conservation / ecosystem, NRMP / BSP, cultural, socio-economic, tourism, research, capacity develop programmes; learning networks.	CM, SED, SS	Programmes, documents	As identified	
	Develop a joint learning network for integrated land use approaches and programmes.	CM, SS, SED	Report	Year 3	
	Report on implementation programmes according to the UNESCO MaB requirements.		Reports	As required	
	Align the park buffer, Vhembe and K2C BRs and GLTFCA zonation.		Zonation	Year 3	



INTEGRATED LAND USE AND REGIONAL PLANNING AND MANAGEMENT PROGRAMME

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Objective: To improve and maintain healthy ecosystems that promote responsible biodiversity economies beyond the boundaries of the park, through implementing a range of co-operative “buffer mechanisms” within the municipal, biosphere and bioregional planning processes, and through natural resource, protected area, environmental and wildlife economy programmes.

Sub-objective	Actions	Responsibility	POE	Timeframe	Reference
To provide inputs into Bioregional Plans (BRP) and Environmental Management Frameworks (EMF).	Delineate the Greater Kruger integrated land use zone/buffer and spatial priorities for inclusion into BRPs, EMFs and other environmental and development planning tools.	CM	Buffer delineation, Bioregional Plans, EMFs	As required	NEMA NEM: PAA NEM: BA, EMFs, Bioregional Plans
	Inform biodiversity, ecosystem, socio-economic priorities in the development and review of EMFs		Reports	As required	
To promote sustainable local and regional economic development.	Develop a collaborative baseline understanding of the Greater Kruger stakeholder and sector profiles, and socio-economic status quo and update as required.	SED, CM, SS	Report	Year 2, as required	KNP Stakeholder Engagement Plan
	Establish, through co-operative partnerships, the socio-economic value-added impact of the Greater Kruger protected area network, and potential collaborative investment opportunities and financial sustainability models.		Report	Year 4, as required	
	Co-develop guidelines prioritising SED projects.		Document	Year 1	
	Provide inputs on a regular basis into the municipal LED, IDP and other provincial planning processes.	SED, CM, T	Reports	Annually	
	Develop agreements with community forum structures to pursue responsible land use practices, through joint conservation and socio-economic programmes.	SED, CM	Documents	As required	SED LLP, GLTFCA LLP
	Develop an understanding and overarching beneficiation principles / guidelines for the Greater Kruger.	SED	Documents	Year 2, as required	
	To improve transboundary disease management within the wildlife-livestock-human interface through enabling institutional co-ordination and partnerships	Develop a strategic management framework which supports flexible institutional / co-operative collaboration on a range of matters, including fence monitoring and management, snaring, responding to DCA incidents.	CM, SS, VWS	Documents	Year 2
Create an enabling platform for rapid and strategic risk assessments to communicate such risks, especially at the transboundary level.		SS	Minutes of meetings, report	As required	Disease LLP

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Objective: To improve and maintain healthy ecosystems that promote responsible biodiversity economies beyond the boundaries of the park, through implementing a range of co-operative “buffer mechanisms” within the municipal, biosphere and bioregional planning processes, and through natural resource, protected area, environmental and wildlife economy programmes.					
Sub-objective	Actions	Responsibility	POE	Timeframe	Reference
To improve transboundary disease management within the wildlife-livestock-human interface through enabling institutional co-ordination and partnerships.	Reconciliation of disease control at co-operative level, captured within management plans and strategies of respective co-operative partners, including operational management such as fence maintenance.	VWS, SS, CM	Documents	As required	Disease LLP
	Develop integrated approaches with respect to global drivers e.g. poisoning, and review periodically.		Programmes, plans	Year 3	GLTFCA LLP Safety and security LLP
To monitor and evaluate the impact of the implementation programmes and adapt as required.	Monitor and evaluate progress and impact against annual work plan targets and programme objectives.	CM, relevant Departments	Reports	Annually	
	Adapt programme approach and feedback and inform risk response strategy.		Programme, document	Annually	

10.2.2 GLTFCA, Contractual and Co-operative conservation arrangements programme

The purpose of this programme is to support the implementation of the GLTFCA objectives and associated contractual and co-operative arrangements for conservation compatible areas (GLTP Treaty 2002), through providing the framework for a co-ordinated and uniform approach to guide a range of contractual and co-operative conservation arrangements within the open and adjacent Greater Kruger footprint.

The integration of the park within the broader bioregion and regional economy increases the sustainability of the park through a greater variety of profitable economic activities within and outside the park. This also results in the conservation of a larger regional area of biodiversity and heritage importance and important transboundary ecosystem services such as water provisioning, because of alignment and partnering with communities, private sector and relevant conservation related agencies / sectors. This contributes to improved management of the areas’ biodiversity and heritage importance through co-operation with other stakeholders, the increased appreciation of the value of conservation through the contribution to government’s desired development objectives, and through providing important ecosystem services. There are several benefits associated with the neighbouring conservation network open to the park, and / or conservation-compatible land uses adjacent to park. It is a compatible land use to the park; the conservation areas contribute to secure important catchments and ecosystem services linking to the park, sustaining livelihoods; the protected area network is a major local and international economic driver; it allows for the partnering and expertise to unlock and leverage socio economic benefits to communities; it provides for collaborative wildlife protection and it is part of the international UNESCO K2C and Vhembe BRs, and the GLTFCA.

The Great Limpopo Transfrontier Park (GLTP) project is a joint agreement between the countries Mozambique, South Africa and Zimbabwe to establish a 3,577,144 ha transfrontier park comprising of three National Parks, one in each of the respective countries involved (GLTP Treaty 2002). The three areas involved are the LNP (formerly known as Coutada 16) in Mozambique, the KNP in South Africa and the Gonarezhou National Park, including the Manjinji Pan Sanctuary and Malipati Safari Area, in Zimbabwe. The Treaty also provides for the establishment of the Great Limpopo Transfrontier Conservation Area (GLTFCA), which is defined, as *“the area adjacent to the Transfrontier Park, comprising compatible conservation areas but not lending itself to formal integration with the Transfrontier Park, shall be managed as a Transfrontier Conservation Area”*.

The GLTFCA 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 the development of cross-border tourism linkages. The GLTFCA strives to protect and maintain landscape level ecosystem integrity and connectivity, facilitate movement of animals, whilst promoting more seamless transboundary tourism products and access. A new tourism access facility has been established at Giriyaondo and the Pafuri border post requires upgrading to facilitate



tourists moving between the park and LNP in Mozambique. In order to link the park with Gonarezhou National Park in Zimbabwe, mechanisms to enable tourists to cross the Limpopo River are being investigated.

It is believed that an effectively designed and implemented GLTFCA will enhance the achievability of the park's core functions, whilst maintaining and enhancing the special features within and around the park. An additional opportunity is the establishment, consolidation and expansion of private, state and community conservation areas across international boundaries, as provided for in the GLTP Treaty. The LNP, and reserves on the Mozambican side of the border between Massingir Dam and the Inkomati River, which is referred to as the Greater Libombos Conservancy (GLC), has already been included as part of the GLTFCA. Following the signing of the GLTP Treaty, a Joint Management Board (JMB) was established to provide strategic direction to the implementation of the cross-border initiative. The JMB, in turn, reports back to a Ministerial Committee regarding progress made in the development of the GLTP. To facilitate the effective implementation of the GLTFCA at park level, a process is underway to establish operational Joint Operational Committees (JOC) within various geographic clusters, and an overarching Joint Management Committee (JMC) as operational oversight structure. The co-operation will seek to leverage collective action on matters of joint interest, with portfolios dealing with issues related to conservation, land use planning and disease management; socio-economic issues; responsible tourism, branding and marketing safety and security; risks; procurement and other matters.

The GLTFCA Co-operative Agreement for conservation compatible areas will promote collaborative conservation of functional regional landscapes and ecosystem services, which unlock sustainable benefits, and grow resilient and responsible economies through meaningful, inspiring co-operative partnerships and compatible land use practices within the GLTFCA conservation areas. The adjacent state nature reserves are managed by the provincial conservation authorities within the overarching GLTFCA Co-operative Agreement principles and framework. These provincial state managed nature reserves/conservation areas are:

- Manyeleti (managed by Mpumalanga Tourism and Parks Agency - MTPA);
- Mhetetomusha (co-managed by the MTPA);
- Letaba Ranch/Mthimkhulu complex (co-managed by Limpopo Department of Economic Development, Environment and Tourism (LEDET); and
- Makuya Nature Reserve (co-managed by LEDET).

The fences between Manyeleti Game Reserve, Makuya and Letaba Ranch / Mthimkhulu Nature Reserves and the park have been removed as they were seriously damaged by elephant, with elephant populations also having occurred in Manyeleti Game Reserve and the Letaba Ranch / Mthimkhulu Nature complex.

Private and community protected and conservation areas and reserves in South Africa bordering and being open to the park are declared through the provincial legislation (Mpumalanga and Limpopo Provinces). These protected and conservation areas on the western boundary include Sabie Sand Wildtuin; Mala Mala; the Associated Private Nature Reserves (APNR), which include Timbavati, Klaserie, Umbabat, Thornybush and Balule Private Nature Reserves; Mjejane Game Reserve; and Kapama. Further protected area and conservation compatible areas borders the KNP or form important ecological corridors and included within the Park consolidation and expansion plan (refer to Section 8, and the KNP Land Inclusion Protocol). Co-operative arrangements give the respective private, state and community owned protected and conservation areas autonomy in the management of their areas, as guided by the NEMPAA and broader legislative framework on the western boundary, with implementation through the approved Management Plans.

The development and review of existing agreements will need to incorporate the legislative requirements for conservation / protected areas open to each other, whilst promoting “best practices” / custodianship amongst the respective entities. The co-operative and contractual incorporation agreements will pursue means to guide operational and strategic management interventions within such an open and integrated landscape, whilst acknowledging that the lower level objectives of the respective parties might not be fully aligned, but still contribute to the desired state of the park and the larger GLTFCA.

There are areas that have been successfully claimed by communities and fall within the boundaries of the park. The areas are under individual community ownership. These areas are the result of land restitution and / or community areas that were fenced in but not necessarily declared as part of the park historically. Currently there is one such area in the park, namely the Makuleke Contractual Park. The day-to-day conservation management of this area, which includes law enforcement and biodiversity management and monitoring, is performed jointly by park officials and the Makuleke governance structure. Commercial activities within Makuleke Contractual Park have been contracted out by the communities as concessions. A signed co-management agreement exists between the Makuleke CPA and SANParks. A Joint Management Board (JMB) is responsible for the oversight / executive functions, whilst operational implementation is facilitated through Joint Committees (JC).

A detailed lower level plan outlining the rationale and operational approach supports this programme. The emphasis falls on co-developing, reviewing, aligning as required, and implementing as per Contractual or Co-operative arrangements, through the Management Plans of the respective conservation entities, as per governing legislation of the relevant countries. This programme links with high-level objective 1 and objective 1.2 on page 48. To achieve the purpose of this programme, the actions listed in the table below will be implemented.

GLTFCA CONTRACTUAL AND CO-OPRATIVE CONSERVATION ARRANGEMENTS PROGRAMME					
High-level objective: To promote resilient regional outcomes and shared benefits across boundaries, through enabling institutional arrangements and co-operative support to transfrontier and bioregional programmes, growing the conservation domain and contractual and co-operative landscape planning and management.					
Objective: To secure and improve ecosystem processes and associated socio-economic benefits through the consolidation of vast landscapes, by re-connecting ecological systems and the expansion of the GLTFCA conservation estate, conservation areas open and adjacent to the park, through a range of co-operative, contractual and stewardship models.					
Sub-objective	Actions	Responsibility	POE	Timeframe	Reference
To review, develop and implement Contractual and Co-operative Arrangements to secure and improve important environmental services, to ensure integrated land use planning, and to enhance associated socio-economic outcomes through strengthening enabling institutional arrangements.	Support the implementation of the GLTFCA Institutional Reform Strategy the functional operationalisation of the GLTP / GLTFCA institutional arrangements and governance structures at all levels.	CM, LS, SED, RS, T, TS	Reports	Ongoing	GLTP Treaty, GLTFCA Institutional Reform Strategy
	Conduct a baseline assessment, review, develop and implement contractual and cooperative conservation agreements.		Reports, agreements	Year 1, as required	NEM: PAA, SANParks Land Inclusion Strategy, KNP Land Inclusion Protocol
	Assess new areas, formalise and declare contractual inclusion agreements, and inform the update of the protected area register.		Report	As required	
	Develop, implement and periodically review overarching GLTFCA Norms and Standards and “Best Practice” guidelines for incorporation into contractual and co-operative agreement and Management Plan/s.		Documents	Year 2, 7	Protected area Norms and Standards, Contractual Agreements
	Assess, recommend and implement corrective interventions to ensure compliance and regularisation according to the legal framework.		Report	Year 2, 4, 6, 8, 10	
	Assess and recommend on inclusion of new areas as guided by the GLTFCA guidelines.		Documents, report	As required	SANParks Land Inclusion Strategy KNP Protocol, NEM: PAA



GLTFCA CONTRACTUAL AND CO-OPRATIVE CONSERVATION ARRANGEMENTS PROGRAMME

High-level objective: To promote resilient regional outcomes and shared benefits across boundaries, through enabling institutional arrangements and co-operative support to transfrontier and bioregional programmes, growing the conservation domain and contractual and co-operative landscape planning and management.

Objective: To secure and improve ecosystem processes and associated socio-economic benefits through the consolidation of vast landscapes, by re-connecting ecological systems and the expansion of the GLTFCA conservation estate, conservation areas open and adjacent to the park, through a range of co-operative, contractual and stewardship models.

Sub-objective	Actions	Responsibility	POE	Timeframe	Reference
To review, develop and implement Contractual and Co-operative Arrangements to secure and improve important environmental services, to ensure integrated land use planning, and to enhance associated socio-economic outcomes through strengthening enabling institutional arrangements.	Provide inputs into National and international policies, and review, update and harmonise Management Plans, Zonation Plans, Protocols, SOPs and guidelines for land inclusion into the GLTFCA.	CM, LS, SED, RS, T, TS	Documents	As required	
	Develop, review and / or formalise JMBs and JOC structures, Service Level Agreements, Charters and SOPs.		Structures	As required	SANParks Land Inclusion Strategy, KNP Land Inclusion Protocol
	Review the park Land Inclusion and Co-operative / Contractual Agreement Protocol.		Document	Year 5	
	Assess protected area management effectiveness at the Contractual Park and Co-operative protected area level, and co-implement interventions.	CM, LS, SED, RS, T, TS	Reports	Year 2, 4, 6, 8, 10	METT
	Develop an integrated land use plan, zonation, guidelines and align zonation and incorporate it into municipal, bioregional, GLTFCA, MaB, and other land use planning schemes such as SPLUMS.		Maps, reports	As required	GLTP Treaty MaB SLUMS Direito do Uso e Aproveitamento da Terra
	Identify, and build effective partnerships and institutions supportive of integrated land use and protected /conservation area outcomes.		Document, reports, minutes of meetings	Annually	
Facilitate a process to delineate of the GLTP / GLTFCA components in each partner country.	Report		As per Agreement & Work Plan	Joint Management Plan	
To support and enhance the implementation of the GLTFCA conservation and cultural management programme.	Develop, review, harmonise and implement management plans / guidelines / protocols for: species of joint interest / concern, vegetation, fire management, water resource management, restoration and invasive alien species, human wildlife conflict management.	CM, SS, RS, SED	Documents, reports	As per Agreement & Work Plan	NEM: BA Species Management plans
	Develop, review and implement management plans / guidelines / protocols to control diseases threatening human, wildlife and environmental health; for resource use; animal translocations and introductions.				Veterinary legislation

GLTFCA CONTRACTUAL AND CO-OPERATIVE CONSERVATION ARRANGEMENTS PROGRAMME

High-level objective: To promote resilient regional outcomes and shared benefits across boundaries, through enabling institutional arrangements and co-operative support to transfrontier and bioregional programmes, growing the conservation domain and contractual and co-operative landscape planning and management.

Objective: To secure and improve ecosystem processes and associated socio-economic benefits through the consolidation of vast landscapes, by re-connecting ecological systems and the expansion of the GLTFCA conservation estate, conservation areas open and adjacent to the park, through a range of co-operative, contractual and stewardship models.

Sub-objective	Actions	Responsibility	POE	Timeframe	Reference
To support and enhance the implementation of the GLTFCA conservation and cultural management programme.	Develop and promote standardised guidelines for environmental audits, monitoring and implementation of recommendations and monitoring.	CM, SS, RS, SED	Documents, reports	As per Agreement & Work Plan	NEMA
	Support co-ordinated animal census / counts and make management recommendations.				
	Develop an integrated cultural heritage plan.				SAHRA
To support the implementation of joint socio-economic programmes and activities.	Develop a baseline understanding of the beneficiation framework(s) and business models within the GLTFCA, and provide recommendations to pursue sustainable and responsible socio-economic outcomes.	SED	Framework, reports	As per Agreement & Work Plan	SED LLP
	Assess financial sustainability at contractual and co-operative level and implement corrective actions, including seeking external funding, developing incentives and leveraging institutional support for key management priorities.	FS, SED, CM	Reports, documents		Finance LLP SED LLP
To support the implementation of joint socio-economic programmes and activities.	Assess, align, prioritise, and guide joint responsible social investment programmes.	SED	Documents, report	As per Agreement and Work plan	GLTFCA Integrated Livelihoods Diversification Strategy, SED LLP
	Develop and implement nodal plans as per the GLTFCA Integrated Livelihoods Diversification Strategy.				
To support the implementation of joint responsible tourism, marketing and branding programmes and activities.	Develop, review and implement Responsible Tourism best practice toolkit with guidelines, protocols and standard operating procedures.	T	Toolkit	As per Agreement and Work plan	
	Co-develop integrated visitor movement, management and interpretation plans.		Documents		
	Support the development and implementation of integrated product, development plan, joint branding strategy, marketing plan, and booking systems, and joint events.				
	Ensure appropriate infrastructure is developed and managed to facilitate cross-boundary tourism.	T, CM, TS	Report	Joint Tourism Strategy, infrastructure LLP	
To support the implementation of a joint safety and security programme.	Standardise, review and implement safety and security management plans, SOPs.	RS	Documents	As per Agreement and Work plan	Safety & Security SOP & Protocols & LLP
	Ensure integrated information management.		System, reports		
	Ensure integrated access and movement control, e.g. gate and aircraft movement.		Systems, reports		



GLTFCA CONTRACTUAL AND CO-OPRATIVE CONSERVATION ARRANGEMENTS PROGRAMME

High-level objective: To promote resilient regional outcomes and shared benefits across boundaries, through enabling institutional arrangements and co-operative support to transfrontier and bioregional programmes, growing the conservation domain and contractual and co-operative landscape planning and management.

Objective: To secure and improve ecosystem processes and associated socio-economic benefits through the consolidation of vast landscapes, by re-connecting ecological systems and the expansion of the GLTFCA conservation estate, conservation areas open and adjacent to the park, through a range of co-operative, contractual and stewardship models.

Sub-objective	Actions	Responsibility	POE	Timeframe	Reference
To develop stakeholder and communication plans.	Develop a joint stakeholder engagement plan and stratification process, and review periodically	CS	Plan, database	Year 2, 7	Link to Stakeholder Engagement Section
	Develop a joint communication plan for key themes / messaging through a range of media, and relevant to different stakeholder groups as determined by stakeholder engagement plan.	CS	Document	Year 1, review annually	Communication LLP
	Identify, prioritise and implement applied research projects and monitoring programmes.	SS, CM	Programmes, reports	As required	KNP Research Protocol
To develop and support the implementation of joint capacity development, awareness, training and research programmes.	Conduct a joint needs assessment programme, and implement skills development, awareness, mentorship and learning exchange programmes linked to key management objectives.	SED, CM	Programmes, reports	As per agreement	
	Identify, prioritise and implement applied research projects and monitoring programmes.	SS, CM		As required	KNP Research Protocol
To ensure the implementation of the GLTFCA improved land and air access programme.	Ensure seamless movement for tourists across boundary between GLTFCA country components without compromising security.	T, CM, TS	Report	As per Agreement & Work Plan	GLTFCA Improved Land and Air Access Strategy
To guide peripheral conservation land use practices in support of compatible environmental and socio-economic outcomes.	Develop a baseline status quo assessment of peripheral conservation and ecotourism areas, formalise and periodically review relevant cooperative arrangements	CM	Report Agreements	Year 3, as required	
	Develop and review overarching peripheral land use guidelines, and implement overarching "Best Practice" guidelines and protocols.		Documents	Year 1, 6	NEM: PAA, NEM: BA, Responsible Tourism Strategies
To support stewardship / conservation and off-set priorities through cooperative partnerships.	Develop and periodically review systemic guidelines to prioritise Stewardship areas adjacent to the park, within important corridors and catchment areas.	CM, SED	Documents	Year 3, as required	NEM: PAA, International and National conservation agreement, KNP Contractual and Co-operative Agreement Protocol

GLTFCA CONTRACTUAL AND CO-OPERATIVE CONSERVATION ARRANGEMENTS PROGRAMME

High-level objective: To promote resilient regional outcomes and shared benefits across boundaries, through enabling institutional arrangements and co-operative support to transfrontier and bioregional programmes, growing the conservation domain and contractual and co-operative landscape planning and management.

Objective: To secure and improve ecosystem processes and associated socio-economic benefits through the consolidation of vast landscapes, by re-connecting ecological systems and the expansion of the GLTFCA conservation estate, conservation areas open and adjacent to the park, through a range of co-operative, contractual and stewardship models.

Sub-objective	Actions	Responsibility	POE	Timeframe	Reference
To support stewardship / conservation and off-set priorities through cooperative partnerships.	Perform a baseline assessment of potential stewardship areas.	CM, SED	Report	Year 3, as required	NEM: PAA, International and National conservation agreement guidelines, KNP Contractual and Co-operative Agreement Protocol
	Implement stewardship agreements through a range of formal and co-operative models and partnerships in priority areas.		Documents	As required	
	Develop ecosystem and climate change adaptation and mitigation responses.	CM, SED, SS	Programme, documents	As per project plan	CSA Climate change adaptation and vulnerability framework, climate change adaptations plans for SA biomes
	Identify and support off-set programmes within priority areas.	CM, SED	Programmes, reports	As required	NEM: BA, NEMA
Develop, implement and review incentive framework to ensure sustainability.	Framework		As required		
To ensure the boundary descriptions and land audit register reflect accurate information.	Develop guidelines for land audit, boundary verification.	CM	Document	Year 1	NEM: PAA
	Periodically review and update the Greater Kruger land audit database, including land claim status.		Database	As required	
	Verify and correct boundary descriptions and implement corrective interventions.		Report	Year 3	
	Develop and formalise agreements and relevant Protocols.	LS, CM, TS	Documents	As required	
To monitor and evaluate the impact of the implementation programmes, and adapt as required	Monitor and evaluate progress and impact against annual work plan targets and programme objectives.	CM, relevant Departments	Reports	Annually	
	Adapt programme approach and feedback, and inform risk response strategy.	CM	Programme Risk response strategy	Annually	

10.2.3 Integrated catchment management programme

The purpose of this programme is to take a holistic view to water resources management in the catchments draining into and through the park, in order to protect freshwater ecosystems whilst effectively managing this important joint resource. In achieving these objectives this programme has clear associated links with the Biodiversity: Fresh water programme.

The water resources of South Africa, which includes both surface water within rivers, pans and wetlands and sub-surface in groundwater aquifers, are under the custodianship of the national Department of Water



and Sanitation (DWS) which is responsible for implementing the National Water Act No. 32 of 1998 (NWA) and the principles of IWRM it embraces. Under the NWA, the Minister of DWS is required to implement the National Water Resources Strategy (NWRS) over a 5-year period. In 2017 the Republic of South Africa started implementing the 2nd edition of the NWRS. It is of particular relevance to the park as it makes provision to implement the Ecological Reserve, the specified flows of sufficient quantity and quality to ensure future and sustainable provision of ecosystem goods and services.

The park recognises its position within the drainage landscape, being downstream of six large fully developed catchments (within South Africa) and also being an upstream actor in these transboundary systems with Mozambique. The park's position at the border with Mozambique and Zimbabwe provides a unique opportunity for cross-border co-operation particularly in terms of integrated operations of Transboundary Water Resources. By ensuring adequate flow and quality of water entering the park, and through the natural remediation of its intact riverine processes, it ensures that the water flowing out to Mozambique is cleaner than that which enters the park, and thereby benefits communities living downstream. It is therefore imperative that the park continues to take a firm stance on the need for integrated operations of large dams both upstream of the park and downstream, and to this an opportunity exists to develop this through the GLTFCA programme. In so doing, the park has worked over the past two decades to achieve the progressive realisation of environmental water requirements (ecological reserve) for flow and quality. However, this also necessitates a long term view to ensure that SANParks continually interacts with water resources management institutions to ensure that the beneficial uses of these water resources are maximised within the context of socio-ecological sustainability. This also has relevance to the formalisation of a productive integrated land-use zone (buffer) around the park. Meanwhile, the park itself as a water user, should be an example for its sustainable and equitable utilisation.

The park is a key stakeholder and role player in the management of water resources in all the catchments within which it is situated (water quantity and quality issues are very important from both biodiversity management and tourism perspectives). The NWA details the involvement of stakeholders in the management of this resource and the park has taken an active role in the management of Catchment Forums by:

- Providing a leadership role in the initiation and management of such forums;
- Educating and empowering stakeholders on water resource management issues; and
- Playing leadership and active roles in the structures that are meant to lead to the establishment of Catchment Management Agencies (CMAs) in Water Management Areas that have no CMAs.

Strategic engagement with stakeholders, regulatory authorities in the water resources management and water services sectors will need to take place for areas along the periphery of the park. This will also require a strong catchment focus to integrated land use planning such that water allocation planning can be considered for differing land-uses resulting from land-claim settlement, expansion of the protected area network, and the need to inform catchment management strategies developed by the CMAs. A key aspect is the reporting system between the park and the upstream institutions which have been derived through a participatory process to link river flow TPCs to certain management actions, and important learning and reflection in the park river management log (McLoughlin *et al.*, 2011). This should be maintained and where necessary adapted and refined.

The opportunity exists to build good neighbour co-operation and establish compatible land-use activities within the buffer zone, such as organic farms using the Agri-Parks model which will require both emerging farmers to utilise their full allocation (which at present is not known) and also additional water allocation, by renegotiation of rights to water downstream through a water value chain and Water Allocation Reform process.

The park has to provide water services according to the Water Services Act No. 108 of 1997, to staff, contractors and its guests. The park is thereby also mandated to provide sanitation services necessary to secure sufficient water and an environment not harmful to human health and / or well-being. In order to supply water to staff and tourists, as well for irrigation (gardens, Skukuza golf course, indigenous nursery) the park abstracts water from the perennial rivers and / or groundwater and must thereby also comply with the NWA. The park presently has 14 registered water use licenses for river abstraction, 11 for groundwater abstraction, and 10 for storage (dams). It is imperative that the park continues to maintain sound monitoring of its abstraction data, so that it does not over abstract. Furthermore, where restrictions are placed on irrigation during times of drought the park must continue to adhere to these restrictions as would any other user in the catchments. In addition, soft approaches to decrease the per capita water use include further refinements to the present 5 tier progressive tariff for potable water, including a drought tariff structure. The aim is that within 5 years the park's per capita potable water use will be within 250 l per person per day.

A detailed lower level plan outlining the rationale and operational approach supports this programme. This programme links with high-level objective 1 and objective 1.3 on page 48. To achieve the purpose of this programme, the actions listed in the table below will be implemented.

INTEGRATED CATCHMENT MANAGEMENT PROGRAMME						
High-level objective: To promote resilient regional outcomes and shared benefits across boundaries, through enabling institutional arrangements and co-operative support to transfrontier and bioregional programmes, growing the conservation domain through contractual and co-operative landscape planning.						
Objective: To take a holistic view to catchment and water resources management in the catchments draining into and through the park, in order to protect freshwater ecosystems whilst maximising the developmental water management potential of the resource.						
Sub-objective	Actions	Responsibility	POE	Timeframe	Reference	
To engage downstream stakeholders to create broader and transboundary EWR constituency and mitigate downstream impacts on the park.	Determine the feasibility and develop of a Freshwater Ecosystem Protection Programme at GLTFCA level.	CM	Report	Year 1	Limpopo Watercourse Commission, Tripartite Permanent Technical Committee, Inkomati-Usuthu Catchment Management Agency, Operating Rules	
	Implement the Freshwater Ecosystem Protection Programme at GLTFCA level.		Document	Year 6		
	Engage dam operators downstream of the park in order to minimise backwater effects.		Research projects, reports	Ongoing		
	Develop a management plan for RAMSAR wetlands, as they interact with perennial rivers.		Document	Year 2		R-METT, RDM office of DWS
To maintain and refine decision support systems for river management, integrating monitoring data, desired states and TPCs to monitor and evaluate reserve implementation.	Oversee EWR implementation and stimulate refinement where not meeting their objectives of promoting healthy river systems.	CM, SS	Reports	Annually	Inkomati-Usuthu Catchment Management Agency, DWS, Fresh water LLP	
	Monitor against river TPCs and instigate strategic adaptive management processes when approaching thresholds.		Reports	Ongoing		
	Develop predictive capacity to evaluate alternative management actions.		Research projects	Annually		CMA's, SAEON, NGOs
	Integrate with the Climate Adaptation Programme to ensure resilient river operations.		Research projects	Ongoing		GEC, Provincial Adaptation Strategy, SWSAs
To promote the park's riverine needs and aspirations for achieving river management goals (in terms of flows, quality, river health, etc.).	Engage in CMA's and where needed drive the process towards establishment.	CM	Reports	Ongoing		
	Promote an understanding amongst all stakeholders of both the threats facing park rivers, how this can and will impact on society and biodiversity role and requirements.	CM, SS, SED	Reports	Ongoing		
	Identify and actively target high level champions both within DWS and CMA's to promote the park's river issues.	CM, SS	Reports	Ongoing		



INTEGRATED CATCHMENT MANAGEMENT PROGRAMME					
High-level objective: To promote resilient regional outcomes and shared benefits across boundaries, through enabling institutional arrangements and co-operative support to transfrontier and bioregional programmes, growing the conservation domain through contractual and co-operative landscape planning.					
Objective: To take a holistic view to catchment and water resources management in the catchments draining into and through the park, in order to protect freshwater ecosystems whilst maximising the developmental water management potential of the resource.					
Objective	Actions	Responsibility	POE	Timeframe	Reference
To promote the park's riverine needs and aspirations for achieving river management goals (in terms of flows, quality, river health, etc.).	Showcase the park's river management, rehabilitation and research efforts to exploit potential funding sources for management and research.	SS, CM	Reports	Ongoing	
To adhere and comply with national water management legislation.	Ensure all water user abstractions are authorized and compliant with Water Use Licence conditions.	TS, CM	Reports	Ongoing	National Water Act, NEMA
	Ensure all discharges are authorized and compliant with Water Use Licence conditions.		Reports	Ongoing	
	Ensure continuous update for General Authorisation conditions as the related to Section 21 of the NWA.		Document	Ongoing	
To apply internal water stewardship principles to improve water use efficiency.	Implement water conservation measures (irrigation, dual-flush, low-flow showers, etc.).	TS, CM	Document	Ongoing	Hotel Water Measurement Initiative
	Implement Phase 1 Continued Annual incremental water savings. Ensure that per capita use is limited to 350 l per person per day.		Document	Year 2	No Drop Assessment for Local Municipalities
	Implement Phase 2 – ensure per capita potable water use is limited to 250 l per person per day.		Document	Year 5	
	Further develop and implement water savings programme for irrigation / raw water.		Document	Year 5	Gov. Notice 1141 of 2014, Catchment Restrictions
	Ensure groundwater abstractions are commensurate with Groundwater Management Areas.	TS, CM, SS	Report	Year 5	DWS Provincial Groundwater Strategy
To monitor and evaluate the impact of the implementation programmes, and adapt as required.	Monitor and evaluate progress and impact against annual work plan targets and programme objectives.	CM, relevant Departments	Reports	Annually	
	Adapt programme approach and feedback, and inform risk response strategy.	CM	Document	Annually	

10.3 Biodiversity conservation

South Africa is a signatory to the United Nations Convention on Biological Diversity and therefore subscribes to the strategic plan for biodiversity (2011-2020) which includes the development and implementation of a National Biodiversity Strategy and Action Plan (NBSAP). Many of the

SANParks and KNP's biodiversity conservation actions are therefore nested within South Africa's NBSAP. SANParks subscribe to the broad definition of biodiversity as described by Noss (1990) which includes structural, functional and compositional diversity at all scales. In managing the heterogeneity and diversity in the park it is emphasised that ecological systems function across a full hierarchy of physical and biological components, processes, and scales in a dynamic space-time mosaic (Pickett *et al.*, 1997). A challenge faced by the park is how to manage such a complex array of species richness, environmental template and climatic variables with limited management tools available. Park management therefore attempts to identify key agents, drivers and controllers of change that can be manipulated if the need to influence the nature and direction of heterogeneity change arises as Biggs & Rogers (2003) suggests. At the scale of the park, experience has shown that allowing ecosystem processes and drivers to function as naturally as possible (or simulating such where need be), has better conservation outcomes than to only manage at a species level. As such, a number of biodiversity management programmes have been developed to effectively manage the diversity and patterns, as well as processes of the characteristic elements of a typical savanna landscape.

10.3.1 Herbivory programme

The purpose of this programme is to provide guidance on managing factors and drivers that can derail the benefits of, as well as minimise risk from herbivory.

Herbivores are organisms that principally eat autotrophs like plants, algae and photosynthesizing bacteria. Colloquially, however, herbivory refers to vertebrates and invertebrates eating plants, which is also the focus of this plan. Herbivores can graze (>90 % grass) or browse (>90 % leaves or twigs) with mixed feeders being intermediate. Many herbivores do not fall into one specific feeding strategy but employ several strategies and eat a variety of plant parts. Optimal foraging makes an animal consider other species, individuals of its own species as well as danger to make trade-offs of the best gain for food versus the best gain for other resources. Consumption of plants thus varies between different plant parts, species and places depending on who is eating.

Herbivory is in effect a natural disturbance impact on plants, but also facilitate aspects such as seed dispersal, pollination and compensatory growth. Herbivores thus act as disturbance agents on top of major drivers such as geology and climate that affects biodiversity. Disturbance predicts that indigenous biodiversity may benefit or be impacted by various levels of disturbance. Even so, disturbance is a key element creating heterogeneity in landscapes, and hence biodiversity, importantly though is that the gradient of disturbances intensity is spatially heterogeneous – some places may 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. Keystone species have disproportionately high impacts on ecosystem function, including that of plants, given their biomass (e.g. termites) (Paine *et al.*, 1995). Non-selective mega-herbivores (e.g. hippo, buffalo, giraffe, rhinoceroses and elephants) can serve as ecosystem engineers through mechanical structural changes they induce. Ecosystems consequences and responses to disturbances such as herbivory, helps create diversity. Disturbances with low herbivore intensity may not result in change at all. In some instances, herbivore disturbances with quick return times may have short periods for pioneer species to be replaced by later successional species. Those with longer return times may have longer times for secondary species to replace pioneers (Cook *et al.*, 2005).

The park and Lowveld had relative low mammalian herbivore numbers during the mid- to late-19th century due to uncontrolled hunting and a rinderpest epidemic (Mabunda *et al.*, 2003). The park was fenced between 1959 and 1980 to curb the spread of diseases, keep dangerous game from leaving the park, and facilitate patrolling the boundary in terms of poaching control. As game had less access to water due to the disruption in their movements, artificial water was provided. The changes in water provision had several unforeseen consequences, which included the decrease in numbers of rare antelope which were indirectly affected by higher competition from water dependent species as well as increases in predators. The confinement, protection and historic high-level water provision within the park most likely benefited elephants. The population grew to about 7,000 towards the end of the 1960s and was kept at this figure through culling (about 16,000 elephants were removed between 1966 and 1994). A moratorium on culling was put into place in 1994 and elephant numbers have increased to around 19,000 by 2017.

Individuals choose where to go in a landscape based on where resources are located. Essential resources, like water for many large vertebrates, are the first determinant. The second is where individuals perceive safety from predators including man. Individuals 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. The spatial gradient of herbivory disturbances reduce



or homogenize if factors in the landscape makes the distribution of resources more even through the landscape (e.g. widespread water provisioning, broad-scale fires, fences excluding access to some resources etc.).

Animals in the wild will typically be vigilant about the environment and have evolved mechanisms to respond to undesirable elements and stress as and when these occur. SANParks recognize this as a key mechanism in how individual animals cope in ever changing environments with different threats and challenges. It is this aspect that park management seek to use and thus want to create “local zones of increased vigilance” which allows individual animals to make choices to respond to perceptions they have about the environment. As part of SANParks’ due diligence, any intervention is conducted within the ambits of the law and SANParks make use of an ethics committee to evaluate and approve animal interventions. Monitoring of the effects of herbivory on vegetation dynamics has not taken place to full capacity during the duration of the previous plan. The aim is to direct future vegetation monitoring in such a way as to inform wildlife off-takes, to support the safe-guarding of species such as rhinoceros, and to support and inform elephant management. Monitoring will also link animal distribution better with resource availability and plan vegetation monitoring to evaluate the prediction that we can create gradients of herbivory (use by herbivores) by creating gradients of replaceable and essential resources. We operate from the premise that if disturbance intensity is spatially heterogeneous, biodiversity may benefit. To create gradients of resource use by keystone species, we will aim over the longer term to actively deter species from certain areas where animals have been kept historically at low levels by anthropogenic activities.

This programme has links with the approved elephant management plan, habitat rehabilitation programme, GLTFCA and Conservation Contractual and Co-operative models and agreements programme, integrated land use and bioregional planning and management programme, fire programme, invasive and alien species programme and predation programme.

This programme links with high-level objective 2 and objective 2.1 on page 48. To achieve the purpose of this programme, the actions listed in the table below will be implemented.

HERBIVORY PROGRAMME					
High-level objective: To maintain the diverse savanna landscape for its intrinsic value and delivery of broad ecosystem services by ensuring its biota and associated terrestrial and freshwater processes are restored and maintained.					
Objective: To restore and maintain herbivores as a key driver of environmental heterogeneity and associated biodiversity by establishing and maintaining gradients of resources used by herbivores, informed by ongoing monitoring and evaluation while minimising risks to the ecological role of herbivores.					
Sub-objective	Actions	Responsibility	POE	Timeframe	Reference
To establish naturalised gradients of essential water resources across landscapes and habitats.	Identify human-induced threats to natural water resources.	CM	Report	Year 2	Habitat Rehabilitation LLP
	Develop implementation plan to manage threats to natural water and initiate management of threats where possible.		Document	Year 3, ongoing	
To establish a gradient of replaceable resources across landscapes and habitats.	Identify drivers of habitats and resources in river ecosystems and identify threats to these.	SS	Report	Year 2	Freshwater Ecosystems LLP
	Develop implementation plan to manage threats to habitats and resources in river ecosystems.	CM	Document	Year 4	

HERBIVORY PROGRAMME

High-level objective: To maintain the diverse savanna landscape for its intrinsic value and delivery of broad ecosystem services by ensuring its biota and associated terrestrial and freshwater processes are restored and maintained.

Objective: To restore and maintain herbivores as a key driver of environmental heterogeneity and associated biodiversity by establishing and maintaining gradients of resources used by herbivores, informed by ongoing monitoring and evaluation while minimising risks to the ecological role of herbivores.

Sub-objective	Actions	Responsibility	POE	Timeframe	Reference
To establish a gradient of replaceable resources across landscapes and habitats.	Establish resource gradients associated with river ecosystems.	CM	Report	Annually	
Establish local zones of vigilance.	Review the areas of local concern identified in the Kruger Elephant Management Plan and define extent of areas and inform any further reviews and alignment with the Elephant Management Plan and Corporate objectives	SS, CM, RS	Map	Year 2	Elephant Management Plan
	Identify areas of local concern associated with other herbivores and define extent of areas.		Map	Year 2	
	Identify drivers and mechanisms that create areas of local concern and link the areas of local concern to historic human activities.	SS, CM, RS	Report	Year 2	
	Identify management responses to address above mechanisms.	SS, RS, CM	Report	Year 2	Elephant Management Plan, Elephant Norms and Standards
	Advocate through participation in the review of the Elephant Norms and Standards appropriate management responses.	SS	Revised Norms and Standards	Year 2	Elephant Norms and Standards
	Establish an implementation plan for inducing local zones of vigilance using an adaptive management framework and where possible, mimic the influence of humans on mega-herbivores.	SS, RS, CM	Report	Year 3, ongoing	Elephant Management Plan
To monitor and evaluate impact of management.	Identify appropriate indicators for drivers of resource availability, identify key resources and evaluate the distribution of these.	SS	Report	Year 2	Biodiversity Monitoring System
	Survey large and mega-herbivores to define spatial distribution and estimate populations.		Report	Year 2, 4, 6, 8, 10	
	Evaluate the distributions and intensity of use of all herbivores and link this with key resources.		Report	Year 2, 4, 6, 8, 10	
	Provide recommendations to adapt herbivore management if required.		Report	Annually	
	Identify appropriate indicators for measures of vegetation change on a large scale.		Report	Year 2	Biodiversity Monitoring System
	Conduct vegetation surveys.		Report	Annually	
	Evaluate changes in vegetation features within different landscape types and habitats and link with herbivore distributions and where possible provide recommendations to adapt herbivore management.		Reports	Year 5, 10	



10.3.2 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 on Biological Diversity 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 indigenous tree clearing for farming purposes or 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; past agricultural practices, artificial water provision, invasive alien species (although relatively small scale), past and present herbivory, old infrastructure, erosion and soil degradation. Invasive alien plants have allelopathic 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). 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 in a reasonable period of time. 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 flows 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 retarded or prohibited as a result 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.

Since the park's proclamation, evolving management practices resulted in certain changes and ecosystem impacts over the years. Management interventions such as the erection of fences, fire management, water provision and animal population controls, as well as the development of infrastructure for management and tourism purposes, progressively reshaped the natural environment within the park. Although localised to a certain extent, these actions and

developments did have certain negative impacts on ecological processes, “sense of place” and wilderness qualities within the park and these must be mitigated or rehabilitated to an acceptable level. This include the closure, removal and rehabilitation of certain artificial water sources such as dams, reservoirs and drinking troughs, the closure and rehabilitation of disused management roads, the removal and rehabilitation of redundant structures, the rehabilitation of all man induced erosion and other disturbed sites such as disused gravel pits, addressing bush encroachment and to prevent (where possible) and respond appropriately to poison and pollution incidences in the park. The most immediate challenge is the removal and rehabilitation of redundant and manmade structures from the park and specifically prioritising structures in Wilderness areas of the park in order to secure their statutory protection as Wilderness under the NEM: PAA.

Current erosion problems in the park are mainly associated with (i) incorrect road alignment through sensitive soils and seep lines, (ii) erosion around artificial water sources such as dams and windmills where excessive trampling and the unnatural channelling of water resulted in ongoing erosion problems, (iii) erosion linked to the closure of approximately 1,146 km of management roads (of which 600 km are bordering Wilderness areas and must receive priority attention) and (iv) disused gravel pits.

A more recent emerging threat is that of increase in poisoning and pollution incidents. Deliberate wildlife poisoning specifically is linked to the illicit trade in wildlife parts and human wildlife conflict. Poison poaching is of concern since the magnitude of a single poacher using pesticides can be large, affecting both primary consumer as well as secondary consumers. The actual pesticide can vary and several different compounds and formulations have been used throughout Africa to poison wildlife (Ogada et al., 2014). KNP is not immune to this threat and several mass poisoning incidents have killed large groups of vultures, amongst other wildlife. The approach to preventing deliberate poisoning of wildlife is multi-pronged and involves greater understanding of the problem, greater protection of the natural assets, improved response times, arrests rates and prosecution as well as improved legislative control over pesticide use, storage and distribution. Though SANParks endeavours to contribute to initiatives to counter these threats at root cause, our management responses are targeted to improving law enforcement and security measures in KNP, which include quicker response times, effective management of affected animals, increased arrest and prosecution rates and stiffer sentencing.

If rehabilitation does not receive attention, 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 forage to support herbivores. To this regard the Biodiversity Social Projects (BSP) unit has since 2005 rehabilitated more than 4800ha at a cost of R 68,240,652.00. Finally, the dependency of this program on two external funders, namely the EPWP (BSP) program and SANDF to implement the majority of the plan is recognised and acknowledged. The existing financial support and good collaboration with our external partners should continue and be expanded upon where possible. In order to support our external collaborators, KNP Management must also ensure that sufficient funds are budgeted for internal operations aimed at erosion control and maintenance of existing management roads.

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 48. To achieve the purpose of this programme, the actions listed in the table below will be implemented.

REHABILITATION PROGRAMME					
High-level objective: To maintain the diverse savanna landscape for its intrinsic value and delivery of broad ecosystem services by ensuring its biota and associated terrestrial and freshwater processes are restored and maintained.					
Objective: To rehabilitate and restore the natural ecosystem health and functioning of the park landscape.					
Sub-objective	Actions	Responsibility	POE	Timeframe	Reference
To restore and rehabilitate processes, patterns and viewsheds to a state of naturalness.	Develop and implement a demolition and rehabilitation plan for all undesirable artificial water infrastructure.	CM, BSP, TS	Report	Annually	
	Restore river connectivity through appropriate removal of undesirable artificial water infrastructure.		Report	Annually	Freshwater Ecosystems LLP
	Identify and implement a demolition and rehabilitation plan for all undesirable artificial water infrastructure within wetlands.		Report	Ongoing	



REHABILITATION PROGRAMME					
High-level objective: To maintain the diverse savanna landscape for its intrinsic value and delivery of broad ecosystem services by ensuring its biota and associated terrestrial and freshwater processes are restored and maintained.					
Objective: To rehabilitate and restore the natural ecosystem health and functioning of the park landscape.					
Sub-objective	Actions	Responsibility	POE	Timeframe	Reference
To restore and rehabilitate processes, patterns and viewsheds to a state of naturalness.	Update the park artificial water provision structures database.	CM, BSP, TS	Database	Annually	Wilderness LLP
	Identify, plan and implement the removal and rehabilitation of man-made impacts to enhance / improve and establish wilderness qualities.		Report	Annually	
To address the accelerated erosion induced by man and his activities that threatens to impact biodiversity and aesthetics of the park.	Roll out of the erosion assessment and prioritisation on management roads.	CM, TS	Report	Ongoing	
	Monitor and evaluate the rehabilitation interventions and their outcomes.	CM, BSP, SS	Reports	Ongoing	
	Develop guideline and principles for future road placement and stream crossing (concrete drift) design.	TS, CM	Document	Year 2	
	Investigate methods and implement the rehabilitation of gravel pits.	CM, BSP, TS	Report	Ongoing	
To improve tourist viewing and safety.	Identify and inventorise tourist sites that are bush encroached.	CM, BSP, T, RS	Map	Ongoing	Climate Change LLP, Visitor Experience LLP
	Develop and implement a clearing protocol for bush thickened sites.	CM, BSP, RS	Report	Year 1, ongoing	Fire -, Herbivore -, SED LLP
	Monitor and evaluate post clearing activities.	CM, SS	Report	Annually	
	Solicit research on the effects of bush encroachment on biodiversity.	SS	Research projects	Ongoing	Research, Monitoring and Co-learning LLP
To prevent (where possible) and reduce poison and pollution incidences.	Ensure internal management protocols and practices that are environmentally sensitive, striving for reduction of poison and pollution incidences.	CM, SS	Documents	Ongoing	
	Promote and ensure a high level of awareness amongst and support from staff and the public to reduce poisoning and pollution incidences in the park.	CS, CM, SS, RS	Reports	Ongoing	HWC -, Safety and security LLP
	Engage in regional, national or international forums aimed at investigating and influencing pollution and poisoning strategies.	CM, SS, RS	Reports	Ongoing	HWC -, Safety and security -, IWRM LLP
To respond effectively and professionally to poison and pollution incidences.	React speedily and professionally to any poison and pollution incident.	TS, RS, CM, SS	Document, report	As required	Disaster management LLP

REHABILITATION PROGRAMME					
High-level objective: To maintain the diverse savanna landscape for its intrinsic value and delivery of broad ecosystem services by ensuring its biota and associated terrestrial and freshwater processes are restored and maintained.					
Objective: To rehabilitate and restore the natural ecosystem health and functioning of the park landscape.					
Sub-objective	Actions	Responsibility	POE	Timeframe	Reference
To understand the effects of poison and pollution on biodiversity.	Solicit research and keep abreast of knowledge as well as best practice options for mitigating, reducing, managing and monitoring poison and pollution incidences and the impacts on biodiversity.	CM, SS	Report	Ongoing	Research, Monitoring and Co-learning LLP

10.3.3 Invasive and alien species programme

The purpose of this programme is to protect the biodiversity, 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 and to protect the park from new and emergent species.

Many international conventions call for the management of invasive alien species, among others the Convention on Biodiversity. In South Africa, the management of IAS is mandatory under the NEM: BA. There are sixteen national acts, provincial ordinances and municipal by-laws that govern the management of IAS. Of these, the most immediately relevant are the NEM: BA and regulations. The IAS management framework for SANParks (Hendricks & Symonds, 2009) provides the context within which all management of IAS is implemented. The park is embedded in a complex matrix of land use types, where human induced disturbances and propagules outside the park provide strong drivers for continuous invasion. 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, invasive alien species, 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 (alien plants species) 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.

However, the long-term successful outcome of the alien species management programme, especially for plants, is currently contingent almost completely on funding from external sources. The overriding majority of the funding is currently provided by the Department of Environmental Affairs’ Working for Water programme, through SANParks’ Biodiversity Social Programme department. However, the park needs to be cognizant of the risk that National Government Departmental priorities can change and resources are directed elsewhere. Therefore the park should, as far as possible, develop and migrate the alien species control programme into its internally funded structures.

List of invasive species occurring in the park

About 391 alien species, (including 363 plants and 28 animals) have been recorded for the park.



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

The drainage lines in the park, specifically perennial rivers that rise outside of the park are the main areas of IAS infestation and are the primary conduits for introduction of IAS into the park. The perennial river corridors and riparian zones are the areas of greatest risk for the establishment of IAS and stands of *Chromolaena odorata* and *Lantana camara* have in the past been the focus of much IAS management. The upland areas are less prone to infestation, although much attention has been given to *Opuntia stricta*. These areas have been brought under control since implementation of active management in the late 1990's. The influx of *Parthenium hysterophorus* into the park has become a major concern, the species occurs almost exclusively south of the Sabie River. These areas are under continuous surveillance and management of IAS is implemented as needed.

There is a seasonal flux of IAS across the park linked to the summer rains. It is noted, specifically in the wetter seasons that annuals may persist into the dryer months along perennial and some of the non-perennial rivers when higher flow rates and longer retention of ground water occurs. Road verges and culverts are also areas where IAS, notably annuals, may start establishing, specifically along tourist roads where the practise of covering the tar roads with river sand and gravel from borrow pits has seen the influx of annuals further from rivers than in areas where the practise is not undertaken. The increase in IAS along the park's boundary is linked to neighbouring land use, in areas with higher human populations. Settlements are specifically areas of potential concern especially where drainage lines run in these areas into the park.

Status report on the efficacy of past control measures

The Working for Water programme has been active in the park since 2002. From 2002 - 2017 a total of R 127,697,348 has been invested into the control and eradication of IAS by BSP. The programme has provided work to at least 6,617 persons and cleared an estimated 1,079,051.81 ha (initial clearing and follow-up).

The management of both *C. odorata* and *L. camara* have been considered effective with a decrease in work load of 70 % for *C. odorata*. Anecdotal information supports the effectiveness of control of both species within the park. Similarly, with *Opuntia* species, there has been effective control of populations over a longer period and evidence shows that these species occur in the park at very low densities.

A strategic decision has been made to only clear annuals in asset areas; the management activity will be focused on monitoring flux, persistence into dry seasons and distribution. Where set TPCs are exceeded management action will be implemented.

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

The SANParks invasive and alien species framework provides an integrated approach to alien and invasive species 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 are 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 for available 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 Annual Plan of Operation (APO), which will form the basis of the motivation for annually funding. 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 rapid response to eradicate or contain infestation be enabled. Even though a new invasion may seem insignificant, it must be evaluated for potential risk and prioritised for treatment to ensure the threat does not spread, which could require exponentially more effort and resources to clear at a later stage.

The IAS control programme will follow both an area- and species-based approach. The species-based approach focuses on the alien species richness, types of species, and the density thereof, in a particular area, which will continue with standard control operations. The area-based approach focuses on (i) perennial rivers where clearing will be carried out annually and (ii) non-perennial rivers where clearing will be done on a three year rotation. All rivers are to be worked from the park boundary downstream and tributaries from the confluence with perennial rivers upstream. Perennial rivers are buffered for a distance no greater than 15 km from the park boundary upstream. All areas are to be reassessed annually.

Due to the range of alien plants, and that limited funding does not allow for controlling all species, a priority list has been developed. This list is divided into three categories (A) species that are of national concern or due to their nature require species specific plans, (B) species that must always be controlled as part of normal contract work and (C) high priority species not yet in the park, or in the process of being eradicated or the population is small and is receiving intense efforts to be reduced. Species may however be added as new information indicates the species' status has changed, or a new species is recorded, or a risk analysis shows a species warrants a different status.

The management plan for aquatic species will focus on *Eichhornia crassipes*, *Pistia stratiotes* and *Salvinia molesta*, but will also include contingency plans for the management of any new aquatic species. These species are currently the most problematic aquatic species in the park and are managed using an integrated control programme. An aerial application of herbicides is applied twice annually, together with the continued introduction of biological control agents. Chemical application is done in partnership with the Mpumalanga Department of Environment. A strategic partnership has been developed with the South African Sugar Research Institute, who provides the biological control agents to the park and assists in carrying out monitoring in conjunction with the park. The *Salvinia molesta* in Mtshawu dam and *Myriophyllum aquaticum* in the Biyamiti River appear to have been eradicated but intensive surveillance is required.

Control methods, or an integrated combination thereof, are designed to suit the target species and environment in which they occur. The following methods may 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
 - Bio-control release - collection of clean cladodes, propagation of bio-control and deployment of agent.
2. Follow up treatment (manual, chemical and biological).
 - Loppers and hand saws;
 - Foliar spray – application of herbicide; and
 - Bio-control release - collection of clean cladodes, propagation of bio-control and deployment of agent.
3. Integrated combination of methods.



The species listed in Table 13 below have been identified as a priority for control.

Table 13. IAS species identified for priority control.

Category A	Category B	Category C
<i>Parthenium hysterophorus</i>	<i>Lantana camara</i>	<i>Arundo donax</i>
<i>Opuntia stricta</i>	<i>Melia azedarach</i>	<i>Cylindropuntia imbricata</i>
<i>Pistia stratiotes</i>	<i>Nicotiana glauca</i>	<i>Bryophyllum delagoense</i>
<i>Eichhornia crassipes</i>	<i>Solanum mauritianum</i>	<i>Pennisetum setaceum</i>
<i>Salvinia molesta</i>	<i>Thevetia peruviana</i>	<i>Solanum seaforthianum</i>
	<i>Tithonia diversifolia</i>	<i>Sphagneticola trilobata</i>
	<i>Pennisetum purpureum</i>	<i>Leucaena leucocephala</i>
	<i>Ricinus communis</i>	<i>Passiflora edulis</i>
	<i>Cardiospermum halicacabum</i>	<i>Dolichandra unguis-cati</i>
	<i>Cardiospermum grandiflorum</i>	<i>Cereus jamacaru</i>
	<i>Agave americana</i>	
	<i>Nerium oleander</i>	
	<i>Chromolaena odorata</i>	

Of the 28 animal species recorded in the park about four species may potentially have substantial negative ecological impacts. These include Indian myna *Acridotheres tristis*, redclaw crayfish *Cherax quadricarinatus*, silver carp *Hypophthalmichthys molitrix* and quilted melania freshwater snail, *Tarebia granifera*. However, as little is known of how the species may respond in natural systems such as Kruger, it is possible that many of the total species list may become invasive. Unfortunately, little can be done to manage these alien animals. Research is being done on some species to determine the outcomes of their impacts in the long-term. Indian myna is, however, being managed by rangers where possible, but the current rate of colonisation is concerning.

While no new species may be introduced, a process is currently being developed to allow for the introduction of critically endangered species in the region surrounding the park. This is, for example, to protect and propagate the last individuals of a cycad species. Some of these introduced species could find the way into the park at some stage. Management will monitor and initiate a clearing programme should new IAS be identified.

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 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.

There has been good progress with the management of several species, for example *O. stricta*, *Sesbania punicea*, *L. camara* and several aquatic weeds, often because of effective biological control (*O. stricta* and floating aquatic plants). Working for Water data shows that *L. camara* has historically been recorded at low density and has been maintained at low densities. *Parthenium hysterophorus*, a species of national concern is currently managed in the southern regions of the park. The distribution of *Parthenium* is being monitored and the rapid response strategy takes the occurrence of the weed outside of its current distribution into consideration.

Due to the range of alien plants, and that limited funding does not allow for controlling all species, a priority list has been developed (Table 13). This list is divided into three categories (A) species that are of national concern or due to their nature require species specific plans, (B) species that must always be controlled as part of normal contract work and (C) high priority species not yet in the park, or in the process of being eradicated or the population is small and is receiving intense efforts to be reduced.

Due to the long western and southern boundaries of the park and the shared international boundaries, conflicting land use practices adjacent to the park and the extent of the catchments that drain into the park the eradication of all alien species from the park is not feasible. Management must be aimed at long-term, economically sustainable programmes, which focus on the species which have the greatest impact, with the objective to maintain populations below a threshold where they will have the least negative impact. It is critical that sustained long term funding for the management of IAS is achieved.

A detailed lower level plan outlining the rationale and operational approach supports this programme. This programme links with high-level objective 2 and objective 2.3 on page 48. 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 maintain the diverse savanna landscape for its intrinsic value and delivery of broad ecosystem services by ensuring its biota and associated terrestrial and freshwater processes are restored and maintained.					
Objective: To minimise the impact and maintain the integrity of biodiversity and ecosystem services within the park landscape by anticipating, preventing entry and where possible controlling invasive alien species.					
Sub-objective	Actions	Responsibility	POE	Timeframe	Reference
To evaluate potential risks, source areas and pathways of invasion into the park at a regional scale.	Interaction with neighbours and landowners in the broader region via forums.	CM, BSP, SS	Report	Ongoing	Integrated land use LLP
	Create awareness of the threats of alien species in an effort to support preventative measures, i) internally, ii) with visitors and iii) neighbouring landowners.	BSP, CM, SS	Reports	Ongoing	
	Assess pathways of invasion for species of high concern to inform management planning.	SS	Report	Ongoing	
	Assess the risk of species of high concern to inform management planning.		Report	Ongoing	IWRM LLP
To ensure the effective and timely implementation of integrated control strategies for priority invasive species, in such a manner that both rapid response and long-term maintenance goals are met.	Revise the management unit clearing plan.	BSP, CM	Document	Annually	
	Prepare APO's for BSP control programmes.		Reports	Annually	
	Prepare species specific management action plans for species listed in Table 13.	CM	Reports	Year 1	
	Implement <i>Parthenium hysterophorus</i> and <i>Opuntia stricta</i> management action plans.	BSP, CM	Reports	Annually	
	Implement Ornamental Plant Management Protocol.	CM	Reports	Ongoing	Management of Ornamental Alien Plants and Landscaping Protocol
	Manage biological control rearing facility to provide bio-control agents.		Report	Ongoing	
	Implement biological control programme.	CM, BSP, SS	Report	Ongoing	
	Manage alien animal invasions and stray animals.	CM, SS	Report	Ongoing	SANParks Alien and Invasive Species Management Policy



INVASIVE AND ALIEN SPECIES PROGRAMME

High-level objective: To maintain the diverse savanna landscape for its intrinsic value and delivery of broad ecosystem services by ensuring its biota and associated terrestrial and freshwater processes are restored and maintained.

Objective: To minimise the impact and maintain the integrity of biodiversity and ecosystem services within the park landscape by anticipating, preventing entry and where possible controlling invasive alien species.

Sub-objective	Actions	Responsibility	POE	Timeframe	Reference
To map the distribution of alien species inside the park and in priority neighbouring areas, and implement effective monitoring to determine trends in the status of invasions and efficacy of control programmes.	Map the distribution of alien plants.	SS, BSP, CM	Map	Ongoing	
	Implement fixed site monitoring programme.	SS	Reports	Annually	
	Maintain updated species lists.		Document	Ongoing	
	Maintain spatial distribution database.		Database	Ongoing	
	Develop a species prioritisation framework to determine species priorities for management.	SS, CM, BSP	Document	Ongoing	
To monitor and evaluate the impact of the implementation programmes, and adapt as required	Monitor and evaluate progress and impact against annual work plan targets and programme objectives.	SS, CM, RS, BSP	Reports	Annually	
	Adapt programme approach and feedback, and inform risk response strategy.	SS, CM, RS, BSP	Document	Annually	

10.3.4 Freshwater ecosystem programme

The purpose of the freshwater ecosystem programme is to ensure the persistence of freshwater systems and associated biota in the park ecosystems by maintaining and restoring its ecological processes through understanding the important ecological processes and functions in these ecosystems and by promoting and ensuring local level constituency building. This section must be read in conjunction with the IWRM programme (Section 10.2.3). This programme in essence measures the effectiveness / outcome of the IWRM programme.

South Africa is a signatory to the Convention on Biological Diversity (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 (CSIR) 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). A substantial proportion of the river length in the park (almost 50 %), have been classified as FEPAs, making the park very important in achieving national freshwater ecosystem conservation goals (Roux *et al.*, 2006). The park has 19 river ecosystem types of which 82 % has been classified as AB category, 15 %

as C category and 3 % as a D category. Many of the rivers in the park have also been selected as FEPAs because they support fish populations by providing spawning and breeding sanctuaries. However, whether FEPA status has been accredited or not, rivers provide critically important ecological functions and ecosystem services, both at the local scale and beyond park boundaries, and should be managed accordingly.

Though much research has taken place on the perennial rivers in the park, research into its wetlands, a key transition zone between the terrestrial and aquatic environment, remains understudied. Wetlands are notoriously difficult to map at a broad scale, since they are numerous, often small in size and difficult to recognize and delineate with remotely sensed imagery. Local-scale data for large protected areas like the KNP remains coarse. An attempt was made to improve the national FEPA wetland layer by using a hydro geomorphic terrain model, together with 17 years of late dry season ecological aerial census data demarcating surface water, point data from the park's Managers and Section Rangers and data from localised studies throughout the park. Preliminary results indicate an increase in the total area of wetlands demarcated in the park compared to the national FEPA dataset. The improved data layer should provide a good basis to stimulate more research into the wetlands in the park. An updated version of the national FEPA Atlas will be released in 2018 and, particular attention will be given to wetland delineation and characterisation to update the current wetland inventory layer.

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 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.

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.

After the establishment of the park, long periods of drought and the subsequent migration of wildlife from the park, resulted in artificial water provisioning for wildlife. This led to the construction of dams and the drilling of boreholes across the park landscape, an estimated 1,500 boreholes has been drilled (Du Toit, 1998). Historically, groundwater resources monitoring tended to be overlooked in the park resulting in very few water level measurements being taken since the first borehole was drilled in the mid-1920s (Du Toit, 1998). Thus, insufficient knowledge has been available on the groundwater level response to environmental change. In 2007 a groundwater monitoring programme was established with the aim to optimise and determine the most effective monitoring station density, as well as early warning monitoring as part of abstraction, sanitation and waste disposal management and protection of the groundwater resource. Bio-monitoring of the perennial rivers in the park has been conducted according to the principles established through the national River Health and River Eco-status Monitoring Programmes. These bio-monitoring programmes are designed as screening tools to determine whether rivers are supporting aquatic life with respect to the management of Environmental Water Requirements (Ecological Reserve); Water Resources Classification (WRCs); and Resource Quality Objectives (RQOs). The information generated from the above mentioned programmes are used to enhance the coverage of broad geographical assessments of rivers throughout the country for the purpose of national state-of-the-rivers reporting (Roux, 1997, Roux *et al.*, 1999).

A detailed lower level plan outlining the rationale and operational approach supports this programme. This programme links with high-level objective 2 and objective 2.4 on page 48. To achieve the purpose of this programme, the actions listed in the table below will be implemented.



FRESHWATER ECOSYSTEM PROGRAMME					
High-level objective: To maintain the diverse savanna landscape for its intrinsic value and delivery of broad ecosystem services by ensuring its biota and associated terrestrial and freshwater processes are restored and maintained.					
Objective: To ensure the persistence of freshwater systems and associated biota by maintaining and restoring ecological processes.					
Sub-objective	Actions	Responsibility	POE	Timeframe	Reference
To strive for ecosystem health and resilience in park river systems.	Develop and ensure refinement or revision of aquatic monitoring tools to better inform the implementation of the Ecological Reserve.	SS	Report	Annually	IWRM LLP
To monitor short term responses and long-term changes in the ground water-table level in response to climatic cycles.	Measurement of water levels taken / downloaded twice a year before and after wet season.		Report	Annually	
To inventorise and characterise non-riverine aquatic systems e.g. wetlands, pans and springs.	Develop an inventory / map which describes the location and characteristics of non-riverine aquatic systems such as wetlands, pans and springs.		Map	Ongoing	
To inventorise riverine aquatic systems and meaningfully integrate monitoring efforts.	Update and where necessary create a species list, including a reference sample collection of aquatic biodiversity (fish, frogs, macro invertebrates, diatoms etc.).		Document	Ongoing	
To generate an interest and awareness of the plight of rivers in the Lowveld catchments amongst local partners.	Host education and awareness days for various stakeholders, these include school groups, river forums and businesses.		Report	Ongoing	Research, Evaluation and Co-learning LLP
To collaborate and share data sets and techniques with internal and external institutions (e.g. DWS, SANBI, SAIAB) needs.	Collaborate or solicit research with external partners.	SS	Registered projects, published papers	Ongoing	Research, Evaluation and Co-learning LLP
To monitor and evaluate the impact of the implementation programmes, and adapt as required.	Monitor and evaluate progress and impact against annual work plan targets and programme objectives.	SS, CM	Reports	Annually	
	Adapt programme approach and feedback, and inform risk response strategy.	SS, CM	Document	Annually	

10.3.5 Species of special concern programme

The purpose of this programme is to ensure the persistence and viability of key species by contributing to national and international initiatives and implementing species-specific management interventions and providing guidance on managing factors and drivers that can derail the benefits of species of special concern (SSC).

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. Within this context, there are four species currently found in the park that are regionally threatened.

Species of Special Concern is largely an administrative designation or grouping. These include (i) red list taxa from local to regional scales; (ii) taxa without a formal conservation status assessment or with insufficient data; (iii) listed in the NEM: BA Threatened or Protected species regulations (TOPS) Regulations on CITES appendices; (iv) species which is subject to a Biodiversity Management Plan as per NEM: BA and NEM: PAA; (v) endemic taxa that has >80% of range confined to a park; (vi) reintroduced taxa that were extinct or threatened or indigenous species recently introduced and (vii) locally threatened populations. These categories also include species with a data deficient status especially invertebrates such as the green ducetia *Ducetia chelocerca*, Rentz's ambush katydid *Peringueyella rentzi* and the Jambila seedpod shieldback *Thoracistus jambila*. Some of these species have no records inside the park, but were collected in the vicinity of the park. Apart from these principal definitions, species may also be of special concern if (i) threatened taxa were monitored in the past, but the conservation status have improved; (ii) taxa are functionally important or key species; (iii) taxa are selected or common species; (iv) species with social or cultural value; (v) taxa that are subject to resource use and legitimate sustainable harvesting; (vi) species listed under relevant international conventions other than CITES. These above designations that can make-up species of special concern, pose some key challenges in defining a list for the park largely because species of special concern can nearly be any kind of species and are context- person- and park specific.

The two plant species that have received the most attention within the park in terms of conservation are *Warburgia salutaris* and *Adenium swazicum*. *Adenium swazicum* is listed as Critically Endangered due to habitat destruction and exploitation of populations and is also listed as a Threatened Species in terms of section 97 of the NEM: BA TOPS. An estimated 10 % - 20 % of the total population occurs within the park. Monitoring of three populations within the park has started in 2013. *Warburgia salutaris* (also known as pepper-bark tree) is listed as critically endangered as a result of overharvesting in the wild due to its high medicinal value. Monitoring and patrolling of the *Warburgia* population in the north of the park takes place regularly and SANParks, through the nursery at Skukuza, has also engaged in propagating *Warburgia* and distributes the plants to communities outside the park.

Avian monitoring and management has received little attention in the past due to limited SANParks capacity. Subsequently, avian research and monitoring has been predominately driven by SANParks' external partners. The bulk of monitoring to date has been on the Pel's fishing owl *Scotopelia peli* and aquatic bird populations in the Olifants and Luvuvhu River systems. The data generated from these monitoring efforts are currently (2018) being analysed and should provide insight for future monitoring efforts. The ecology and breeding biology of Southern ground hornbill *Bucorvus leadbeateri* has also received much attention in the last 10 years (2007 – 2017).

Global environmental change drivers are the primary cause of species becoming threatened and then listed as a species of special concern. Emergence of illegal resource use is a key element in recent times. Emerging diseases may also pose new challenges. Invasive species such as alien plants and pollution are perhaps lower level threats, while climate change impacts focus mostly on unpredictable weather patterns. Inside protected areas like KNP, habitat change is primarily driven by tourist development and ecological management that could impact on how resources that species use are distributed. Values of humans are largely influenced by human perceptions. Even so, if such perceptions dictate major societal expectations, then irresponsible management of keystone species, species with spiritual, cultural and economic values; as well as irresponsible focus on historic species, impose significantly on the benefits of SSC.

This programme has links with the approved elephant and rhino management plans, predation programme, herbivory programme, resource use programme, disease programme, climate change programme, habitat restoration programme and alien and invasive species programme.

This programme links with high-level objective 2 and objective 2.5 on page 48. 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 maintain the diverse savanna landscape for its intrinsic value and delivery of broad ecosystem services by ensuring its biota and associated terrestrial and freshwater processes are restored and maintained.

Objective: To restore and maintain the benefits of species of special concern by managing threats as far as possible.

Sub-objective	Actions	Responsibility	POE	Timeframe	Reference
To determine the context of threatened (compromised) species and manage threats to these.	Establish a SSC list (of compromised species) and distribution maps with special attention to red data plants and other that have not received attention in the park.	SS	Document	Year 2, as required	CITES listings
	Identify, prioritize and manage threats to the listed SSC.	SS, RS, VWS, CM	Document	Year 2, as required	Rare antelope -, Wild dog & Cheetah meta-population management plan, Habitat Rehabilitation LLP
	Identify and implement species specific restoration requirements.		Document	Year 3, as required	
To manage the role of keystone species.	Identify, prioritise and manage keystone species and threats to important processes (e.g. pollination)	SS, RS	Report	Year 3	
To manage the impact of use for a variety of reasons on species of special concern.	Identify and manage potential and existing value-adding species	SS, RS	Report	Year 2	
	Create and implement management plans for value-adding species that are harvested at present.	CM	Document	Year 3	Resource Use LLP
	Define and implement species specific restoration requirements for compromised value adding species.	SS, RS, VWS	Document	Year 3	
To evaluate the output and impact of management.	Continue with the monitoring of the populations of <i>Adenium swazicum</i> and <i>Warburgia salutaris</i> .	SS, CM	Report	Year 3, 6, 9	
	Develop and implement a monitoring plan for priority SSC species which will include the evaluation of persistence of compromised species using predictive sampling and censuses.		Document, report	Year 5, 10	Resource Use LLP, Wildlife Utilization Policy
To monitor and evaluate the impact of the implementation programmes, and adapt as required	Monitor and evaluate progress and impact against annual work plan targets and programme objectives.	SS, RS, VWS, CM	Reports	Annually	
	Adapt programme approach and feedback, and inform risk response strategy.	SS, RS, VWS, CM	Document	Annually	

10.3.6 Predation programme

The purpose of this programme is to provide guidance on managing factors and drivers that can derail the benefits of predation.

There are three important documents that provide guidance regarding the management of certain predators. Those are the Biodiversity Management Plan for the African Lion, the South African Action Plan for the Conservation of Cheetahs and African Wild Dogs and the Norms and Standards for the Management of Damage-causing Animals in South Africa.

Predation is a biological interaction when an organism that is hunting feeds on its prey. Such organisms may or may not kill their prey prior to feeding on it. Although predation is often carnivory, other categories of consumption can be difficult to separate. Some parasites, for instance, prey on their host while it continues to live. The key characteristic of predation is the predator's direct impact on the prey population (Barbosa & Castellanos 2004). For the purpose of this plan, a true predator is a vertebrate or invertebrate that kills and eats another living vertebrate or invertebrate.

Selective pressures that predators impose on prey and vice versa, lead to a race that results in various anti-predator adaptations by prey. Ways of classifying predation thus include grouping by trophic level or diet, by specialisation, and by the way a predator interacts with prey. The consequence is that predator populations are often directly related to the dynamics of prey populations. In some instance predators provide top-down control of prey populations. For instance, predation on many insect species is a key mechanism in how those insect populations are limited (e.g. bat predation on flying insects) (Begon, Townsend & Harper 1996).

Predation is a trophic interaction that is in effect a natural disturbance impact on prey. Maximised diversity is expected at intermediate levels of disturbance that vary across space and time. Apex predators, such as lions, are key drivers of diversity in savannah ecosystems because it creates gradients of predation pressure that result in different combinations of all kinds of species to exist. It is believed that man historically played a similar apex predator role in African savannahs. The intensity of predation will thus be a consequence of the spatial distribution and variability of resources that their prey uses. The spatial gradient of predation disturbances will thus reduce or homogenize if factors in the landscape makes the distribution of resources that their prey use more even through the landscape (e.g. widespread water provisioning, broad-scale fires, fences excluding access to some resources etc.). This human-induced influence is likely to be more pronounced for the large predators including lions, spotted hyenas, leopards, wild dogs, cheetahs and crocodiles. A consequence is that species, like roan and sable, experience increased predation that challenges their persistence.

Furthermore, members of different guilds of predators interact with each other through competitive interactions that reduce niche overlaps in how predators feed on species. In addition, large mammalian carnivores may suppress the smaller sized mammalian carnivore abundances *i.e.* such meso-predator suppression is a mechanism of maintaining intermediate predation pressure and the associated benefits for species diversity (Begon, Townsend & Harper, 1996). For instance, areas with high intensity of use by lions often have low intensity of use by wild dogs. If lions thus respond to prey re-distributions because of for instance water provisioning, it results in consequences for the persistence of wild dogs in this example.

Another challenge for large predators is the potential influence of emerging diseases such as bovine tuberculosis in lions (Miller *et al.*, 2012) and pansteatitis in crocodiles (Lane *et al.*, 2013), or disease outbreaks such as canine distemper in wild dogs that can have consequences for large predator populations themselves. This in turn has consequences for predation pressure and the benefits that predation related disturbances provide for the park.

Predation, specifically the observation there off, remains a key attractant for visitors to the park. At the same time though, predators can cause damage, specifically to neighbours, to property and threaten lives of people. Providing opportunities for predation across all taxa to play-out is thus a key requirement to achieve the biodiversity and tourism objectives of the park. Responsible management of risks associated with predators in the park and when they escape is an additional key requirement.

The emergence of bovine tuberculosis in the park (Miller *et al.*, 2012) prompted an extensive history of research seeking to define diagnostic tests, while there has been incidence of canine distemper outbreaks, the most recent being that in wild dogs. A key challenge is dealing with damage causing predators such as lion and spotted hyenas that leave the park. There are no extensive histories of introducing and / or relocating carnivores from the park although recently a wild dog introduction commenced in the north of the park. Carnivore research focused largely on predator-prey relationships, social dynamics and consequences of emerging diseases (Bruns *et al.*, 2017; Miller *et al.*, 2012; Maputla *et al.*, 2015).

The majority of predation by other smaller vertebrate and invertebrate species will remain largely intact if habitats are intact. This is because predation interaction is at a relative local scale and is most intact when several micro-habitats provide a variety of essential, replaceable and safety resources for prey as well as predator species alike.



This programme has links with the fire, disease, herbivory, habitat rehabilitation, invasive alien species and regional land-use integration programmes. A detailed lower level plan outlining the rationale and operational approach is available. This programme links with high-level objective 2 and objective 2.6 on page 48.

PREDATION PROGRAMME					
High-level objective: To maintain the diverse savanna landscape for its intrinsic value and delivery of broad ecosystem services by ensuring its biota and associated terrestrial and freshwater processes are restored and maintained.					
Objective: To restore and maintain predators as a key driver of environmental heterogeneity and associated biodiversity and tourism experiences by ensuring the role of large predators, restoring meso-predators and managing the role of small predators while minimising the risks of predation threats and their assets.					
Sub-objective	Actions	Responsibility	POE	Timeframe	Reference
To maintain the role of large predators.	Understand and manage the role of diseases on predators	SS, VWS	Report, Document	Year 2, then annually	Disease LLP
	Identify, prioritize and manage threats of illegal activities such as snaring and poisoning of predators across the GLTFCA	RS, SS, CM	Report, Document	Annually	
	Monitor large predator populations at appropriate intervals	RS, CM, SS	Report	Annually	
To maintain and restore when required the role of meso-predators.	Identify and manage threats to the persistence of meso-predators and restore populations when required	SS, CM, VWS	Report	Annually	National BMPs plans, Habitat Rehabilitation LLP, Veterinary and Wildlife Management LLP
	Monitor meso-predator populations at appropriate intervals	RS, CM, SS	Report	Annually	
To ensure suitable habitat exists for small predators.	Understand and evaluate habitat and restoration requirements of species of concern	SS	Report	Year 3	National BMPs plans
	Restore populations through habitat restoration or introductions if required.	CM, VWS	Reports	Annually	Habitat Rehabilitation LLP, Veterinary and Wildlife Management LLP

10.3.7 Fire management programme

The purpose of this programme is to provide guidance on how to mimic and manage the role of fire as an ecosystem driver as well as to evaluate and respond to fire threats.

Fires are considered as one of the key abiotic drivers in African savanna systems as it influences ecosystem processes and promotes heterogeneity. Not all fires are the same; hence their impact on the ecology may be varied depending on the fire regime. The fire regime is influenced by factors such as fire frequency, fire intensity, type of fire (back vs head fire) and the season in which the fire occurs (van Oudtshoorn, 2015).

These fire-driven systems have evolved with fire, making them quite dependent on veld-burning to maintain their ecosystem health and integrity. KNP uses fire as a critical management tool to control vegetation composition and structure (Smit *et al.*, 2010). By either excluding or applying

fires, managers can improve veld conditions by providing grazing for large herbivores, to promote tree growth and to promote biodiversity. In order to use fire effectively, it is important to understand and monitor how it behaves and functions as well as to determine the role of other variables which may influence its behaviour. Furthermore, the spatial and temporal monitoring of fires in the park will feed into other research programs that will address the effect of fire on their respective variables.

Since 1926, the Fire Management Strategy in KNP has continuously evolved. For nearly a century, various fire policies have been implemented – these range from total fire suppression, to prescribed burning in fixed seasons and frequency, to only allowing lightning fires to burn and suppression of all other fires. The current KNP Fire Management Strategy may be described as an integrated fire management policy that allows for burning of the veld by rangers to achieve specific ecological objectives. This protocol has been in place since 2012 when it was modified to implement the fire plan within ecological fire management zones which are defined by rainfall, geology and historical fire return intervals.

By law, KNP is expected to promote fire safety and protect infrastructure and lives. The National Veld and Forest Fire Act 101 of 1998 stipulate that landowners must construct firebreaks around their properties in order to prevent veldfires from either jumping out of or into their areas. Furthermore, personnel who are tasked with working with fire are expected to be appropriately equipped and trained to deal with fires.

A detailed lower level plan outlining the rationale and operational approach supports this programme. This programme links with high-level objective 2 and objective 2.7 on page 48. To achieve the purpose of this programme, the actions listed in the table below will be implemented.

FIRE MANAGEMENT PROGRAMME					
High-level objective: To maintain the diverse savanna landscape for its intrinsic value and delivery of broad ecosystem services by ensuring its biota and associated terrestrial and freshwater processes are restored and maintained.					
Objective: To mimic the role that fire plays in maintaining African savannas, whilst specifically considering fire-elephant interactions, by evaluating and responding appropriately to fire threats facing infrastructure and human lives.					
Sub-objective	Actions	Responsibility	POE	Timeframe	Reference
To promote fire as an ecosystem process.	Implement prescribed ecological burning, and post fire monitoring.	CM, RS, SS, TS	Reports	Annually	KNP Fire Protocol, National Veld and Forest Fire Act (1998)
	Monitor and evaluate the interaction between fire and additional ecosystem drivers such as water, climate and soils, and their cascading effects on biodiversity.	SS	Reports	Year 2, 4, 6, 8, 10	Fresh Water -, Habitat rehabilitation -, Climate change -, Resource Use LLP, Tourism,
	Monitor and evaluate the interaction between fire and elephants and its impacts on vegetation.		Report	Year 3, 6, 9	Herbivory LLP
	Develop and implement an integrated fire / elephant operational plan.	SS, CM, RS	Document, reports	Year 2, annually	Elephant Management Plan, KNP Fire Protocol
To ensure fire monitoring and research.	Maintain accessible, accurate and current spatial records of all fires, supported by a Decision Support System informed by relevant fire-related research and experimentation to inform management.	SS, CM, RS	Reports, minutes of meetings, database	Annually	National Veld and Forest Fire Act (1998), KNP Fire Protocol, Greater Kruger Fire Protection Association Business Plan
	Maintain the long-term Experimental Burn Plots.	SS, TS, RS	Reports, database	Annually	National Veld and Forest Fire Act (1998),
	Ensure general fire awareness of both staff, tourists and general public.	SS, CM, C	Reports	Annually	Greater Kruger Fire Protection Association Business Plan,
	Source and ensure capacity for fire management (appropriate equipment and personnel).	TD, CM, RS	Training records	Annually	Working on Fire



FIRE MANAGEMENT PROGRAMME

High-level objective: To maintain the diverse savanna landscape for its intrinsic value and delivery of broad ecosystem services by ensuring its biota and associated terrestrial and freshwater processes are restored and maintained.

Objective: To mimic the role that fire plays in maintaining African savannas, whilst specifically considering fire-elephant interactions, by evaluating and responding appropriately to fire threats facing infrastructure and human lives.

Sub-objective	Actions	Responsibility	POE	Timeframe	Reference
To promote fire safety and reduce wildfire risk.	Promote safety and protect infrastructure by constructing and maintaining firebreaks.	RS, TS, CM	Reports	Annually	
	Maintain appropriate networks, collaborations and support structures to encourage co-learning and knowledge sharing.	SS, CM, TS, RS	Meetings, conferences, Forums	Annually	Greater Kruger Fire Protection Association, Working on Fire
To evaluate and monitor achievements.	To monitor the impact of fire awareness campaigns on tourists and staff.	CM, SS	Minutes of meetings, reports	Year 3, 6, 9	
	Evaluate and review the park's Fire Protocol.	CM, SS, RS	Document	Year 3	Current Fire Protocol; Greater Kruger Fire Protection Association,

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 limiting the introduction or impact of alien diseases, and minimising the spread of disease from the park.

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.

From a national disease control perspective, the park is especially important in containing diseases of economic importance that have the potential to severely impact the livestock industry and international trade. These include foot and mouth disease (FMD), Corridor Disease, Bovine Tuberculosis (BTb) *Mycobacterium bovis*, Brucellosis, African Swine Fever, African Horse Sickness, and Anthrax. The park is therefore subject to one of the most intensive wildlife surveillance efforts in the country, if not the world. The park has a large and varied wildlife-domestic interface, with everything from peri-urban residential to communal livestock farming, irrigated sugar cane production and mining all within 5 km from the park. This intense interface has allowed many alien diseases such as BTb, Rabies and Canine Distemper to spread from domestic animals to wildlife. Diseases such as *Ecephalomyocarditis* have also been detected and linked to larger climatic cycles like drought and subsequent resource availability which favours rodent explosions (especially of species like the multimammate mouse, *Mastomys natalensis* and *M. coucha*). Increasing climate variability and major events like floods and droughts could further impact rodent borne zoonotic and emerging diseases, such as plague, *leptospirosis*, Hanta virus and Arena virus.

Savanna parks, such as KNP, due to their diverse animal compliment (including many large mammal species, which carry and are susceptible to several diseases) and their semi-tropical climate, supports a variety of different pathogens and vectors and therefore has disease dynamics that differ from other parts of the country. The park is bordered by high density communal and commercial livestock farming and mixed peri-urban and rural residential areas which creates an intense interface for disease transfer. However, proximity to protected areas can also come at significant cost to communal livestock farmers in terms of direct disease effects and imposed trade restrictions. Livestock, and cattle specifically, remain the economic backbone of rural South Africa, and shared infectious diseases especially those maintained in wild Bovidae can be especially crippling. In the area surrounding the park, the most notable example is FMD, maintained by the African buffalo. KNP is maintained as an infected zone and separated by the FMD buffer zone by a veterinary cordon fence managed by the DAFF. Strategic vaccination and surveillance of cattle in a disease buffer zone surrounding the park allows for an FMD-free trade zone for the rest of the country. Indirect effects of FMD in terms of trade restrictions rather than direct cost of treatment and prevention, reduce economically viable farming practices in the communal areas adjacent to the park. Other diseases that can be spread from African buffalo to cattle are Corridor Disease *Theileria parva*, Anaplasmosis *Anaplasma marginale* and Heartwater *Ehrlichia ruminantium* where production losses and costs of treatment can be significant for small herd livestock farmers. Buffalo in the park are also now recognised as a wild reservoir / maintenance host for the cattle-introduced disease, BTb, and spill-back into cattle has recently been demonstrated in the communal lands to the west of the park (Masoke *et al.*, 2015).

While wildlife are often seen as reservoirs of diseases to humans and their domestic stock, there are a number of other reasons why a disease monitoring and management plan is beneficial, including that many exotic diseases can be brought into a country by migrating wildlife, new and emerging diseases are often first detected in wildlife, wild animals can be threatened by newly introduced or alien diseases, and that wildlife disease can be an important indicator for underlying environmental degradation.

A detailed lower level plan outlining the rationale and operational approach supports this programme. This programme links with high-level objective 2 and objective 2.8 on page 49. To achieve the purpose of this programme, the actions listed in the table below will be implemented.

DISEASE MANAGEMENT PROGRAMME					
High-level objective: To maintain the diverse savanna landscape for its intrinsic value and delivery of broad ecosystem services by ensuring its biota and associated terrestrial and freshwater processes are restored and maintained.					
Objective: To allow for endemic disease to play out as a key ecological process to maintain a healthy, resilient savanna, while preventing and mitigating disease transfer at the wildlife-livestock-human interface.					
Sub-objective	Actions	Responsibility	POE	Timeframe	Reference
To develop and contribute to a robust disease surveillance system to be able to detect unusual / epidemic disease events.	Conduct refresher courses to train conservation staff to identify basic disease syndromes, and collect and store appropriate samples.	SSV, VWS, SS	Register	Annually	
	Develop a system for reporting sick and dying animals.	RS, CM, SSV, SS, VWS	Reports, samples	Year 1	
To evaluate and respond to disease threats to wildlife posed by humans and domestic livestock and vice versa.	Strengthen barriers to disease transfer and promote good livestock / domestic animal husbandry practices at the wildlife-livestock interface (including fences, strategic vaccination and dipping).	SSV, RS, CM, SS	Reports	Ongoing	
	Develop effective disease information networks with the DAFF, Provincial State Veterinary Services, AHF, NICD, DoH, ARC to determine regional occurrences of disease and appropriate disease control responses.	SSV, SS, VWS, OHS	Minutes	Ongoing	
To determine disease risk for all animal (and where necessary plant) introductions.	Conduct a quantitative risk assessment and associated disease mitigation actions for all introductions.	VWS, SS, CM, SSV	Report	Ongoing	
	Review code of conduct for permissible pets in the park based on risk assessment.	CM, SS, VWS	Document	Year 5, 10	



DISEASE MANAGEMENT PROGRAMME

High-level objective: To maintain the diverse savanna landscape for its intrinsic value and delivery of broad ecosystem services by ensuring its biota and associated terrestrial and freshwater processes are restored and maintained.

Objective: To allow for endemic disease to play out as a key ecological process to maintain a healthy, resilient savanna, while preventing and mitigating disease transfer at the wildlife-livestock-human interface.

Sub-objective	Actions	Responsibility	POE	Timeframe	Reference
To maintain a biological resource bank for animal and plant tissue.	Store biological tissue.	VWS, SS	Samples	Ongoing	
To bring about greater awareness about disease risks and explore cooperative opportunities for integrated domestic-wildlife-human land use.	Promote and ensure a high level of awareness about disease issues (including malaria and abattoir-related diseases) in order to encourage a shared understanding of disease threats to the park and its surrounding ecosystems.	SS, OHS, SED, SSV	Report	Ongoing	
	Promote and encourage Inter-governmental engagement (DAFF, DEA, SANParks, Department of Rural Development, Agricultural Research Council) to explore models for a thriving and integrated domestic animal, human and wildlife landscape.	SED, SS, CM, VWS, SSV	Report	Ongoing	
To monitor and evaluate the impact of the implementation programmes, and adapt as required.	Monitor and evaluate progress and impact against annual work plan targets and programme objectives.	CM, relevant Departments	Reports	Annually	
	Adapt programme approach and feedback, and inform risk response strategy.	CM	Document	Annually	

10.3.9 Natural resource use programme

The purpose of this programme is to allow for the sustainable utilisation of natural and cultural resources from within the Kruger NP that aids biodiversity management, shares socio-economic benefits, fosters positive relationships with neighbours and ensures the long-term persistence of the park as defined in the NEM: PAA.

The NEM: PAA and SANParks Resource Use policy (SANParks 2010) makes allowance for the sustainable use of renewable and non-renewable resources for the purpose of managing biodiversity and sharing socio-economic benefits from utilising resources within national parks. The programme is underpinned by three main objectives including the maintenance of ecological integrity, economic viability and social relevance. Similarly, it is built on a framework that describes natural and cultural resources as products that are derived from final ecosystem services, and that give rise to costs and benefits through impacting either positively or negatively on human well-being. The park regards any action that utilises resources or impacts on the scenery, sense of place, soil, water, air nutrient cycles, habitats, heritage resources, flora and fauna, and the interrelatedness between these, as a type of resource use. Resource use of all natural products, both biotic and abiotic, including elephant tusks and rhinoceros horn, is guided by sustainability principles as set out in the SANParks policy framework and KNP protocols. These are reviewed periodically, considering changes to the International and National legal framework (as informed through appropriate stakeholder consultation processes) and in response to emerging drivers, opportunities and threats.

Archaeological records from the areas in and adjacent to the Kruger National Park demonstrate that people were living in and utilising resources from these areas as far back as the early stone age, between 200 000 and 1 million years ago (Eloff 2012 in Pienaar 2012). This was at a time when the animal population differed considerably from current day with several species having become extinct and new species emerging (Eloff 2012 in Pienaar 2012). Throughout occupation, humans relied on, used and subsequently valued the ecosystem for the numerous benefits they derived from it. In using the ecosystem, people impacted on it through the use of fire, harvesting, hunting and creating “zones of increased vigilance” for certain species suggesting that humans and the modern day lowveld savanna ecosystem evolved together. Promoting access for people to certain resources at a small scale that does not negatively impact ecosystem integrity significantly, provides opportunities for park management to both maintain the role of humans as an ecosystem driver as well as to build value of protected areas through relevant benefit accrual and distribution processes.

Through the promotion of the sustainable use of natural and cultural resources, the park aims to share ecosystem benefits more equitably and fairly, and in so doing promote long-term relationships with a broad range of stakeholders including neighbours. The strong emphasis of resource use by and for local communities further aims to promote access and benefit sharing locally, which in the spirit of historical redress and environmental justice goes far beyond simply the resource itself. As such, monitoring for the outcomes of resource use should go beyond simple numbers and quantities of resources (Swemmer & Taljaard 2011) and also look at the impact of these projects in fostering lasting positive relationships with neighbours.

During the course of the previous plan, several extractive resource use projects were ongoing such as thatch harvesting, the growing and supply of plants and plant parts from the Skukuza nursery (including but not exclusive to plants used as traditional medicine), gravel from gravel pits and collecting of mopane worms. Much has been learnt from these projects which will be incorporated in future ventures. The Skukuza nursery fulfils an important function in the resource use programme. Not only does it propagate and / or grow medicinal plants including the pepper bark tree, but the nursery also grows numerous other indigenous plants, most of which are endemic to the Lowveld. Assorted sizes of trees / shrubs and groundcovers from over 200 park species are sold to the public and used in tourist camps and other facilities in the park. Furthermore, many plants and seeds are donated to projects and programmes free of charge in support of sharing benefits, building capacity, maintaining environmental integrity as well as building support for conservation. Local schools are a major recipient of nursery grown plants, which are donated either to support calendar days (e.g. Arbor Week) or to enable greening in communal areas in support of rehabilitation and providing shade for learners during break times. The tree donations events often include the distributing of information about plants in support of environmental education by the schools. Live and lethal animal off-takes taking place within the park are guided by various SANParks policies and procedures including the “SANParks Donation of Wildlife and Wildlife Products Policy”, the “SANParks Wildlife Utilisation Strategy” and the “SANParks Wildlife Utilisation SOP”, taking further cognisance of regional legislation and international agreements. Various partnerships are being fostered that promote applied research on the sustainable use of resources in the areas adjacent to the park (e.g. University of Stellenbosch and University of Pretoria). More recently the use of protein from animals harvested for ecological, economic or social reasons (including human-wildlife conflict) has further broadened the context of resource use from within the park with meat from both buffalo and elephant being donated to local schools. This forms part of outreach and awareness raising in local communities, towards building positive stakeholder relationships. The illegal utilisation of resources from the park has become an increasing threat to biodiversity and provides the rationale for implementing projects such as the pepper bark conservation programme. The poaching of rhinoceros has also stimulated a far greater effort at providing benefits to local communities some of which are in the form of extractable tangible resources. Furthermore, the park recognises that it also has a responsibility to ensure that natural and cultural resources which are not harvested from within the park boundaries, but are brought into and used in the park, are collected and harvested in an ethical way that conforms to SANParks’ policies.

Monitoring of small scale resource use projects in the park suggests that these projects have huge potential to enhance local stakeholders perceptions of the park, coming at a low cost, operating for a short timeframe while meeting multiple objectives such as (i) enhancing access to the park, (ii) contributing positively to basic livelihoods in a tangible way, (iii) enhancing human well-being (iv) promoting conservation constituency and (v) engendering positive long-term relations with neighbours.

A detailed lower level plan outlining the rationale and operational approach supports this programme. This programme links with high-level objective 2 and objective 2.9 on page 49. To achieve the purpose of this programme, the actions listed in the table below will be implemented.



NATURAL RESOURCE USE PROGRAMME

High-level objective: To maintain the diverse savanna landscape for its intrinsic value and delivery of broad ecosystem services by ensuring its biota and associated terrestrial and freshwater processes are restored and maintained.

Objective: To support, where possible, social, ecological and economic sustainability of the Greater Kruger park system by promoting and facilitating access to and sustainable use of a range of natural resource products within and adjacent to the park.

Sub-objective	Actions	Responsibility	POE	Timeframe	Reference
To manage the utilisation of natural and cultural resources according to ecologically sound principles, guidelines and criteria.	Establish and manage a park committee that drives governance and decision making on resource use issues in the park.	SED, CM, SS, CS	Minutes of meetings	1 year, ongoing	
	Govern the use of natural resources using operational planning and implementation processes outlined in appropriate documentation (management plans / protocols / guidelines) in accordance with a strategic adaptive management framework that includes awareness and communication.	SS, CM, SED, TS, FS	Documents, reports	Ongoing	SANParks Resource Use Policy, SANParks Wildlife utilisation strategy, SANParks SOP off-takes and disposal of wildlife, Social Economic Development Strategy, National Bio-prospecting, Access and Benefit Sharing Guidelines
	Explore options that may facilitate the long term propagation and associated industry development of high value species in the context of bio-prospecting as alternative sources to those found inside of the KNP.	SS, CM	Documents	Ongoing	
	Develop co-operative agreements that guide relevant resource use in the Greater Kruger (e.g. animal off-takes).	CM, SS	Document	Year 2	Regional integration LLP
	Facilitate the propagation of high value species as alternative sources of tissue supply, and industry development.	CM, SS, SED	Reports	Ongoing	Social economic development strategy, SANParks resource use policy, National bio-prospecting, access and benefit sharing guidelines
To reduce the illegal utilisation of resources from within the park by promoting access to alternative sources of appropriate resources, by increased security and by raising awareness.	Implement projects that facilitate access to alternative sources of biological material.	SED, SS, CM, RS, VWS	Document, reports	Ongoing	EE -, safety and security LLP

NATURAL RESOURCE USE PROGRAMME					
High-level objective: To maintain the diverse savanna landscape for its intrinsic value and delivery of broad ecosystem services by ensuring its biota and associated terrestrial and freshwater processes are restored and maintained.					
Objective: To support, where possible, social, ecological and economic sustainability of the Greater Kruger park system by promoting and facilitating access to and sustainable use of a range of natural resource products within and adjacent to the park.					
Sub-objective	Actions	Responsibility	POE	Timeframe	Reference
To implement resource use in a manner that through access to resources, users build a vested interest in conservation through the value that is created by benefits being accrued.	Assess the impacts (costs and benefits, changes in perceptions & constituency) across scales and scopes of various resource use initiatives and adapt programmes where necessary.	SS, CM, SED, SED, TS, FS	Documents	Ongoing	
To monitor and evaluate the impact of the implementation programmes, and adapt as required.	Monitor and evaluate progress and impact against annual work plan targets and programme objectives.	CM, relevant Departments	Reports	Annually	
	Adapt programme approach and feedback, and inform risk response strategy.	CM	Document	Annually	

10.4 Wilderness programme

The purpose of this programme is to provide a framework for the management of wilderness areas and the wilderness experience in the park.

The development of infrastructure associated with increasing tourism demand such as roads, rest camps, picnic sites, hides and concession operations has also increased over time. These actions and developments have significantly affected the “sense of place” and wilderness qualities within the park. Ever increasing urban and rural developments peripheral to the park have also eroded the remaining wilderness within the park through increased visual, noise and light impacts.

Defining a common understanding of wilderness and its associated attributes is crucial, as it will affect the future designation and management of wilderness within our national parks. Hendee & Dawson (2002) differentiate between two extremes in defining wilderness. At one extreme, wilderness can be defined according to a legal perspective and at the other extreme according to a social perspective. They call these two extremes legal wilderness and sociological wilderness.

In terms of the NEM: PAA, wilderness is defined as: “*an area designated in terms of section 22 for the purpose of retaining an intrinsically wild appearance and character, or capable of being restored to such and which is undeveloped and roadless, without permanent improvements or human habitation.*”

Defining a universally acceptable definition of sociological wilderness is highly unlikely because people’s perceptions of wilderness vary widely and also vary between countries and cultures. Because this management plan is focused on the management of wilderness within a national park, the definition should mirror the legal definition of wilderness as outlined in the applicable legislation that governs the management of the park.

The focus is thus on retaining the intrinsic qualities and values of wilderness and to maintain or restore specific attributes associated with such areas. The complexity of wilderness management frequently results in uncertainty amongst managers about how to deal with a particular problem. In order to minimise this, a set of broad wilderness management principles has been accepted to guide the decision-making rationale and produce solutions that are consistent and compatible with the wilderness resource. The following wilderness management principles were adopted from Hendee *et al.*, (1990) and Hendee & Dawson (2002) as a framework for wilderness decision-making in the park:

The following management activities are conducted within the park and will continue in the foreseeable future and the monitoring of these actions in wilderness areas is crucial:

- Monitoring and research;
- Removal of redundant structures, e.g. windmills, dams, buildings;
- Rehabilitation of roads, management tracks, gravel pits and man-induced erosion;



- Wildlife off-takes;
- Anti-poaching activities;
- Fire management; and
- IAS removals.

A detailed lower level plan outlining the rationale and operational approach supports this programme. This programme links with high-level objective 3 on page 49. To achieve the purpose of this programme, the actions listed in the table below will be implemented.

WILDERNESS PROGRAMME					
High-level objective: To protect, enhance and restore wilderness areas and wilderness qualities that contribute to the unique sense of place through appropriate park development and effective management.					
Objectives	Actions	Responsibility	POE	Timeframe	Reference
To ensure compliance of designated areas.	Apply for formal designation of Wilderness areas as per NEM: PAA.	PPD	Government Gazette	Year 1, as required	NEM: PAA
	Develop appropriate monitoring and auditing mechanisms to verify whether developments adhere to target wilderness attributes and industry standards.	CM, SS	Auditing tool, report	Year 3	
	Develop appropriate monitoring and auditing mechanisms to verify wilderness qualities experiences and sense of place.		Auditing tool, report	Year 3	
	Implement and report on Wilderness zonation auditing.	CM	Reports	Ongoing	
	Mitigate non-compliance.		Document	Ongoing	
	Rehabilitation of man-made infrastructure (roads, tracks, artificial water points) and visitor management to enhance wilderness experience.	TS, CM	Report	Ongoing	Rehabilitation LLP
To expand the wilderness area.	Develop wilderness quality principles and conservation guideline.	CM, SS, RS	Document	Year 2	
	Identify and request designation of potential additional wilderness areas.	CM, PPD	Document	Year 3, as required	NEM: PAA
To promote an appreciation of wilderness amongst the general public, especially visitors to the park.	Produce information for the public on wilderness areas and its value.	CS, SS, CM, T	Documents	On-going	Research, Monitoring and Co-learning LLP
	Ensure that wilderness areas are clearly indicated on tourist maps with accompanying descriptions.		Map	On-going	
	Promote a wider use of wilderness areas in the park through a range of appropriate and alternative product development, e.g. people must see walking in one of the wilderness areas almost like viewing the Big 5, specific environmental education products, train guides, resource use etc.	T, SED, CM	Report	Ongoing	Visitor Management Plan

WILDERNESS PROGRAMME					
High-level objective: To protect, enhance and restore wilderness areas and wilderness qualities that contribute to the unique sense of place through appropriate park development and effective management.					
Objective	Actions	Responsibility	POE	Timeframe	Reference
To develop and maintain a collaborative network.	Develop and maintain a collaborative network between the park and other conservation or wilderness-associated institutions (regionally, national & internationally) so as to promote wilderness qualities and associated values.	CM, SS	Report	Year 3	Wilderness Action Group
To monitor and evaluate the impact of the implementation programmes, and adapt as required	Monitor and evaluate progress and impact against annual work plan targets and programme objectives.	CM, SS	Reports	Annually	
	Adapt programme approach and feedback, and inform risk response strategy.	CM, SS	Document	Annually	

10.5 Responsible tourism programme

The purpose of the responsible tourism (RT) programme is to drive nature based responsible tourism in the park to promote conservation, public enjoyment, constituency building and income generation.

In March 2011 Cabinet approved the National Tourism Sector Strategy (NTSS) that further entrenched the principles of RT in the both the development and operation of businesses in the field of tourism. The NTSS further identified specific areas that require attention and 15 of these areas listed below, in no specific order, relate directly and in some cases indirectly to SANParks and hence influence how the organisation should interact and operate its own tourism business in the context of the broader tourism industry:

- Strengthening collaboration and partnerships within the tourism industry;
- The development of domestic tourism;
- Enhancing quality assurance and universal accessibility;
- Ensuring a co-ordinated approach to product development;
- Investment facilitation, including enterprise development and development finance;
- Ensuring sound environmental management and triple bottom line reporting;
- Growing business and events tourism;
- African Tourism development;
- Improving general awareness of tourism among South Africans;
- Enhancing domestic airlift;
- Transformation in the industry;
- People development;
- Service excellence;
- Improving community benefits from, as well as community participation in tourism; and
- Providing decent work in tourism.

SANParks, as a major provider of tourism accommodation and natural experiences in the country, recognises that by implementing responsible tourism management and principles, the organisation will not only continue to benefit from enhanced income, but also from a better quality of tourism product, better development and management practices, and higher levels of local involvement along with much needed sustainable benefits flowing to local communities.

To this end, SANParks continually evaluates the alignment of policies, strategies and operations with the principles of RT and strives to put measures in place that will enhance this process. Following an extensive review of existing policies, guidelines and plans as well as information gathered through interviews with personnel and stakeholders, the 2022 Responsible Tourism Strategy and Implementation Plan was approved in 2012. 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 park's RT 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 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.

In order to align the SANParks tourism operations to these expectations and in implementing the 2022 Responsible Tourism Strategy SANParks seeks to base all its planning and decision making on the following guiding principles and values:

- Provide nature-based responsible, value for money tourism experiences, whilst promoting our biodiversity, cultural and where applicable, wilderness qualities, to our strategic advantage;
- Contribute to building a broad based constituency for the long term sustainability of conservation in a people-centred way; and
- Using appropriate nature-based RT as the best possible financial opportunity to support and supplement conservation funding. This financial driver should never become an end in itself, and should never erode the core conservation values of the organisation. Viewed together with other financial sources, the overall outcome must effectively enable SANParks.

For park management to ensure effective implementation and measurement of the Responsible Tourism Standard, it is vitally important to establish a park responsible tourism baseline, from which to measure progress. The plan must seek to find ways to be minimising environment damage to counteract the possible, negative perceptions of the environmentally conscious travellers. Responsible tourism should maintain a high level of tourist satisfaction and ensure a meaningful experience to the tourist, raising their awareness about sustainability issues and promoting sustainable tourism practices amongst them.

Park management recognises that apart from the limitations of the biophysical environment and the park's desired state; that tourist density and experiences must be managed through a strong but flexible visitor management protocol that is informed by a sound research programme as well as the experiential expectation and perceptions of the broader market place. Furthermore, in partnership with our key stakeholders, the park will seek to provide real and tangible benefits to communities around the park thereby facilitating effective socio-economic development and growth in these local communities.

The GLTFCA presents a unique opportunity to use tourism development to facilitate regional ecosystem conservation based socio-economic development. The GLTFCA has identified a range of cross-border tourism opportunities that can be developed within the transboundary initiative and in partnership with a range of key stakeholders. These products include transboundary wilderness trails, 4x4 trails and the development of a cross-border tourism node within the Pafuri / Sengwe area that forms the heart of the GLTFCA.

The development and improvement of tourism infrastructure is critical for sustainable growth. This would require partnerships in mobilising necessary resources and attracting investment to grow tourism. Through the implementation of PPPs identified it will enable the park to improve its infrastructure, generate revenue, promote black economic empowerment whilst creating much needed employment in the region.

The park currently hosts more than 1.8 million visitors a year (2017), and is one of the flagship destinations in South Africa and has remarkable biodiversity, wilderness qualities and a sense of place. With the increasing number of visitors and the changing environment over the years, the

park needs to be more innovative in its approach to ensure that it remains relevant and offers quality products, hence a strategic tourism planning session was conducted via a “tourism opportunity framework mechanism”. This mechanism seeks to identify tourism opportunities, experiences and products. Products identified and incorporated into the park management plan will then feed into the product development framework that will, via a specific process, ensure sustainable product development. In this regard all new developments will be considered very carefully within the approved zonation and will ensure that the sense of place in the park is maintained.

Potential risks to tourism in the park are diverse and largely unpredictable. A study conducted during 2016 by the University of Pretoria concluded that rhino poaching and anti-poaching measures do impact tourism and could affect future visitations to the Park. Conservation fees will increase by 11.3 % in 2018 /19 for all national parks with rhino’s. This increase has been brought about to support the increasing costs associated with Anti-Poaching operations.

The park takes responsibility for achieving the economic, social and environmental components of responsible and sustainable tourism.

This programme links with high-level objective 4 and objectives 4.1 – 4.5 on page 49. To achieve the purpose of this programme, the actions listed in the table below will be implemented.

RESPONSIBLE TOURISM PROGRAMME					
High-level objective: To be a world class destination by providing nature based responsible tourism experiences in promoting biodiversity, cultural and wilderness qualities to grow revenue in support of the conservation mandate.					
Responsible Tourism performance objective: To establish, maintain and continuously improve the park’s Responsible Tourism performance, by implementing and monitoring improvement to achieve and where possible exceed the minimum standards of Responsible Tourism (SANS1162).					
Sub-objectives	Actions	Responsibility	POE	Timeframe	Reference
To develop a RT programme for the park that aligns with SANParks RT Strategy.	Develop a responsible tourism programme in line with SANParks responsible tourism strategy to measure RT norms and standards	T	Programme	Year 1	SANParks Responsible Tourism Framework, SANParks Responsible Tourism Strategy
	Communicate the RT programme to all park stakeholders.	T, CS	Reports	Year 2	
	Engage relevant stakeholders to facilitate funding for energy-efficiency conversions or renewable-energy projects.	TS, T	Reports	Year 1	
	Educate and motivate staff in the responsible tourism principles and enhance tourism capacity and skills base within staff complement.	T	Registers	Year 2	
To manage and assess RT performance.	Implement and monitor Responsible Tourism actions.	T	Report	Year 3, ongoing	
	Identify, review and mitigate the visitor impact on biodiversity, heritage and tourism resources.	T	Report	Year 2, ongoing	
	Undertake Tourism Quality Assurance assessments, grading, and UA assessments.	T	Reports	Year 1, ongoing	
	Develop measures for continues improvement of sustainable operations; considering climate change risks to socio-cultural, environment and economic management.	T	Guidelines	Year 3, ongoing	Climate Change, National Development Plan
To promote RT practise within Tourism.	Increase number of tourism programmes and projects led by benefiting communities.	SED, T	Research reports	Year 3	NTTS Strategy
Use local resources sustainably, avoid waste and over-consumption.	Measure, manage and monitor performance of water and electricity consumption by adhering to targets.	T, TS, CS	Report	Ongoing	
	Set appropriate targets for reduction or recycling of waste produced.	T, TS, CS	Report	Ongoing	



RESPONSIBLE TOURISM PROGRAMME

High-level objective: To be a world class destination by providing nature based responsible tourism experiences in promoting biodiversity, cultural and wilderness qualities to grow revenue in support of the conservation mandate.

Diverse products and experiences 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
Align new and existing tourism infrastructure and tourism products to be in line with market demands and industry standards to enable revenue optimisation.	Implement recommendations from Visitor Research Study, and review as required.	T	Research reports, plan	Year 1, as required	
	Maintenance of tourism facilities and infrastructure according to tourism standards.	T, TS	Grading Schedule, Annual Infrastructure Maintenance Schedule	Annually	
	Identify events, activities and facilities that may be considered for development within the park.	BDU, T, CS	List of products	Annually	Product development framework
	Establish a Product Development Committee to annually review or approve developments including the review of development plan.	BDU, T, CS	Minutes of meetings	Year 1, ongoing	
	Conduct a feasibility study of priority opportunities.	BDU, T	Documents	As required	Product development guideline
	Identify opportunities to link up existing and new products with neighbours that are open to the park including GLTFCA.	T	List of products	Year 2, ongoing	
Identify areas where communities could become beneficiaries of tourism projects	Identify and support appropriate product development by developing and implementing a heritage and rural tourism strategy.	SED, CS, T	Document, reports	Year 1	
Ensure optimal returns from commercial operations	Support retail outlets and restaurants in order to maximise concession income generating potential and review existing contracts to ensure responsible tourism standards are reflected.	BDU, T	Reports	Ongoing	PPP Agreements
	Monitor implementation of responsible tourism by commercial partners.	BDU, T	Reports	Ongoing	
	Review the Strategic Plan for Commercialisation in order to attract private sector investment and skills.	BDU	Revised Strategic Plan	Year 2	
Analyse and review pricing to optimise financial returns.	Provide input into tariffs during annual review process.	T	Tariff Document	Annually	
	Implement yield management for high demand products.	T	Room Seeker Reports	Ongoing	

RESPONSIBLE TOURISM PROGRAMME

High-level objective: To be a world class destination by providing nature based responsible tourism experiences in promoting biodiversity, cultural and wilderness qualities to grow revenue in support of the conservation mandate.

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 tourism products, facilities and activities.	Conduct market research and surveys to identify the most viable options that will ensure the growth of domestic tourism.	CS, T	Reports	Year 1	
	Develop a comprehensive tourism marketing strategy that covers all markets and matches up markets and products / experiences with a focus on RT issues.	CS	Document	Annually	
	Investigate ways of motivating and providing affordable tourism products and packages to encourage low to medium-income earners to take holidays.	CS	Reports	Ongoing	Sales and marketing strategy
	Find opportunities for media coverage and enhance existing - editorials, magazines and social media coverage, to maintain high media visibility.	CS	Reports	As required	Sales and marketing strategy
	Develop and implement a social media strategy.	CS	Reports	Year 1, ongoing	Sales and marketing strategy
	Explore opportunities for promoting park attractions in conjunction with tourism partners.	CS	Minutes of meetings	Ongoing	
	Develop park activities and accommodation application.	CS, T	Reports	Year 2	Research
	Make website universally accessible for people with visual impairments.	CS, T	Website	Year 2	National Department UA declaration
	Introduce a park radio station.	CS	Broadcasts	Year 2	Communications Strategy

Visitor interpretation objective: To continually enhance the visitor experience within the park, by implementing innovative interpretation services to inform and educate the visitors.

To ensure adequate, effective and accurate visitor communication within and on approach to the park to enable a quality visitor experience.	Develop and implement a park interpretation plan.	T	Document	Year 2	
	Monitor and evaluate the park visitor interpretation plan.	T	Reports	Year 2	
	Update and maintain the signage manual, including GLTP requirements.	TS, CS, T	Updated document	Year 1, ongoing	Branding guideline
	Complete and maintain a Tourism Park Guide document.	CS, T	Document	Year 2 and ongoing	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.	CS, T	Park rules / information on website, reservation attachments, interpretive signage	Ongoing	Visitor management policy and protocols, SOPs
	Ensure all staff are adequately trained to communicate key park, tourism and biodiversity information to visitors, and where appropriate to access information, if unknown.	CS, CT, T		Ongoing	Park rules, visitor information



RESPONSIBLE TOURISM PROGRAMME

High-level objective: To be a world class destination by providing nature based responsible tourism experiences in promoting biodiversity, cultural and wilderness qualities to grow revenue in support of the conservation mandate.

Visitor management objective: To continually enhance the visitor experience within the park, by effective visitor engagement, management, and quality of facilities offered.

Sub-objectives	Actions	Responsibility	POE	Timeframe	Reference
To ensure effective visitor management in the park.	Develop and implement a park visitor management plan.	T	Document	Year 1	Visitor management protocol
	Maintain the visitor management plan taking changes in the environment into account.	T	Updated visitor management plan	Year 3, 6, 9	Visitor management protocol
	Conduct research to understand the visitor traffic to the park in order to determine solutions for alleviating tourist traffic in the southern region of the park and implement recommendations.	T	Reports	Year 2	
Operational standards, efficiency and service excellence objective: To enable appropriate customer- focused service excellence, by understanding and responding appropriately to market preferences.					
To enhance the tourism attractions and existing and new products within the park in line with the recommendations of the RT programme.	Enhance Customer Service Standards, manage and resolve feedback from the public within the park.	T	Questionnaire responses	Ongoing	Tourism grading standards, SANParks Housekeeping Standards,
	Review and analyse guest feedback to provide targets and improvement.	T	Reports	Ongoing	Housekeeping Standards
	Act on customer service recommendations and targets received.	T	Customer Service Assessment	Ongoing	
	Improve efficiency of access to key high-volume sites.	T		Year 3	
	Identify and implement technology to improve visitor flow at access points.	T, RS	Reports	Year 2	
	Conduct customer surveys to understand visitor numbers, expectations, preferences, park use and trends.	T	Reports	Year 1	
To create awareness of the importance of customer care among employees.	Introduce employee awareness campaigns as part of the training and service commitment of employees.	HR, T	Registers	Ongoing	
Ensure compliance and achievement of set Customer Care Standards.	Continues monitoring, review and training programmes of processes in ensuring effective service delivery and customer satisfaction.	T, HR	Surveys results	Ongoing	

RESPONSIBLE TOURISM PROGRAMME					
High-level objective: To be a world class destination by providing nature based responsible tourism experiences in promoting biodiversity, cultural and wilderness qualities to grow revenue in support of the conservation mandate.					
Universal access standards: Ensure that persons with disabilities have equal rights of access to all tourism infrastructure, products and services, including employment opportunities and benefits that the park can provide.					
Sub-objectives	Actions	Responsibility	POE	Timeframe	Reference
To provide the same choices for all consumers to ensure the full participation of persons with disabilities, the elderly and parents with young children by creating appropriate facilities and providing dignified service.	Develop and implement an Universal Access strategy to identify mechanisms for improving the parks UA facilities and services taking into consideration the rights and needs of diverse user groups.	T, CS	Document	Year 2	SANParks Universal Access Guidelines
	Engage in Universal Access assessments.	T	Reports	Every third year	UA strategy UA protocol
	Conduct research on the level of satisfaction of visitors with a physical or sensor disability.	T	Survey results	Year 2	
	Develop in-house programmes to raise awareness, sensitivity and skill levels in order to provide more appropriate services for persons with disability.	HR, T	Programmes	Year 2	
Create opportunities for empowerment and employment of people with disabilities	Make specific efforts to link people with disabilities to enterprise development services.	HR, T	Document	Ongoing	
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 facilitate and promote equitable access to the park, tourism products and facilities for all targeted communities and user groups	Investigate, develop and implement a community wildcard that will facilitate community members access into the park at a reduced rate	SED, T	Community wildcard developed and working	Year 5	
	Maintain, enhance and assess progress in achieving equitable access.	SED, T	Reports	Ongoing	
	Engage with local and regional government, commercial business operators and the local community to identify opportunities for improving local community access to the park.	SED, T, CS	Minutes of meetings	Ongoing	Park Forum
To monitor and evaluate the impact of the implementation programmes, and adapt as required	Monitor and evaluate progress and impact against annual work plan targets and programme objectives.	T, SED	Reports	Annually	
	Adapt programme approach and feedback, and inform risk response strategy.	T, SED	Document	Annually	

10.6 Cultural heritage management programme

The purpose of this programme is to consolidate, sustain, manage and present the significance, authenticity and integrity of tangible and intangible cultural heritage (CH) resources. The vision is to conserve, sustainably utilize and promote cultural heritage resources for the benefit and enjoyment of visitors and neighbouring communities.

The management of the CH 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) provide further guidance.



Long before its establishment as a protected area, the park functioned as an integrated natural – cultural environment. It was inhabited by communities who viewed the landscape as one whole from which their provisions and survival were derived and guaranteed through sustainable utilization. Sustainable utilisation of the natural resources was achieved through various cultural practices including taboos and assigning of sacredness to biodiversity. This harmonious nature - culture interaction has been weakened over the years through the establishment of the protected area which introduced new approaches that were based on removal of human influence on the natural environment. The uncontrolled hunting by early Europeans laid the foundations for the protected area approach that views human (culture) influence on nature as harmful.

The forced removals that came with the establishment of the park as a protected area did not only physically alienated communities from the landscape but denied them the spiritual and cultural connectedness which they previously enjoyed. The resulting loss of access to ancestral burial sites and other sacred spaces created the antagonistic relationship that most neighboring communities had with the park. This is a legacy that the park is now working hard to address through various interventions including its Socio Economic Development (SED) programme. The cultural heritage resources of the park will play a critical role in reestablishing the connection between communities and the landscape (natural and cultural environment). Community benefits will not be limited to only spiritual and cultural access but entrepreneur support through capacitating local entrepreneurs to run landscape tours that include heritage trails (e.g. rock art trails) as part of the SED's SMME support programme.

Today, the park is a world-renowned tourist destination famous for its biodiversity and big game sightings. However it also has a unique cultural landscape with over 720 recorded cultural sites including graves, rock art, ruins of prehistoric settlements, fossils, sacred sites, iron smelting sites, historic landmarks, monuments, historic infrastructure, shelters, trade routes, old mines, battlefields, marked trees and the foundations of old trading posts. Many of these sites hold cultural and spiritual importance, whilst others reveal an exciting and romantic history of the area some of which (55 sites) are accessible to tourists. The Luvuvhu-Limpopo landscape has one of the richest and most representative cultural chronologies in Africa. The Makahane and Thulamela archaeological sites in the north of the park are in the process of being nominated for National Heritage status, thus requiring conscious conservation efforts. The park has a rich suit of CH assets including paleontological (sites with dinosaur fossils), archaeological (Early, Middle and Late Stone Ages, and Iron Age) and historical sites. Some sites contain evidence of the spiritual practices of the early human inhabitants, stone tool technology and early iron smelting technology. It is estimated that the human population in the park may have peaked at around 16,000 people, a number large enough to have had a significant influence on the ecosystem, a driver that is largely missing in the current context. The arrival of the Voortrekkers (Van Rensburg, Trichardt, Potgieter, Bronkhorst) is also evidenced by several sites in the park (Bulpin 1989; Joubert 2007). Sites associated with the establishment of the park mostly relate to Paul Kruger and James Stevenson-Hamilton, whilst it also includes many mass graves (mounds) of herds of cattle that were shot in the park to prevent the spread of zoonotic diseases.

Over the decades the park has offered researchers and scholars throughout the country and abroad, great opportunities to unmask and help interpret the past through its wealth of cultural heritage sites and heritage objects. The learnings from many of these have not been shared with the public. The park will seek partnerships with cultural heritage organizations and other institutions in order to establish relationships that enhances the resourcing and improvement of cultural heritage. Universities and institutions like national museums will be engaged to conduct cultural heritage research and keep the park as an active cultural heritage knowledge generation hub. Other partnerships will include funders like the National Department of Tourism for capital projects aimed at improving and introducing new infrastructure related to tourism product offering. The challenges that the park faces are not only about how cultural heritage was alienated from mainstream park management but the resultant poor investment in the upkeep of

heritage sites and collections. Currently the park does not have accredited collections storage facilities and therefore unable to curate high risk heritage objects. The park should invest in developing facilities that meet minimum museum and curatorial standards in order to be able to protect existing collections and repatriate collections that are currently held by third party institutions. Infrastructure investments for cultural heritage should be increased in order to bring in line more cultural heritage tourism products. The park is currently not maximising the huge cultural heritage tourism potential as products are not packaged and promoted. There is an urgent need to provide packaged cultural heritage tours that links offerings from across the park and the wider cultural landscape beyond the parks borders.

A detailed lower level plan outlining the rationale and operational approach supports this programme. This programme links with high-level objective 6 and objectives 6.1 - 6.5 on page 50. To achieve the purpose of this programme, the actions listed in the table below will be implemented.

CULTURAL HERITAGE MANAGEMENT PROGRAMME					
High-level objective: To effectively manage the preservation and presentation of the diverse historical and cultural resources associated with the park through compliance with relevant legislation, identification, research and responsible utilisation, for the benefit of society.					
Objective: To compile and maintain a comprehensive inventory, and grading of all cultural heritage resources, inclusive of oral history through continuous identification and effective documentation.					
Objectives	Actions	Responsibility	POE	Timeframe	Reference
To improve the understanding of the CH landscape of the park.	Synthesise all stakeholder and expert inputs, and incorporate into work plan.	SED, SS	Report	Year 1	
	Map existing and newly discovered cultural heritage sites, maintain and update database.	SED, SS	Database	Ongoing	
	Document oral history in relation to known sites in the park (Babalala-Gumbandevvu-Dzundzwini-Tshokwane-Freedom Fighters route-Chief Mattafin).	SED	MoU, Reports	Ongoing	
Objective: To conserve the tangible and intangible cultural heritage resources, through effective management.					
To manage CH sites and collections in accordance with legislation and minimum standards.	Update existing (Thulamela) and write new individual (Masorini, Albasini, Shikumbu, Chief Nyongane grave, Andries Pretorius grave) and generic management (rock art trails, historical sites) plans for CH sites and CH collections (e.g. artefact, museums).	SED	Documents	Year 5	
	Develop and monitor implementation of CH sites - and collections management plans.	SED	Documents, reports	1 year, ongoing	
	Develop a Collections Security Plan.	SED, Corporate Cultural Heritage Unit	Document	Year 2	
	Upgrade collections storage facilities and apply for SAHRA repository accreditation.	SED, TS, Corporate Cultural Heritage Unit	Report, SAHRA accreditation application letter.	Year 7	
To nominate CH sites for National status.	Engage SAHRA to initiate grading processes, update Nomination Dossiers and site management plans and submit Dossiers for grading and declaration.	SED	Document	Ongoing	
Objective: To enable the access, interpretation, awareness and responsible use of heritage resources, including cultural assets and oral history, by broader society, through research, knowledge management, sharing and product development.					
To facilitate outreach and awareness through various mediums.	Develop and place interpretive material that enhances awareness of the African history of the park.	SED	Material	Ongoing	
	Facilitate access to the park for groups (including CH days), and engage with the media to enable experiential learning, share knowledge on CH.	SED	Reports	Ongoing	



CULTURAL HERITAGE PROGRAMME

High-level objective: To effectively manage the preservation and presentation of the diverse historical and cultural resources associated with the park through compliance with relevant legislation, identification, research and responsible utilisation, for the benefit of society.

Objective: To enable the access, interpretation, awareness and responsible use of heritage resources, including cultural assets and oral history, by broader society, through research, knowledge management, sharing and product development.

Objectives	Actions	Responsibility	POE	Timeframe	Reference
To develop new CH tourism products.	Development of rock art trails.	SED	Report	Year 5	
	Develop fund raising proposal for establishment of Thulamela Interpretation Centre and Museum	SED, Corporate Cultural Heritage Unit	Proposal	Year 2	
	Develop Cultural Heritage Tourism Packages (Guided and Self-drive Routes) and Linkages to SMME	SED, Corporate Cultural Heritage Unit	Document	Year 5	
To facilitate community access to and use of significant cultural sites.	Facilitate access to and use of sites of cultural significance, by local communities in order to conserve and enhance the cultural continuity of traditional rituals associated with the sites.	SED, RS	Reports	Ongoing	
To build staff awareness of CH.	Foster a better understanding of CH and its management and Indigenous knowledge systems by park staff.	SED	Staff CH awareness events	Ongoing	
To facilitate the second phase of excavation at Thulamela.	Invite proposals for a second phase of excavations at Thulamela Heritage site.	SED, Corporate Cultural Heritage Unit	Plans, Reports	Year 10	
Objective: To grow capacity to enable effective management of all cultural heritage resources by securing required human resources, developing appropriate skills, nurturing partnerships and encouraging research.					
To enhance the CH capacity of staff and support research.	Facilitate interpretation capacity building workshops for heritage sites guides.	SED	Minutes of meetings	Year 5	
	Enhance CH management capacity and facilitate human capital growth for museum curatorship.	SED, HR	New appointments	Year 5	
	Co-identify CH research themes based on management needs (relevant to all objectives).	SED, SS	Registered research proposals, research reports	Ongoing	
	Establish research partnerships with Universities and National Museums.	SED, Corporate Cultural Heritage Unit	Partnership Agreements	Year 5, ongoing	
Objective: To evaluate outcomes of management interventions by developing and reviewing implementation and monitoring plans.					
To apply SAM to all aspects of managing CH in the park.	Track and evaluate progress and impact made regarding all of the above.	SED	Reports	Ongoing	

10.7 Socio-economic development programme

The purpose of this programme is to play a significant, targeted and effective role in contributing to sustainable and responsible local economic development, economic empowerment and social development in communities and neighbouring areas.

This is new programme within SANParks and the Management Plan, a detailed implementation plan will be developed within the first year in support of SANParks strategic decision to expand its role in the developmental support provided to neighbouring communities as an entity of the developmental state. SANParks is committed to ensure that a broad base of South Africans participate and get involved in biodiversity initiatives, and that all SANParks operations have a synergistic existence with neighbouring or surrounding communities for their educational and socio-economic benefit, hence enabling the broader society to be connected to national parks.

Government has promised socio-economic transformation and stated that they are committed to eradicating poverty by creating opportunities where the poor become involved in productive activities. This applies especially to those residing in rural areas. The promotion of BBBEE in various sectors is part of government vision for the upliftment of the previously disadvantaged. The focus will be in integrating these people into viable sectors which should hopefully boost communities economically. Socio Economic empowerment is critical to meeting government development goals and will help to establish shared vision partnerships in the communities. With the right opportunities and essential business skills training, the communities will be empowered and understand mutually beneficial practises as well as the safeguarding of the sectors they are actively involved in.

Management of protected areas has increasingly recognised the need to re-define their identity and usher in the new ways of managing protected areas. They have moved out of the ‘island’ mentality of management and are looking at landscapes and seascapes as a whole, with the need to focus as much on their political, economic, and cultural aspects as on their crucial biological values. Protected areas have resources that can be used to unlock opportunities with substantial contribution to the socio-economic development of communities. Local communities have had long-standing traditions of conservation and restrained resource use, they thus have a wealth of traditional knowledge in conservation management and their involvement will provide the opportunity to restore and integrate this knowledge. SANParks’ socio-economic development programme is aligned to Governments’ National Development Plan and the National Biodiversity Economy Strategy (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). The park will partner strategically with the private sector, sector clusters and portfolio committees, and relevant government departments including the Department of Rural Development and Land Reform, DAFF, Local Municipalities, NGOs, and other key programmes partnering with viable agricultural development programmes that will support and unlock the economic potential of agricultural activities in rural areas adjacent and linked to the protected area network.

Several programmes are being implemented throughout SANParks to contribute to the development of local communities, including, waste management, social legacy, EPWP, Environmental Protection, Infrastructure Development, the wildlife economy and green 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. The establishment of viable ecotourism enterprises for the economic benefit of the local communities is another key area of 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 these local enterprises. By partnering with neighbouring district and local municipalities, various external donors and neighbouring local communities, the park has made good strides towards enabling previously disadvantaged individuals and small micro-medium enterprises (SMMEs) providing better access to park-related opportunities ranging from biodiversity conservation, alien species eradication (e.g. Working for Water) and arts and crafts to the concessions programme (outsourcing catering and transport services to neighbouring communities of the park).

Empowering young people is a national imperative. Acquiring skills will enable young people to drive the reconstruction and development of our country. SMMEs are critical drivers of job creation and, more broadly, economic growth in South Africa. Government has prioritised SMME development as one of the strategies for economic development and job creation. The SANParks Enterprise Development Strategy will take a long-term view and place its primary emphasis on facilitating youth access to the benefits that national parks present. A dedicated Youth Education and Development Programme will be implemented to raise awareness about conservation and build the capacity of young people to implement effective local programmes that will contribute to biodiversity management and job creation.



The EPWP is a nationwide programme and covers all spheres of government and state-owned enterprises. This programme provides an important avenue for labour absorption and income transfer to poor households in the short to medium-term. EPWP projects employ workers on a temporary basis under the Ministerial Conditions of Employment for the EPWP in four sectors. It specifically targets the creation of employment for poor, unemployed people who are either unskilled or poorly skilled. The programme provides basic income, albeit on a temporary basis while simultaneously achieving biodiversity objectives. SANParks has implemented EPWP projects since the late 1990's when the first WfW projects were implemented in some of the national parks, and has subsequently become one of the biggest implementers of the DEA programme. SANParks will continue to implement the EPWP programme; and will integrate and align it with operations to ensure proper monitoring and reporting. The Infrastructure Programme supports the use of potentially emerging contractors as per the Construction Industry Development Board guidelines for the implementation of construction projects in national parks.

SANParks acknowledges and supports the government's quest to correct the past imbalances of land rights. In trying to balance these two constitutional mandates, the Department of Land Affairs now the Department of Rural Development and Land Reform made a submission to Cabinet in 2008 to obtain approval for a joint government position regarding the settlement of restitution land claims in proclaimed protected areas, state forests under national government and World Heritage Sites. The park was part of the process to develop a beneficiation scheme which was developed as per Cabinet Memo. The claimants will not be given their land back but will benefit from opportunities identified within the beneficiation scheme. The scheme must be agreed upon by the claimants and thereafter they will be able to participate in the opportunities inside the park and also participate in opportunities identified through the Municipal Integrated Development Plan initiatives.

As a developing country, South Africa, exhibits typical associated challenges. There are communities, particularly in rural areas, without basic services such as clinics, water and sanitation, schools without the necessary infrastructure / equipment, high unemployment and low literacy levels. The majority of national parks are located in these rural areas which experiences the problems identified above. Communities living in these areas view SANParks as a catalyst for socio- economic development. National parks can therefore not grow in isolation without taking cognisance of the needs of the people living in the neighbouring communities. The SANParks social legacy programme contributes to government's mandate as well as the sustainable development goals on social development through collaboration with local municipalities, provincial and national government departments to contribute towards provision of much needed facilities and services in communities bordering national parks. A dedicated fund has been established to support the establishment of social investment projects in communities. The social legacy programme is used to develop and support sustainable programmes and projects that will have a long lasting impact in local communities. At present (2018), the fund is used to provide facilities which support education.

This programme links with high-level objective 6 and objectives 6.1 – 6.6 on page 50. To achieve the purpose of this programme, the actions listed in the table below will be implemented.

SOCIO-ECONOMIC DEVELOPMENT PROGRAMME					
High-level objective: To enhance regional sustainability through facilitating access to a range of economic opportunities and cascading benefits from the park by participating in and developing local economic initiatives, including the biodiversity economy.					
Objective: To facilitate the transformation of the wildlife sector through land access and support programmes for new emerging black game farmers.					
Sub-objective	Actions	Responsibility	Indicators	Timeframe	Reference
To ensure participation of emerging black game farmers within the wildlife economy.	Develop criteria and guidelines to inform feasible wildlife economy geographical areas, recipients and programmes, and review as required.	SED, CM, SS	Document	Year 1, review as required	Wildlife Utilisation Strategy, Resource Use Policy, SED Strategy
	Conduct baseline assessment through the gathering of relevant data to determine feasible wildlife economy programmes and implementation plan within the Greater KNP landscape, and review as required.	SED, CM, SS	Report, document	Year 1, 5, 9	Wildlife Utilisation Strategy, Resource Use Policy, SED Strategy
	Identify, develop and implement work plans, and continuously review.		Report, agreements	Year 1, ongoing	
	Identify and foster strategic partnerships, and review continuously.		Documents	Year 1, ongoing	
	Monitor and evaluate the socio-economic impact to the project beneficiaries.		M&E framework, report	As required	
Objective: To facilitate the transformation of the bio-prospecting sector through direct involvement of communities and traditional knowledge holders.					
To ensure participation of black emerging farmers within bio-prospecting economy.	Develop criteria and guidelines to inform feasible the implementation of the bio-prospecting programme, and review as required.	SED, CM, SS	Documents	Year 1	Bio-prospecting Strategy, SED Strategy, Resource Use Policy
	Conduct baseline assessment through the gathering of relevant information to determine feasible bio-prospecting programmes and implementation plan / targets within the Greater KNP landscape, and review as required.		Report	Year 1, ongoing	
	Identify, develop and implement work plans, and continuously review.		Documents, reports	Year 1, as required	
	Identify and foster strategic partnerships, and review continuously.		Agreements	Year 1, ongoing	
	Continuously monitor and evaluate the socio-economic impact of the programme.		Reports	As required	
Objective: To maximise job creation in local communities through the implementation of Expanded Public Works and Infrastructure Development programmes.					
To facilitate job creation in local communities through the implementation of EPWP and other infrastructure development initiatives.	Develop criteria and guidelines to inform feasible EPWP geographical areas, recipients and programmes, and review as required	SED, T, CM, SS,	Guidelines	Year 1, ongoing	SED strategy, Infrastructure Development Strategy and EPWP Strategy
	Conduct baseline assessment to determine feasible EPWP programmes and implementation plan/targets within the Greater KNP landscape, and review as required		Report	Year 1, ongoing	
	Identify, develop and implement work plans, and continuously review.		Work plan	Year 1, ongoing	



SOCIO-ECONOMIC DEVELOPMENT PROGRAMME

High-level objective: To enhance regional sustainability through facilitating access to a range of economic opportunities and cascading benefits from the park by participating in and developing local economic initiatives, including the biodiversity economy.

Objective: To maximise job creation in local communities through the implementation of Expanded Public Works and Infrastructure development programmes.

Sub-objective	Actions	Responsibility	Indicators	Timeframe	Reference
To facilitate job creation in local communities through the implementation of EPWP and other infrastructure development initiatives.	Identify and foster strategic partnerships, and review continuously.	SED, CM, SS	Agreements	Year 1, ongoing	
	Report on total number of job and SMME opportunities created, especially for youth and women.	SED, T, CM, SS	Report	Year 1, ongoing	
	Continuously monitor and evaluate the socio-economic impact of the programme.		Reports	Year 1, ongoing	

Objective: To ensure participation of emerging and qualifying micro enterprises through various initiatives.

To develop and implement a local enterprise support programme.	Develop a SMME framework, including criteria and guidelines to inform the local enterprise development programme.	SED, T, CM, SS	Framework	Year 1, ongoing	SED Strategy
	Conduct baseline assessment through relevant research to determine the status and feasibility of SMMEs in the broader multi-stakeholder environment.		Report	Year 1, ongoing	SMME Development Policy and Strategy
	Identify, develop and implement work plans, and continuously review.		Documents	Year 1, ongoing	
	Facilitate agreements / contracts between national parks and community based enterprises for supply of goods and services to the Park, and review continuously.	SED, T	Agreements	Year 2, ongoing	
	Identify and foster strategic partnerships, and review continuously.	SED, CM, SS	Strategic Partnership Agreements	Year 1, ongoing	
	Monitor and evaluate local economy enhancement.	SED, T, CM, SS	Report	Year 1, ongoing	IDP annual reports

Objective: To develop and implement a comprehensive environmental education and social legacy programmes that will address the needs of multi stakeholder groups.

To develop and implement comprehensive environmental education and social legacy programmes that will address the needs of multi stakeholder groups.	Develop selection criteria.	SED	Document	Year 1	SED strategy, Department of Education Building Specification Strategy. Infrastructure Development Strategy
	Identify, develop and implement work plan for annual approved projects, and continuously review		Document	Year 1, ongoing	
	Establish an approval committee.		Committee members	Year 1	
	Sign an investment support agreement.		Agreement	Year 1, ongoing	
	Continuously monitor assessment of the investment support.		Report	Year 1, ongoing	

SOCIO-ECONOMIC DEVELOPMENT PROGRAMME					
High-level objective: To enhance regional sustainability through facilitating access to a range of economic opportunities and cascading benefits from the park by participating in and developing local economic initiatives, including the biodiversity economy.					
Objective: To develop and implement a comprehensive environmental education and social legacy programmes that will address the needs of multi stakeholder groups.					
Sub-objective	Actions	Responsibility	Indicators	Timeframe	Reference
To develop and implement a comprehensive environmental education and social legacy programmes that will address the needs of multi stakeholder groups.	Develop criteria and guidelines to inform the approach and implementation of the Education and awareness programme within the broader multi-stakeholder environment.	SED, T	Guidelines	Year 1, ongoing	
	Conduct baseline assessment to determine the status of current education and awareness programmes within the Greater KNP landscape, and review as required.	SED, T, CM, SS	Report	Year 1, ongoing	
	Identify, develop and implement work plans, and continuously review.	SED	Documents	Year 1, ongoing	
	Identify, develop and formalise collaborative partnerships to leverage education, awareness, mentorship, training and career pathing opportunities, and develop relevant collaborative programmes.	SED, T, CM, SS	Agreements	Year 1, ongoing	
Objective: To facilitate and support the settlement and implementation of land claims in the park through the beneficiation scheme initiatives.					
To facilitate and support the settlement and implementation of land claims in the park through the beneficiation scheme initiatives.	Develop an implementation work plan.	SED	Document	Year 1	Beneficiation Scheme, Post land claim settlement agreement
	Establish individual land claimants trust accounts.		Company Account	Year 1, ongoing	
	Develop the communication strategy.		Document	Year 1, ongoing	
	Monitor and evaluate the beneficiation scheme and document lessons learnt.		Report	Year 1, ongoing	
Objective: To facilitate access and participation of communities in tourism opportunities created through the national parks system.					
To facilitate tourism access opportunities.	Develop and implement work plan, and continuously review	SED, T	Work plan	Year 1, ongoing	
	Identify Public Private Partnership for formalisation of Community Public Private Partnerships		Report	Year 1, ongoing	
	Implementation of BBBEE scorecard			Ongoing	
	Monitoring the implementation of BBBEE scorecard for benefit of emerging companies			Ongoing	
Objective: To leverage strategic business partnerships, and participate in economic clusters and planning processes.					
To leverage strategic business partnerships, and participate in economic clusters and planning processes.	Develop guidelines and criteria to inform SED priorities and programmes within the Greater Kruger, including alignment with internal and external programmes.	SED, CM, T	Document	Year, 1	
	Conduct a baselines assessment of economic profile and sector maturity within the Greater KNP footprint.	SED	Report	Year, 2	
	Identify and formalise partnerships with corporate and other stakeholders in support of the SED outcomes.	SED, T, CM	Document	Year, 2	



SOCIO-ECONOMIC DEVELOPMENT PROGRAMME					
High-level objective: To enhance regional sustainability through facilitating access to a range of economic opportunities and cascading benefits from the park by participating in and developing local economic initiatives, including the biodiversity economy.					
Objective: To leverage strategic business partnerships, and participate in economic clusters and planning processes.					
Sub-objective	Actions	Responsibility	Indicators	Timeframe	Reference
To leverage strategic business partnerships, and participate in economic clusters and planning processes.	Determine the value and contribution of the Greater Kruger protected area network to the local and regional economy, and leverage value added chains	SED, T, CM	Report	Year 3, ongoing	
	Participate in relevant local, provincial, national and regional socio-economic cluster and portfolio committees		Document	Year 3, ongoing	
To monitor and evaluate the impact of the implementation programmes, and adapt as required	Monitor and evaluate progress and impact against annual work plan targets and programme objectives.	SED	Reports	Annually	
	Adapt programme approach and feedback, and inform risk response strategy.	SED	Document	Annually	

10.8 Stakeholder relationships

Park management wishes to establish and maintain meaningful and beneficial relationships with a wide range of stakeholders, in a way as beneficial as possible to park values, objectives and various programmes related to the different core functions. The park prioritises building and broadening strong, long lasting support for conservation for greater sustainability through promoting co-operative, collaborative and mutually beneficial engagement opportunities. This need is driven partly by the park’s history involving forced removals and restricted access particularly by local stakeholders, pertinent in the current climate of land claims and illegal wildlife trade. The park strives to maintain existing relations, and identify and implement new opportunities for enhancing relationships with surrounding communities, all spheres of government and other stakeholders to ensure that local and regional initiatives and developments contribute positively to the attainment of the overall desired state and objectives of the park and the social ecological system within which it is embedded. Various programmes and projects implemented in and around the park aim to address this by fostering positive stakeholder relationships and establishing co-learning opportunities through environmental education and awareness.

Restoring people’s rights to access, and to benefit from and have ownership of conservation land and / or associated businesses, remains an important focus within constituency building. In cases where the existence of the park has had or continues, to have negative impacts on human well-being, efforts are made to ameliorate these in the most appropriate and effective way without compromising the conservation mandate, in engaging stakeholders on different levels and in diverse, context appropriate ways.

This section will seek to review institutional arrangements, strengthening and formalising partnerships in support of the values, mission, attributes and objectives of the Greater Kruger. A multi-sector stratification process will provide the framework of guiding such partnerships and joint implementation approaches, including the development of the necessary capacity to deliver on long-term sustainable outcomes. Such engagement will also seek improved cooperation with local government, Department of Health, Department of Education *etc.* on issues such as basic service delivery, population growth, service delivery strikes that impact on the park’s functions.

10.8.1 Environmental education and interpretation programme

The purpose of this programme is to build a long lasting conservation constituency for greater environmental sustainability 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 (EE) and interpretation has been adopted by 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 to environmental education within SANParks generally will take the form of organised and interactive activities which include:

- Formal EE Programmes: Target the formal education sector, directed at school groups visiting the park and learners in schools adjacent to the park. The programme enhances awareness and education among learners through the development of up-to-date materials on environmental conservation for incorporation into the school curriculum; and
- Non-formal EE Programmes: Implement community oriented initiatives addressing relevant socio-ecological challenges and targeting appropriate stakeholders including farmers, traditional leaders, landowners, women and youth. This programme has the primary objective to build the capacity of communities to support the conservation mandate through raising awareness and sharing of information about conservation issues and promoting action taking.

The EE programme currently is a major contributor towards transformation in the park with 90 % of participants being from ethnic groups that have been previously denied access. As the demand for educational experiences grew, so did the supporting staff compliment in the park, and of the 36 staff currently working within the People and Conservation Department, 13 work primarily on EE both inside and outside the park. The park has five EE centres, based in the major camps (Berg-en-dal, Skukuza, Satara, Letaba and Punda Maria) collectively hosting thousands of participants annually.

The day programmes are popular amongst visiting groups, who get free access to the park, game drives as well as engaging with qualified education and interpretation staff for between 1 – 3 hours at the EE centres. The day programmes provide a valuable role in facilitating access to the park for learners and community members from local villages and towns. In many cases, it is the learners' first time into the park, and they go home with a much better understanding of the park and its purpose, and with memories that they will have for many years to come. There is a need to evaluate the suitability of the learning material and the impact of this on their experiences and perceptions of the park and conservation. A further focus on day programmes going forward will be with KNP staff and their families, in order to build capacity of KNP staff as conservation ambassadors within the local communities.

Sponsored by the Department of Environmental Affairs and the Department of Basic Education, the Kids in Parks (KIP) Programme involves children and educators spending 3 days (and 2 nights) in the park. The project aims to enhance access to SANParks (for most learners this entails a first time visit to parks), strengthening the "environment" module within the national curricula, developing learner support materials aligned to outcomes-based education and contributing towards the ongoing professional development of teachers. The park has been hosting KIP since 2007, engaging annually with schools from previously disadvantaged backgrounds from local villages and towns.

Walk and Learn on the Wildside was introduced as part of the SANParks Week in 2008 and targets Grades 10 and 11 learners from neighbouring communities. The project exposes the learners to conservation and tourism related careers, management programmes, promotes youth buy-in for anti-rhino poaching campaigns (more recently), creates tourism awareness and promotes youth appreciation and visitation to the park.

The Junior Ranger programme is a volunteer programme where local youth are assisted to register as junior rangers, and are then encouraged to volunteer on conservation related projects in and around national parks. The objective of the programme is to inspire youth to value and engage in conservation in a positive way, and to encourage youth towards conservation related careers. Should funding become available, and with the necessary governance, the park will be able to begin to implement this important capacity and constituency-building programme.

The "Kruger to Kasi" project takes "the park to the People." It is an innovative awareness campaign targeting the communities adjacent to the park, providing local communities with direct access to information on what the park has to offer as well as promoting tourism, access to the park, the environmental education programmes, cultural heritage and information of the many economic empowerment opportunities.



Interpretation is a communication process designed to reveal meaning and relationships of our cultural and natural heritage through involvement with objects, artefacts, landscapes and sites. In the park, interpretation is diverse ranging from guided drives, trails and walks, information boards in camps, picnic sites and gates. Targeted interpretive centres at some camps include museums, environmental education centres and a library. These centres focus appropriately on both natural and cultural heritage and are used by staff, tourists and visiting school and community groups through direct programmes, self-guided observation, formal presentations and movies. Although several opportunities for both formal and informal interpretation are available, there is a need to develop more signage with relevant information on current conservation issues as well as CH.

The park has a close working relationship with the SHRs. Their vast expertise is utilised by the park to achieve the desired state. They contribute in the following ways, to name but a few:

- Support and assist in environmental education programmes;
- In-kind contributions and fundraising; and
- Participate in park operations when requested.

This programme has links with the Human Capital Management- and Stakeholder relationships programme.

A detailed lower level plan outlining the rationale and operational approach supports this programme. This programme links with high-level objective 7 and objective 7.1 on page 51. 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 build and broaden a strong, lasting constituency with society for greater environmental sustainability by creating meaningful mutual relationships through establishing reciprocal partnerships, establishing co-learning opportunities and communication that facilitates benefits and values from ecosystem services.					
Objective: To enable curricularised environmental learning opportunities using the park as an outdoor classroom by developing and managing curricula based programmes.					
Sub-objectives	Actions	Responsibility	POE	Timeframe	Reference
To use an EE framework including guidelines to guide curricula based EE programmes.	Develop a clear EE framework including programme guidelines to guide standardised lesson implementation aligned with curricula based EE practices and programmes.	SED	Documents	Year 5	
	Presentation of curricula based programmes at all EE centres in the park.		Reports	Ongoing	
	Establish/develop further linkage with curricula governed departments to ensure the success of the EE programmes.		Agreement	Year 2	
Objective: To enable non-curricularised environmental learning opportunities promoting park and environmental awareness using the park as an outdoor classroom by developing and managing relevant non-curricula based programmes.					
To use a framework and guideline document to guide and standardise non-curricula based EE practices.	Develop a clear EE framework and guidelines to guide the non-curricula based EE practices and programmes.	SED	Documents	Year 3	
	Presentation of non-curricula programmes at all EE centres in the park.		Reports	Ongoing	

ENVIRONMENTAL EDUCATION AND INTERPRETATION PROGRAMME

High-level objective: To build and broaden a strong, lasting constituency with society for greater environmental sustainability by creating meaningful mutual relationships through establishing reciprocal partnerships, establishing co-learning opportunities and communication that facilitates benefits and values from ecosystem services.

Objective: To support projects that address local environmental challenges within communities living adjacent to the park in order to build relationships and contribute towards sustainability (social, economic and ecological) in neighbouring areas by developing capacity and awareness for pro-environmental action.

Sub-objectives	Actions	Responsibility	POE	Timeframe	Reference
To govern the implementation and support of outreach action projects and awareness according to a framework and clear guidelines.	Develop a framework and guidelines that will enable the effective governance of project design, development and maintenance.	SED	Documents	Year 2	
	Develop and implement project plans in line with the outreach action project guidelines.		Documents	Ongoing	
	Review and develop enabling external partnerships to strengthen and expand environmental education and outreach programmes, strengthening programmes with outcomes targeting a range of pre-school, primary, and secondary school target groups.	SED, CS, CM, SS	Partnership strategy Programme Reports	Year 1, ongoing	
	Develop and strengthen multi-stakeholder mentorship and internship programmes (internal and external) as continuation of the outreach programmes, and through strengthening liaison with tertiary institutions.	SED, HCM	Internship programme Mentorship programme	Year 1, ongoing	
Objective: To implement environmental education and awareness programmes with staff and their families to enhance capacity, environmentally friendly action and opportunities for staff to play roles as conservation ambassadors within their own communities.					
To create conservation awareness within the staff compliment of the KNP.	Conduct staff awareness and environmental education programmes.	SED, SS, C	Reports	Ongoing	
	Implement holiday programmes with staff children.	SED	Reports	Ongoing	
Objective: To develop, manage and maintain interpretation facilities to maintain and grow positive EE experiences through appropriate mechanisms and support.					
To manage and maintain interpretation facilities toward a positive EE experience.	Manage and maintain interpretive facilities incl. elephant and rhino hall, Sasol exhibition centre.	SED	Reports	Ongoing	
	Inventorise display items at all EE and interpretation centres, and other sites (incl. new interpretation in camps).		Records, documents	Ongoing	CH LLP
Objective: To develop relevant support documentation and activities for the achievement of the EE objectives.					
	Identification of needs (SWOT analysis of existing programmes).	SED	Report	Year 2	
	Compile resource development guidelines.	SED, T	Documents	Year 2	
	To develop relevant EE resources to support programmes, based on EIE resource development guidelines.	SED	Resources developed and in use	Ongoing	
Objective: To evaluate outcomes of management interventions for cultural heritage by developing and reviewing implementation and monitoring plans according to a strategic adaptive management framework.					
To apply SAM to all aspects of managing EIE in the park.	Monitor and evaluate progress and impact against annual work plan targets.	SED	Reports	Annually	



10.8.2 Stakeholder engagement programme

The purpose of this programme is to establish and maintain meaningful and beneficial relationships with a wide range of stakeholders as beneficial as possible to park values, objectives and various programmes.

Stakeholder engagement between SANParks and society covers a range of different objectives, at various scales ranging from local to global. The NEM: PAA promotes the participation of local communities in the management of protected areas. It further contributes towards strengthening stakeholder-park relations by empowering stakeholders and local communities to participate in decision-making processes related to management and development issues in parks. SANParks has adopted an overarching park management approach to strengthen relationships with stakeholders in pursuit of the long-term “desired state” for the park. This requires continuous engagement with a range of stakeholders and sectors through various mechanisms. The park’s engagement with external stakeholders needs to be responsive to deal with issues beyond internal park operations, including the broader economic and integrated land use role of the park. The commitment to the incorporation of public opinion into park management is rooted in the recognition that (i) the park must serve a conservation-oriented subset of societal values and that (ii) it is inevitably situated within a broader landscape and context, which influences each other.

SANParks has a mandate to conserve biodiversity and to promote the associated conservation values. Stakeholders also have an interest in the park and how it affects the surrounding and interested community and their activities. It is acknowledged, that the sustained vibrancy and legitimacy of the park depends upon stakeholder understanding, support and involvement. For this reason, the park management wishes to engage stakeholders in an ongoing way. This is also the motivation for establishing a SANParks mandate and thereby investing in stakeholder engagement and public participation processes.

The park’s Stakeholder Engagement Strategy guides the process in engaging the stakeholders in all the aspects of the park management objectives. Co-operative partnerships pertain to many levels of stakeholders including all three levels of government, international and national agencies (including conservation and development NGOs and research institutes), business partners, local communities, employees, tourists and the media. Stakeholder engagement and co-operative partnerships are facilitated through a range of informal and formal structures. The park strategically and operationally participate at National, Provincial and local level, Traditional authorities and CPAs, several water management and - river forums, a range security clusters, local and regional tourism operators / partners, several community and youth for a, a range of conservation authorities and entities, the UNESCO MaB and GLTFCA, agricultural, commercial and retail sectors in the local and regional landscape, conservation, education and health NGOs, local and international training and research institutions, media houses, *etc.* In the context of this plan, the focus is on promoting co-operative partnerships at a local and regional level through various existing and new park engagement structures and processes. The developed an initial Stakeholder engagement plan, to be reviewed on a continuous base, to ensure responsiveness to emerging matters. This requires that departments understand their stakeholders, and how it is aligned between the respective functions to better synergise actions. Stakeholders are categorised as Strategic partners, Key interest groups, Primary and Secondary stakeholders. This forms the basis for stakeholder engagement for a range of programmes (including understanding geographical reach), based on the parks’ jurisdiction (mandate of SANParks and KNP); area of influence (issues of mutual interest between SANParks-KNP and co-operative partner(s)); and issues of interest (broader information sharing).

The park furthermore engages with neighbouring communities primarily through community forums representing relevant stakeholders for each of the 7 geographically-distinct community forum areas. Community forums provide a platform for communication between the park and its neighbours on issues that are of mutual interest. The forums vary considerably in terms of whom

they represent (number of Traditional Councils and villages) but in theory they represent all neighbouring communities adjacent to the park (on the South African side). Although the forum concept was started by the park, the fora are governed by their own constitutions and a communally elected committee comprising of a chairperson, deputy chairperson and secretary. Attendance at the various forum meetings differs, based on geography, meeting locations, incentives, topical issues and logistics. The forums that deal with issues directly pertaining to livelihoods of neighbouring communities tend to have better attendance than those who represent people who are not directly affected by the park or its fence. The People and Parks Forum facilitates the building of constituencies in support of the natural and heritage conservation goals of the park whilst ensuring that all stakeholders have a voice on issues of interest.

A detailed lower level plan outlining the rationale and operational approach supports this programme. This programme links with high-level objective 7 and objective 7.2 on page 51. To achieve the purpose of this programme, the actions listed in the table below will be implemented.

STAKEHOLDER ENGAGEMENT PROGRAMME					
High-level objective: To build and broaden a strong, lasting constituency with society for greater environmental sustainability by creating meaningful mutual relationships through establishing reciprocal partnerships, establishing co-learning opportunities and communication that facilitates benefits and values from ecosystem services.					
Objective: To build positive relationships with society by facilitating effective engagement and linkages in order to share conservation benefits through partnerships.					
Sub-objectives	Actions	Responsibility	POE	Timeframe	Reference
To build and strengthen stakeholder relationships supportive of the park's mandate.	Develop a stakeholder and sector analysis / profile and overarching stakeholder engagement plan.	CS, all departments	Document	Year 2	
	Develop strategic partnerships in support of the core functions and associated programmes, and review engagement mechanisms and impact of programmes and partnerships periodically		Document, reports	Year 1, 3, 5, 7	Stakeholder Engagement Plan
	Continuously inform the Communication Strategy and develop a range of communication media to ensure effective knowledge transfer.		Document, reports	Ongoing	
	Develop capacity in support of strategic stakeholder engagement, formalisation of agreements and sector alignment	CS, all departments	Documents, reports	Year 2	Regional integration LLP
	Conduct annual roadshows and AGMs with targeted stakeholder groups.	CS, all Departments	Roadshows, reports	Annually	
	Encourage and support attendance and effective governance of meetings for existing forums.	SED	Minutes	Quarterly	Community Forum ToR, People and Parks ToR, Governance dashboard tools
	Review, align and establish new community and issued based forums where appropriate.		Forum TOR, Minutes of meetings	Year 2	
	Develop and review guidelines to support meaningful volunteer programmes, and develop a work plan to support the implementation thereof.	HCM	Documents	Year 2	



STAKEHOLDER ENGAGEMENT PROGRAMME

High-level objective: To build and broaden a strong, lasting constituency with society for greater environmental sustainability by creating meaningful mutual relationships through establishing reciprocal partnerships, establishing co-learning opportunities and communication that facilitates benefits and values from ecosystem services.

Objective: To build positive relationships with society by facilitating effective engagement and linkages in order to share conservation benefits through partnerships.

Sub-objectives	Actions	Responsibility	POE	Timeframe	Reference
To continually promote access to benefits by exploring opportunities, facilitating engagement and promote linkages that enable capacity building and beneficiation.	Initiate and facilitate awareness meetings regarding identifying business and benefit opportunities.	SED, TS, FS, SS	Reports	Ongoing	
To identify and facilitate appropriate partnerships at various levels that contribute to effective community level benefit sharing.	Review Shangani gate engagement and project development plan in consultation with relevant stakeholders.	SED	Documents	Year 1	
	Explore and facilitate partnerships towards more effective benefit sharing.	SED	Documents	Ongoing	
To strengthen collaboration and partnerships at the strategic level	Develop a Strategic Partner Plan with Corporates and NGOs, pertaining various themes in support of the core functions e.g. youth-, environmental education-, tourism-, conservation-, socio-economic development-, funding raising-, safety and security-, cultural heritage programmes.	ME: KNP, CM, SED, BDU	Document	Year 2	
	Identify strategic platforms for engagement, and strengthen capacity and participation in these platforms.		Report	Year 1	All LLP
	Participate in relevant Macro-policy, socio-economic clusters, and National Joint Committee / Portfolio committees and processes.		Minutes of meetings, reports	Ongoing	
	Develop, review and implement a SEA for the park, through multi-institutional collaboration.	ME: KNP, CM, SED	Document	Year 3, as required	All LLPs

STAKEHOLDER ENGAGEMENT PROGRAMME					
High-level objective: To build and broaden a strong, lasting constituency with society for greater environmental sustainability by creating meaningful mutual relationships through establishing reciprocal partnerships, establishing co-learning opportunities and communication that facilitates benefits and values from ecosystem services.					
Objective: To build positive relationships with society by facilitating effective engagement and linkages in order to share conservation benefits through partnerships.					
Sub-objectives	Actions	Responsibility	POE	Timeframe	Reference
To strengthen collaboration and partnerships at the strategic level	Develop and implement a Strategic Business Plan to unlock corporate support and enhance PPP and CPPPs, and review as required.	ME: KNP, SED	Business plan Reports	Year 3, as required	ALL LLPs
To review institutional arrangements to harmonise alignment and to leverage enabling partnerships.	Review internal and external institutional arrangements such as formally constituting community park forums, and alignment with the People and Parks forum, and periodically review.	ME: KNP, CM, SED	Report	Year 1, 6, 9	GLTP Treaty NDP PGDS
	Develop guidelines to inform institutional arrangements within the GLTFCA/Greater KNP, in support of cluster/nodal implementation approaches	ME: KNP, CM, SED	Documents	Year 1	
	Formalise the GLTFCA Co-operative Agreement, operational implementation structures and associated Trust / Endowment fund	ME: KNP, CM, LS, SED	Documents	Year 1	
	Develop a Greater Kruger Integration Development plan and guidelines to inform and formalise GLTFCA Integrated land use sector Agreement and enabling operational structures	ME: KNP, CM, LS, SED	Document	Year 2	
To monitor and evaluate the impact of the implementation programmes, and adapt as required	Monitor and evaluate progress and impact against annual work plan targets and programme objectives.	CS, all departments	Reports	Annually	
	Adapt programme approach and feedback, and inform risk response strategy.	CS, all departments	Documents	Annually	

10.8.3 Promoting access programme

The purpose of this programme is to promote visitation to the park specifically by neighbouring communities in the spirit of historical redress.

Park visitor numbers have grown exponentially since its establishment in 1926, with almost 2 million people visiting the park in 2016 / 2017. Despite changes in access policies regarding visitor demographics in the early 1990's, the legacy of restricted access remains a challenge today, with thousands of local residents still not having ever visited the park. In an attempt to address this, the park has initiated a number of processes that enable local residents' easier access to the park, either free of charge, or at a reduced rate.

All environmental education and awareness programmes held inside the park include free entry for participants (learners, educators and community members from special groups). In addition, staff members are issued permits that allow free access for family and friends. People attending meetings or conducting official business in the park are allowed free entry as are local community members who are either members of community forum executive committees, Traditional Councils (TC) (each TC has permission to access the park for free, together with 4 accompanying persons per visit), or that have land claims to certain areas of the park. A number of permits are given out each year to allow local community members to



access to the park for cultural or spiritual reasons including visiting ancestral land and ancestral gravesites. The park acknowledges the important role of traditional leadership specifically in terms of social mobilisation and encouraging public participation, an important requirement for rural development in the areas adjacent to the park. As such, the park aims to nurture relationships with local Traditional Leadership both in forum settings as well as when engaging the communities on issues relating to the park.

SANParks has been opening its doors for a full working week during the month of September, at no charge for South African day visitors (certain conditions apply). The celebrations are linked to the globally celebrated National Parks Week, and are aimed at promoting access to parks and celebrating their diversity and value. Not only are South Africans allowed to enter at no charge, using their own transport, but in addition, SANParks arranges to facilitate access to local learners where possible by assisting with transport for day visits. The programme includes a variety of conservation related activities that aim to create awareness of the role of conservation.

The half-entry permit enables the permit-holder (local community member) to access the park at half the standard entry fee. A maximum of 14 people from a single village can access the park per day using a half entry permit, however the permits are only valid on days that do not fall on a public holiday, or during school holidays. Although not yet currently in operation, a community Wildcard is being investigated which will allow for local communities to pay a reduced rate for a Wildcard that will enable unlimited entries to the park on an annual or lifetime basis.

A number of small-scale resource utilisation projects provide the opportunities for community members to access the park at no charge to harvest certain natural resources under controlled conditions. For many resource harvesters, these are their first visits into the park, and in most cases their experience is positive, being able to see first-hand what happens beyond the fence line in addition to taking home a tangible product.

A detailed lower level plan outlining the rationale and operational supports this programme. This programme links with high-level objective 7 and objective 7.3 on page 51. To achieve the purpose of this programme, the actions listed in the table below will be implemented.

PROMOTING ACCESS PROGRAMME					
High-level objective: To build and broaden a strong, lasting constituency with society for greater environmental sustainability by creating meaningful mutual relationships through establishing reciprocal partnerships, establishing co-learning opportunities and communication that facilitates benefits and values from ecosystem services.					
Objective: To promote visitation to the park specifically by neighbouring communities in the spirit of historical redress, through promoting free and facilitated access, and creating awareness and appreciation for the value of the park and conservation to broader society.					
Sub-objectives	Actions	Responsibility	POE	Timeframe	Reference
To promote structured visitation to the park by enabling facilitated and free access to the park.	Facilitate free entry for school and community groups as part of EE programmes based at the 5 EE centres.	SED, T	Reports	Quarterly	EE LLP
	Facilitate access to local community members during SANParks week (including school groups, in some cases arranging transport).		Reports	Annual	EE LLP
	Facilitate local community access to sites of cultural or spiritual significance inside the park		Reports	Quarterly	

PROMOTING ACCESS PROGRAMME					
High-level objective: To build and broaden a strong, lasting constituency with society for greater environmental sustainability by creating meaningful mutual relationships through establishing reciprocal partnerships, establishing co-learning opportunities and communication that facilitates benefits and values from ecosystem services.					
Objective: To promote visitation to the park specifically by neighbouring communities in the spirit of historical redress, through promoting free and facilitated access, and creating awareness and appreciation for the value of the park and conservation to broader society.					
Sub-objectives	Actions	Responsibility	POE	Timeframe	Reference
To promote structured visitation to the park by enabling facilitated and free access to the park.	Facilitate structured access to and participation in <i>ad hoc</i> public events or meetings inside the park.	SED, T	Reports	As required	
	Facilitate structured access to the park to conduct issue based campaigns or environmental calendar days.		Reports	Quarterly	
	Facilitate structured access to the park by rightful owners of land inside the park.		Reports	As required	
	Facilitate structured access to the park to harvest natural resources.	SED, T, TS, CM, RS	Reports	Annual	Resource Use LLP
	Develop a protocol to guide new gate access requests, and evaluate applications.	SED	Document	Year 2	
To promote a greater local visitation to the park by enabling awareness of and access to the park at a reduced fee.	Facilitate awareness of and access to half-entry fee permits by local community members.	SED, T	Reports	Quarterly	
	To investigate the opportunity for a community wildcard that will facilitate community member access into the park at a reduced rate, and in so doing increase local visitation.	SED, T, CS	Community Wildcard	Year 5	
	Develop and review guideline, and implement programmes within this framework to provide broader access to targeted groups.	SED, TS, CS	Guidelines Programmes	Annual	
To monitor and evaluate the impact of the implementation programmes, and adapt as required	Monitor and evaluate progress and impact against annual work plan targets and programme objectives.	SED	Reports	Annually	
	Adapt programme approach and feedback, and inform risk response strategy.		Programme Risk response strategy	Annually	

10.9 Effective park management

Effective park management programmes (including daily, weekly, monthly quarterly and annual actions, reports and reviews) are geared to ensuring 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, objectives and actions that assist in effective park management such as environmental management, financial management (e.g. procurement, reporting), budgeting, maintenance planning, and monitoring compliance.

10.9.1 Environmental management programme

The purpose of this programme is to mitigate potentially negative environmental impacts of development and operational activities on the park through effective risk management and assessment, legislative compliance and the implementation of environmental management tools.

The park is required to practice sound environmental management in accordance with required standards of environmental best practice and compliance with legislation. A number of management tools are being used to develop and manage the park and form the basis of an environmental management framework.

In terms of section 24(2) of the NEMA, the Minister of the DEA has, identified activities that may not commence without authorisation from the competent authority NEMA: Environmental Impact Assessment (EIA) Regulations (2014). Further to the provisions of NEMA, the park will assess risk and implement



Environmental Management Plans (EMPs) and Environmental Management Programmes to guide all construction and operational activities that are not listed under NEMA as an activity requiring an EIA process. The precautionary approach will be applied as well as NEMA Section 28 (2) Duty of Care which imposes a general duty and obligation on every person to avoid pollution and environmental degradation.

The park will develop an Environmental Management System (EMS) to manage their operational impacts. Such a system will provide the framework for the formulation and implementation of proper impact management that are required for all activities within the park. The EMS will consist of seven elements namely:

- Identifying environmental aspects and impacts;
- Identifying legal and other requirements;
- Establishing objectives, actions and programmes;
- Training, awareness and competence;
- Operational control;
- Emergency preparedness and response; and
- Internal audit.

This programme links with high-level objective 8 and objective 8.1 on page 51. 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 and efficient 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	Indicators	Timeframe	Reference
To manage and reduce the impacts of park activities in accordance with legislation to prevent pollution and environmental degradation.	Make environmental legislation available to relevant staff.	CM, RS	Documents	Ongoing	
	Ensure that EIAs and specialist studies are completed for listed activities.		Documents, reports	As required	
	Implement internal environmental management programmes for non-listed activities / developments.		Documents, reports	As required	
	Monitor compliance and enforce requirements as set out in the Environmental Authorisation for listed activities; and environmental management programmes for non-listed activities.		Reports	As required	
To reduce the park's carbon footprint as a measure of environmental and climate change impact of its operations and activities.	Develop, implement and review an Environmental Management Systems to manage internal impacts.	CM, RS, TS	Documents	Year 2, ongoing	
	Develop and implement reduction programme related to single use plastics in all commercial operations.		Work plan	Year 2, ongoing	
	Develop and implement an Integrated Waste Management Plan with improved and effective recycling and waste recovery towards a zero waste goal.		Document	Year 1	

ENVIRONMENTAL 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 strive for best practise and ensure compliance with environmental legislation through improved governance and environmental risk management.					
Sub-objectives	Actions	Responsibility	Indicators	Timeframe	Reference
To reduce the park's carbon footprint as a measure of environmental and climate change impact of its operations and activities.	Environmental Auditing of rest camps and park operations in accordance with ISO14001:2015 Environmental Management Systems implementing corrective actions.		Audit reports	As per schedule	
	Adopting sustainable procurement principles by purchasing eco-friendly, biodegradable, energy efficient products.		Documents	Year 2, ongoing	
	Reduce energy usage through awareness, sustainable procurement and on-going growth and expansion of solar installations in the park.		Documents	Ongoing	
To ensure monitoring and evaluation of programme implementation and effectiveness.	Monitor, evaluate and review the programme, and inform relevant risk responses and adaptive management.	CM, RS, TS	Documents	Annual	

10.9.2 Risk management programme

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

In line with corporate governance best practices and as per the Public Finance Management Act, No. 01 of 1999 (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 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, which is practised as the responsibility of all. 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 the organisation 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 park level, the General Managers are 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 General Managers are in many instances, responsible for implementation of corporate initiatives, programmes, management plan and other projects that form part of the SANParks strategy to address or mitigate issues of risk. Similarly, the SANParks Strategic Plan and Annual Performance Plan must also be incorporated to ensure that strategic initiatives are achieved. 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. The park may also experience extreme environmental / weather conditions from time to time (*i.e.* droughts, floods, runaway fires) as part of the normal cycle. An appropriate response to each of these events will be drafted and revised as and when required.



Similarly, the General Managers needs to ensure that emerging issues of risk, that can jeopardise achievement of the park's (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 8 and objective 8.2 on page 51. 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 risk management systems by creating an enabling environment for the management of risk.	Draft a comprehensive Risk Management Plan for the park, review and update this plan on an annual basis.	RM, all departments	Document	Annually	CRMF
	Incorporate risk response based on the METT evaluation into the Risk Management Plan on a biennial basis.		Report	Biennially	METT report
	Draft and implement a comprehensive Risk Implementation Plan for the park, review and update this plan on a quarterly basis.		Document	Quarterly	CRMF
	Draft a risk assessment and Response Strategy for the park.		Document	Year 1	
	Quarterly review and update the park's Risk Response Strategy.		Report	Quarterly	
	Co-ordinate both internal and external audit programmes.		Reports	Annually	
	Co-ordinate follow-up audit on both internal and external audit outcomes.		Reports	Annually	

10.9.3 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 Other Public entity.

The Finance Division plays a supporting role to operations to ensure that park's operations and projects are supported and conducted in an efficient, cost-effective and responsible manner with sound financial management, and effective internal controls. The finance division also ensure that the financial accounting and administration activities are in compliance with the PFMA, Generally Recognised Accounting Practise, Preferential Procurement Policy Framework, National Treasury Regulations and organisational policies and procedures. All tender processes and procurement opportunities to local communities are guided by the SANParks policy framework.

The local Finance Division reports directly to the Office of the Chief Financial Officer in Pretoria while providing support to the Managing Executive: KNP.

The Financial management and administration support function entails the following activities:

- Budgeting management;
- Financial accounting;
- Financial administration;
- Asset management; and
- Supply Chain Management (SCM)

The Financial Division manages the consolidation of the annual budget for the park. The budgeting process includes both the operational budgeting for the park as well as the Capital Expenditure budget. Furthermore, monthly reporting on the actual budget performance against allocated budget for the period is provided. It's also responsible to guide and provide the necessary assistance with the budget process to all cost centre managers in the park. SANParks annual budget guideline informs a zero-based approach, which implies that every category must be critically assessed, evaluated before the budget is captured.

Financial administration entails the day-to-day processing of financial transactions such as processing and payment of invoices, account reconciliations, processing of debtors invoices, *etc.*

The park has a significant moveable asset (non-living) base with a book value of R 669.8 million. It is therefore critical that all the assets of the park are correctly accounted for. It is also critical that the assets are managed effectively according to the asset management policy and procedure.

All procurement for goods and services is done in accordance with the National treasury guidelines as per the PFMA and PPPFA. Due to the geographical location of the KNP, a warehouse is situated in Skukuza. The main purpose of the warehouse is to keep all essential commodities that are required by operations. As part of the park's contribution towards reducing carbon emissions, its' considering developing logistics hubs and warehouses at the Kruger - and Phalaborwa gates, thereby reducing heavy delivery vehicles driving into the park.

There are certain core functions and activities performed in the park that are dependent on external funding from different donors. This includes support through the EPWP and EPIP programmes for natural resource management and infrastructure development programmes; donor programmes in support of safety and security programmes; major international programmes supporting the regional land use and transboundary water resource management programmes; support to the environmental education and awareness programmes, and international funding to support key research programmes. The financial sustainability of these core functions and activities therefore need to be critically reviewed on an ongoing basis, since funding through these programmes and donations are most for the short-term, are not secured over the medium to long-term. This might pose a major financial burden on the park, if alternative funding sources are not secured. This requires that innovative mechanisms for financial sustainability be investigated to ensure that the core functions are maintained, including the increasing burden as result of the much required safety and security operations, the ability to respond to regional drivers and threats through the regional land use programme, and the commitment deliver tangible socio-economic development opportunities to communities.

The following challenges have been identified:

- The annual operational budget allocated is not sufficient to cover all operational costs;
- The budget methodology only allows for a percentage increase in annual budgets and is not considering any additional activities;
- The increase in the poaching activities resulted to an increase in operational costs of Ranger Services;
- The cost for the in-sourced fleet for the park;
- Reliance on manual activities of certain activities, such as the procurement of goods and services, filling station operations, *etc.*

This programme links with high-level objective 8 and objective 8.3 on page 51. 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 management and administrative support services through good corporate governance enabling the park to achieve its objectives.					
Objective: To ensure sound financial management and administration through proficient budget management, effective internal controls and compliance to corporate governance prescripts.					
Sub-objective	Actions	Responsibility	POE	Timeframe	Reference
To attain effective financial management.	Ensure less than 1% variance on cost of operations.	FS	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.	FS	Audit report	As required	
	Address audit findings.		Audit findings report	As required	
To grow revenue (Including alternative sources of revenue).	Identify new and align existing business opportunities within the commercialisation programme of SANParks.	FS	Opportunities identified	Ongoing	
	Identify possible external funding to supplement current income streams.		Funding proposals	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.	FS	Annual budgets	Annually	
	Provide monthly financial reports timeously by cost centre.		Reports	Monthly	
	Review the insurance schedule and submit to corporate.		Documents	Annually	
	Submit insurance claims as and when required.		Claims	As required	
To ensure proper asset and SCM.	Verify and manage assets registers.	FS	Asset register	Bi-annually	
	Assist with the procurement of goods and services.		Reports	Ongoing	
	Manage and maintain existing contracts for the supply of goods and services.		Register	Ongoing	
	Ensure sound management of vehicle fleet (i.e. logbooks, services, licencing, fuel management).		Logbooks, service records, fuel card statements	Monthly	
To ensure proper inventory management.	Ensure adequate stock levels at the warehouse.	FS	Reports	Monthly	
	Safeguarding of inventory in the warehouse.		Security measures implemented	Year 2, ongoing	

FINANCIAL MANAGEMENT AND ADMINISTRATION 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 ensure sound financial management and administration through proficient budget management, effective internal controls and compliance to corporate governance prescripts.					
Sub-objective	Actions	Responsibility	POE	Timeframe	Reference
To ensure and to improve financial sustainability.	Continuously establish external co-funding support to departments in support of the core functions, and consider in terms of the annual budgeting and risk management process.	FS, all Departments	Report	Annual	
	Establish and continuously review range of financial income streams and efficiency of exiting income streams assessed.	FS	Reports	Annual	
To ensure and to improve financial sustainability.	Analysis of cost effective resource allocation and spending in context of internal and external resource allocation, and recommend corrective actions.	FS	Reports	Annual	
	Explore innovative financial mechanism in support of financial sustainability.	FS	Report	Year 1, ongoing	

10.9.4 Human Capital Management programme

The purpose of this human capital management programme is to ensure that the park has an adequate human capital function to render effective conservation, visitor and supporting services, whilst also ensuring that it provides human capital development support to surrounding communities as per SANParks policy framework.

SANParks has developed corporate human capital policies, guidelines and procedures to guide the park and its workforce in an effectively organised structure while delivering the outputs of the management plan. The park views itself as an equal opportunity employer. This is achieved through non-discriminatory practices in the work environment, availability of equal opportunities for employees and prospective employees, respect for diversity and gender differences and is committed to upholding and implementing the Employment Equity Act No. 55 of 1998.

By adhering to corporate policies, guidelines and procedures the park will ensure that competent staff are 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 capital 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 making staff wellness programmes available 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 Capital and Administration Officers 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 need analysis and requirements for approval to Head Office. Compilation of training needs starts off with the 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 (2018) has 2,234 permanent positions and 113 employees that are on fixed-term contracts. In addition there are also 101 internships, conservation students and temporary workers.

This programme links with high-level objective 8 and objective 8.4 on page 51. To achieve the purpose of this programme, the actions listed in the table below will be implemented.



HUMAN CAPITAL 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 ensure sufficient and effective staff capacity to achieve management objectives by adhering to legislation, corporate human capital management 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.	HCM	Salary instructions	Ongoing	
	Ensure implementation of the prescribed disciplinary code and procedures.		Reports	As required	
	Conduct regular employment equity and skills development forum meetings.		Minutes of meeting	Quarterly	
	Fill vacancies with suitably skilled and experienced candidates within agreed timelines as per employment equity targets.		Statistics	Ongoing	
	Implement the succession plan.		Reports	Ongoing	
	Ensure all post are evaluated and graded.		Reports	Ongoing	
	Implement staff mentoring and coaching programme.		Reports	Ongoing	
	Develop human capital in the fields of tourism, conservation and administration through the internship programme.		Contracts	Annually	
	Develop human capital in the field of people and conservation and ecotourism by introducing tourism and conservation experiences to learners and community groups.		Learner and community groups addressed	Annually	
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.	HCM	Document, reports	Annually	
	Implement ABET Programme for internal employees.		Training register	Reports	
	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.		Documents	Ongoing	
	Conduct Workshops and Imbizos to ensure that staff is familiar with SANParks Policies including the KNP Code of Conduct.		Training schedule / register	Ongoing	SANParks Policies
	Participate in the internal and independent audit of human capital documentation.		Report	As required	
	Address audit findings.		Reports	As required	

HUMAN CAPITAL 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 ensure sufficient and effective staff capacity to achieve management objectives by adhering to legislation, corporate human capital management policies and guidelines.					
Sub-objectives	Actions	Responsibility	POE	Timeframe	Reference
To implement workplace wellness programmes.	Conduct wellness awareness workshops.	HCM	Workshops	Annually	Wellness Policy
	Provide private facilities within the park to enable employee's access to the wellness programme.		Facility	Ongoing	
	Identify and refer employees that require assistance through the employee wellness programme.		Number of referrals	As required	
	Invite professionals to the park to promote awareness on OHS and health issues.		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).		Registers	Annually	Wellness policy
	Administer injury on duty cases.		Report	As required	OHS Act Housing policy Wellness policy
	Administer staff housing.		Document	Quarterly	
	Provide access to clinics, early childhood development (ECD), school, recreational facilities, peer educator programme, emergency medical services.		Reports, registers	Monthly	
	Develop and roll-out the ECD plan for the park.		Document, reports	Ongoing	ECD Plan
	Register as a non-profit organisation with the help of National Development Agency (NDA).		Reports	Year 3	
	Develop a recreational plan and formalise the sport council that would oversee the different sporting codes.		Document	Year 2	
	Develop a facility plan for the various camps to inform feasible roll-out.		Document	Year 2, ongoing	
	Develop a peer educator ABED training plan to assist on wellness issues.		Document	Year 2, ongoing	Wellness policy
	Develop an emergency services plan and train Basic Ambulance Attendants as paramedics.		Document, reports	Year	Wellness and OHS Programmes
	Revamp the Clinic at Letaba camp to assist in reducing the sick leave.		Report	Year 3	Wellness policy
Promote access to clinics through external mobile clinics support to assist with primary health care.	Reports	Ongoing			
To manage labour relations matters and provide sound employee relations.	Handling of grievances, disputes, disciplinary matters and CCMA cases.	HCM	Reports	Monthly	Disciplinary and Grievance Policies and Procedures; and LRA
To create and maintain a sound working environment through fair and equal treatment of all employees and stakeholders to deliver SANParks strategic objectives.	Develop and implement innovative employee relations strategies to enhance industrial harmony and effective conflict resolution.	HCM	Minutes of meetings	As required	Labour Relations Policies
	Management of sound relationship between the park and labour unions.		Minutes of meetings	As required	Labour Legislation



HUMAN CAPITAL 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 ensure sufficient and effective staff capacity to achieve management objectives by adhering to legislation, corporate human capital management policies and guidelines.

Sub-objectives	Actions	Responsibility	POE	Timeframe	Reference
To create and maintain a sound working environment through fair and equal treatment of all employees and stakeholders to deliver SANParks strategic objectives.	Management of labour litigation.	HCM	Reports	Monthly	Labour Legislation
	Implement and manage Management and Shop Stewards committees.		Minutes of meetings	Monthly	Organisational Rights Agreements
	Ensure implementation of Labour Relations related training interventions to achieve effective employee performance, operational and service excellence, and sustainable growth.		Registers	Quarterly	
To develop and implement internship, learnership and volunteer programme for communities and target groups.	Facilitate the Internship and Learnership Programs and ensure that neighbouring communities benefit.	HCM	Programs	Quarterly	
	Review and develop guidelines to support the implementation of volunteer programmes in liaison with departments.	HCM, All departments	Document, programme	Year 2, ongoing	
To ensure monitoring and evaluation of programme implementation and effectiveness.	Monitor, evaluate and review the programme, and inform relevant risk responses and adaptive management.	HCM	Report	Annually	

10.9.5 Information and records management programme

The purpose of this programme is to preserve SANParks institutional memory by establishing a database of park information. Information and records management is applied to promote accountability, transparency and good corporate governance.

Management of parks requires that appropriate information is collected, preserved and made accessible to a range of internal and external stakeholders for the smooth running of operations at SANParks. The programme also seeks to manage knowledge generated so that it is used for the benefit of the organisation.

Information is not only essential to formulate effective long-term management objectives, plans, programmes 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, however, at all times SANParks shall hold the intellectual property right of all such information that is generated by any of its employees in their official capacities.

This programme links with high-level objective 8 and objective 8.5 on page 49. 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 and 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.	All departments	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.	CS	Access procedures	Ongoing	Corporate file plan and Records Management Policy
	Provide access to library and museum services.		Books available, cataloguing of library materials	Year 1, ongoing	Classification system
	Embark on a process to digitise old records in order to electronically preserve it.	All departments	Electronic files	Year 2	

10.9.6 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) are 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 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, airstrips, workshops and stores) and tourism (i.e. tourist roads and tracks, office facilities, staff housing, bulk services, public viewing points, bird hides, 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 highest possible standard. The total infrastructure footprint covers about 0.80 % of the total area of the park.

Management policies and procedures ensure that infrastructure is maintained, renovated, upgraded and replaced at the required intervals and specific 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 10-year maintenance plan addresses issues related to securing funding for upgrading, renovation / maintenance and replacement. Technical services continues to periodically review and assess performance in an attempt to align activities and allocate resources. The total estimated replacement value of the park’s infrastructure is R15.98 billion. There is a major shortfall in addressing the maintenance backlog, annual maintenance, upgrading and new capital development. The required infrastructure maintenance budget for 2017 / 2018 is R 141 million however, only R 43.23 million has been allocated. The Infrastructure Development Programme (IDP) funds are used to supplement the operational maintenance budget.

Detailed lower level plans outlining the rationale and technical detail supports this programme. This programme links with high-level objective 8 and objective 8.6 on page 51. 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 plan and design all new, upgrading and replacement projects and programmes by implementing all relevant legislation and approved design standards and principles.

Sub-objectives	Actions	Responsibility	POE	Timeframe	Reference
To plan and design all projects to comply with legislation, standards and client requirements.	Identify project needs, design specifications and compliance projects scope.	TS	Documents	Ongoing	IDP programme, CAPEX and OPEX
	Ensure all projects are designed according National Building Regulations and Building Standards Act No. 103 of 1977.		Documents	Annually	Technical services approval procedure
	Ensure all building infrastructure is built to prevent bat and mice infestation.		Reports	Ongoing	
To ensure sound contract and project management to enhance good governance	To appoint suitable staff, contractors and consultants who will implement projects in accordance with approved Contracts Management SOP		Documents	Ongoing	Supply chain and recruitment policy
To continue with the application of the sustainable Green Building Principles for all design works.	Apply specifications that comply with the Green Building Principles on all designs and planning of the infrastructure works.		Guidelines	Annually	Sustainable Design Guiding Principles document
	Investigation of the applicable rainwater harvesting methods and implement.		Report	Year 3	
Objective: To maintain and develop roads, boundary fences and dam infrastructure by implementing specific programmes.					
To ensure the implementation of the ten year roads and bridges and storm water drainage structures maintenance plan.	Reprioritise roads and bridges maintenance plan at the beginning of every financial year according to the budget allocation.	TS	Reports	Annually	Roads Maintenance Plan
	Identify and list all dams that are to be decommissioned and or require rehabilitation, and apply for licence to decommission dams.	CM	Reports	Annually	Legal compliance: Dam Safety Regulation notice No: R 139 of 24 February 2012
	Implement rehabilitation and routine maintenance.	TS	Reports	Ongoing	Dam Maintenance Monthly Plan
	Identify the dams that requires the safety inspections or evaluation as per regulation.		Reports	Annually	Legal compliance: Dam Safety Regulation notice No: R 139

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 plan and design all new, upgrading and replacement projects and programmes by implementing all relevant legislation and approved design standards and principles.

Sub-objectives	Actions	Responsibility	POE	Timeframe	Reference
To ensure the implementation of eastern boundary and internal fences maintenance plan, removal and or upgrading.	Identify sections of the fence to be upgraded or removed.	CM	Reports	Annually	MoU between DPW, DEA, SANParks
	Upgrading, removal and maintenance of the fence.	TS	Reports	Ongoing	
	Engagement with DAFF on the maintenance of the veterinary fence on the western boundary, a function of the Director of Animal Health, as required on a project basis.	State Veterinary Services, TS, BSP, RS, CM	Reports	As required	
To determine the condition of various infrastructure that requires intervention.	Appoint a consultant to conduct bridge and storm water drainage structures condition survey.	TS	Report	Year 5	
	Appoint a consultant to conduct road pavement condition survey.		Report	Year 2	
	Assess the roads that require the traffic modelling system.		Report	Year 4	
To upgrade and construct new infrastructure.	Seek approval for the proposed new roads and loops.	TS, CM, T	Report	Year 2	
	Construction of the new roads and loops.	TS	Report	As required	
	Review and implement broader infrastructure development and maintenance plan, including the camp master plans <i>i.e.</i> staff recreation, bomas.	TS, T, CM	Documents	As per plan	
Objective: To maintain and develop all electro-mechanical works and transportation management by implementing specific programmes.					
To ensure that electrical and mechanical equipment (including radio communication network) are effectively and timeously upgraded or replaced where necessary and complies.	Compile an inventory of all mechanical and electrical equipment in the park, determine replacement programme.	TS	Inventory	Year 1	
	Develop and implement annual maintenance schedule for all equipment and service intervals.		Schedule	Annually	
	Ensure that legal inspection / services are conducted accordingly.		Report	As required	
	Ensure licences where applicable are maintained valid.		Licences	Annually	
	Develop and implement annual maintenance schedule for all generators and service intervals.		Schedule	Annually	
To introduce and implement renewable energy programmes.	Assess and implement solar power at strategic areas.	TS	Assessment	Quarterly	
To manage fossil fuel usage.	Implement electrical energy saving programmes.	TS	Reports	Quarterly	
	Reduce usage of Diesel generators by implementing solar power.		Reports	Quarterly	



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 and develop all electro-mechanical works and transportation management by implementing specific programmes.					
Sub-objectives	Actions	Responsibility	POE	Timeframe	Reference
To ensure electrical, two way radio communication and mechanical equipment are serviced and maintained to acceptable standards.	Continuously improve skills, and knowledge of maintenance teams.	TS	Register	Annually	Manufactures recommended maintenance schedule.
	Develop and implement annual maintenance schedule for all equipment and service intervals.		Schedule	Annually	
To ensure that all vehicles in the park vehicle fleet comply with applicable legislation and comply with prescribed service intervals and are replaced accordingly.	Identify vehicles that need COF (Certificate of Fitness) once and twice per year, depending on the category of vehicle en ensure license renewals.	TS	Register	Monthly	National Road Traffic Act (Act No. 93 of 1996) + Regulations and Amendments National Road Traffic Regulations of 2000 NLTTA (National Land Transport Transition Act, 22 of 2000)
	Service all vehicles according to service / maintenance plan at prescribed intervals.		Records	Quarterly	
	Compile necessary documentation to keep record of i.e. km utilisation, inspection records annual vehicle replacement schedule budget.		Reports	Annually	Approved Replacement Cycle
To ensure that all vehicle accidents and incidents be investigated and damage repaired.	Ensure all accidents / incidents are reported, evaluated and repaired as per prescribed documentation.	TS	Reports	Monthly	Fleet Management Procedure
To provide effective scheduled staff and goods transport.	Determine effective transport schedules and provide sufficient vehicles and drivers to implement scheduled transport.	TS	Reports	Monthly	
Objective: To maintain and develop civil services and building works by implementing specific programmes.					
To ensure that all water purification plants infrastructure in the park is maintained to a desired state.	Document the scope of maintenance needs in accordance with relevant specifications to guide contractors.	TS	Documents	Annually	
To reduce water use in the park with 2% per annum.	Implement baseline for each water use group.	TS	Reports	Monthly, annually	
	Monitor surface and underground water abstractions.		Reports	Monthly, annually	National Water Act

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 and develop civil services and building works by implementing specific programmes.					
Sub-objectives	Actions	Responsibility	POE	Timeframe	Reference
To ensure relevant water operator training.	Provide training to all operators to obtain Class II water operator's certificates during the next 5 years.	TS	Register	Annually	National Water Act
To ensure that all potable water complies to SANS 241 and other legal requirements.	Implement water sampling and analysing programme.	TS	Results	Monthly	SANS 241
	Provide emergency water where required.		Report	Annually	
To ensure that all solid waste site infrastructure in the park is maintained and upgrade to a desired state.	Compile an inventory of all infrastructures in the park, and determine the extent of maintenance needed.	TS	Inventory	Year 1	
	Implement the 5-year rolling maintenance plan according to the annual maintenance and upgrade schedules.		Reports	Annually	
To reduce solid waste in the park with 30 % in the next 7 years.	Implement plastic container and packaging reduction programmes.	TS	Reports	Annually	Waste Management Plan
	Develop MoU with recyclable companies to purchase all recyclable products.		Reports	Ongoing	
To ensure that all sewerage plants infrastructure in the park is maintained and upgraded to a desired state.	Compile an inventory of all infrastructures in the park, and determine the extent of maintenance needed.	TS	Inventory	Year 1	
	Implement the 5-year rolling maintenance plan according to the annual maintenance and upgrade schedules.		Reports	Annually	
	Implement effluent sampling and analysing programme.		Results	Ongoing	
To ensure monitoring and evaluation of programme implementation and effectiveness.	Monitor, evaluate and review the programme, and inform relevant risk responses and adaptive management.	TS	Report	Annually	

10.9.7 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 and environmental asset protection.

This programme is aligned to the overarching SANParks Safety and Security Strategy. It outlines the safety and security principles applicable to SANParks environmental assets, staff, including Concessionaires / Contractors, all visitors visiting national parks, infrastructure and facilities including entrance gates and non-commercial border posts within the park.

Crime generally constitutes significant risk, and as such poses a major threat to an organisation such as SANParks ability to deliver on its mandate. This includes the successful protection of all assets (including natural, cultural and physical) under its custodianship as well as the products and services delivered to its customers. Any perception that it is unsafe to visit the park will affect the core pillars of SANParks.

There is generally a fine balancing act required between the rather intrusive nature of mitigating interventions to address the risks associated with safety and security programme and being able to ensure the expected safe environment and experience for visitors and their perceptions.



Research into the impact of safety and security related risks and the mitigation of such should be an on-going process to ensure alignment with the ever changing dynamics in this regard. The published results and recommendations of a research project titled “The Impact of Rhino Poaching on Tourism” carried out by the University of Pretoria in April 2016 is but one example of such valuable research on which to continue building.

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

- NEMA;
- NEM: PAA and Regulations;
- KNP Code of Conduct – Internal Park Rules;
- Safety and Security Strategy & Procedures;
- Criminal Procedures Act;
- Private Security Industry Regulatory Association Act (PSIRAA);
- Access Control Act;
- Firearms Control Act;
- Rhino protection plan and
- Park rules.

The Safety and Security Plan comprehensively addresses both the strategic and operational aspects of visitor and staff safety as well as environmental asset protection and area integrity. A SWOT analysis of issues affecting safety and security in the park has been developed and the resulting strengths, weaknesses, opportunities and threats have 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.

The park has a very good working relationship with the South African Police Service (SAPS), SANDF and other government agencies who along with SANParks form the lead components of the KNP Mission Area Joint Operations Centre (MAJOC) from where all joint operations relating to safety and security interventions in the park are planned, coordinated and monitored.

In addition to this a number of reactive measures have been developed, including immediate action drills, emergency procedures and evacuation plans. Information regarding these emergency procedures is available in the various tourism accommodation facilities. All staff must be familiar with the above procedures and will receive regular relevant training in this regard.

The overall poaching risk is high. The security of the park’s key species, particularly rhino and elephant are at significant risk due to the rampant nationwide wildlife crime. Key species protection plans have been developed to address the specific security needs in order to safeguard the park’s rhino and elephant populations.

Poaching activity involving the use of snares and poisons, which target indiscriminately, also pose a challenge and risk to wildlife. Certain plant species sought after for their medicinal qualities could also be at risk.

The threat and associated risks relating to trans-boundary international criminal syndicates involved with human trafficking, arms, vehicle and drug smuggling, making use of the Kruger National Park as a smuggling route is an ever present reality. To this end SANParks works closely to support the various projects, operations and interventions conducted by the SAPS and SANDF to curb these activities.

To meet the ever increasing threats and risks associated to safety and security within the park there has been a steady increase in both funding, personnel capacity, equipment, such as aircraft and supporting hi-tech technologies which are required to support the interventions necessary to deal with this.

A detailed lower level plan supports this programme. This programme links with high-level objective 8 and objective 8.7 on page 51. 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 ensure 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 employees as well as to ensure the protection and integrity of natural, cultural and physical assets and resources, by implementing a Park Safety and Security Plan.					
Sub-objectives	Actions	Responsibility	POE	Timeframe	Reference
To provide environmental asset protection for natural and cultural resources, infrastructure whilst improving capacity.	Implement SANParks Safety and Security Strategy.	RS	Report	Annually	Safety and Security Strategy
	Implement key species (as identified) protection plans, including baseline assessment, monitoring and protection.	RS, SS, CM	Report	Annually	
	Implement protection plans, including baseline assessment, monitoring and protection for identified non-key species <i>i.e.</i> snaring & illegal harvesting of wildlife & natural resources.	RS, VWS, State Veterinary Services	Reports	Annually	Protection Plans
	Conduct regular proactive and reactive interventions <i>i.e.</i> patrols and surveillance operations to ensure that area integrity is maintained.	RS, Wilderness Trails Guides, Guides	Report	Ongoing	
	Ensure that all law enforcement officers receive the appropriate advanced / specialised training in operational tactics, investigations & crime scene management <i>i.e.</i> tracking, poison crime scenes & advanced technology management.	RS, HR	Training records, reports	Ongoing	
	Align safety and security plan with the existing Park and species level intervention or implementation strategies & plans <i>e.g.</i> Rhino Management Strategy.	RS, SS, CM	Reports	Quarterly	Relevant Strategies & Plans
	Implement SoAIM process to assess area integrity management effectiveness and state of preparedness relating to safety and security.		Reports	Annually	
	Implement deception testing technology as a tool to support security related investigation processes.	RS	Records	Ongoing	Integrity Testing Policy & Procedures
	Conduct assessments and ensure monitoring of Concession operations in line with prescribed guidelines.		Reports	Monthly	
	Provide law enforcement officers with an all-inclusive legal support services.	RS, LS	Reports	Ongoing	
	Conduct assessments and ensure monitoring of Wilderness Trails and Guiding operations in line with prescribed guidelines	RS, T	Monitoring reports	Monthly	Wilderness Trails monitoring Programme



SAFETY AND SECURITY PROGRAMME

High-level objective: To ensure 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 employees as well as to ensure the protection and integrity of natural, cultural and physical assets and resources, by implementing a Park Safety and Security Plan.

Sub-objectives	Actions	Responsibility	POE	Timeframe	Reference
To provide environmental asset protection for natural and cultural resources, infrastructure whilst improving capacity.	Provide law enforcement officers with a comprehensive wellness programme	RS, HCM	Report on Wellness programme	Ongoing	Wellness support monitoring Programme
	Provide a comprehensive air reaction capability and support system to safety and security operations.	RS	Reports	Ongoing	Air Service Strategy and Procedures
	Provide a specialist K9 support and reaction capability to safety & security operations.		Reports	Ongoing	K9 Strategy and Procedures
	Research, develop and deploy appropriate detection technologies to enhance capabilities in safety and security operations.		Reports	Ongoing	
	Provide an effective environmental crime investigation and intelligence management capacity.		Reports	Annually	
	Ensure appointment and appropriate designation of Environmental Management Inspectors (EMI) status for law enforcement officers.		Reports	Ongoing	EMI status reports
	Ensure boundary and facility fence line integrity.	RS, TS	Reports	Ongoing	Infrastructure LLP
	Ensure boundary and facility fence-line integrity, upgrades & linkages to State Veterinary Service requirements.	RS, TS, State Veterinary Services	Reports	Monthly	Infrastructure LLP, Fence maintenance programme of State Veterinary Services
	Protect park Key Point Facilities.	RS	Reports	Ongoing	Key Point Security Plan
	Ensure Rapid Reaction capability.	RS	Reports	Ongoing	Incident Rapid Reaction Standard Operating Procedure
	Report environmental concerns in the adjacent KNP boundary areas.	RS, CM	Monthly reports	Monthly	SoAIM; Integrated land use & KNP Zonation Plans
	Ensure integration of access control systems with visitors' and staff entry system and Joint Operation Centre (JOC).	RS, T	Reports	Ongoing	
	Safekeeping of certain animal products.	CM, RS	Reports	Ongoing	

SAFETY AND SECURITY PROGRAMME					
High-level objective: To ensure 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 employees as well as to ensure the protection and integrity of natural, cultural and physical assets and resources, by implementing a Park Safety and Security Plan.					
Sub-objectives	Actions	Responsibility	POE	Timeframe	Reference
To provide adequate control over access to and movement within the park whilst ensuring and maintaining a safe and secure environment for both staff and visitors.	Ensure control of aircraft movement.	RS	Reports	Ongoing	Air Service Strategy and Procedures
To provide a safe and secure environment with due regard for the safety and security of people.	Demonstrate the importance of safety and security through awareness raising activities aimed at staff and visitors.	RS, CS	Reports	Ongoing	Visitor and Staff Safety and Security Awareness Plan
	Ensure regular Visible Policing Patrolling and Vehicle Check Point operations.	RS	Reports	Ongoing	Visible Policing Plan
	Provide advisory service - appropriate safety and security interventions for identified high risk work areas.		Reports	Ongoing	
	Available Emergency "Hot Line" incident reporting system.	RS, CS	Reports	Ongoing	Emergency "Hot line" Reporting Procedure
To develop a proactive relationship with safety and security authorities and alliance partners to assure quick and deliberate safety and security response actions.	Align safety and security plans and interventions with relevant State Safety and Security mechanisms and programmes at all levels.	RS	Reports, minutes of meetings	Ongoing	NATJOINTS, PROVJOINTS, MAJOC
	Improve overall park safety and security through regular interactions with relevant cross border stakeholders (National & International).		Reports	Ongoing	
	Formalise co-operative agreements for cross border cooperation - both National and International.		Reports	Ongoing	Cross Border Agreements and Protocols
	Participate in legislative and public review processes to promote safety and security.		Reports	Annually	Stakeholder Engagement Plan
	Engage in joint cross border operations according to agreements, both national & international.		Operational Reports	Ongoing	Joint Operations Plan
	Participate in resource use recommendations with neighbouring conservation authorities/areas.		Reports	Ongoing	Regional Integration LLP, Natural Resource Use LLP
	Align safety and security activities to accommodate collaborative operations with external partners, e.g. SAPS, SANDF, GKEPF, GLTP, GLC and relevant cross border authorities.		Minutes of meetings	As required	NATJOINTS, PROVJOINT, MAJOC, ANAC



SAFETY AND SECURITY PROGRAMME					
High-level objective: To ensure 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 employees as well as to ensure the protection and integrity of natural, cultural and physical assets and resources, by implementing a Park Safety and Security Plan.					
Sub-objectives	Actions	Responsibility	POE	Timeframe	Reference
To develop a proactive relationship with safety and security authorities and alliance partners to assure quick and deliberate safety and security response actions.	Participate in Problem Animal Control, DCA investigations, management actions as per protocols.	RS, CM, State Veterinary Services	Investigation Reports	Ongoing	DCA Policy
	Formalise agreement and participate in relevant operational forums with LEDET and the MTPA.	RS	Reports	Ongoing	Formal Agreements
	Participate in community based SED regional land use programmes such as GEF, BSP, & Khetha.	RS, SED	Progress Reports	Ongoing	SED & Regional Integration Programmes
To ensure monitoring and evaluation of programme implementation and effectiveness.	Implement Information management (capture and analysis) systems.	RS, IT	System	Ongoing	
	Monitor implementation of programme.	RS	Reports	Ongoing	
	Ensure Information Intellectual Property Rights are maintained according to SANParks Policies and Procedures.	RS, IT	Documents	Ongoing	IT Policies and Procedures

10.9.8 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, but is also 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 5 to 8 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 (2018/19 – 2022/23) will focus on the first three bullets as listed above. Phase two (2023/24 – 2027/28), will focus on the last three bullets as listed above.

This programme links with high-level objective 8 and objective 8.8 on page 51. To achieve the purpose of this programme, the actions listed in the table below will be implemented.

SAFETY, HEALTH, ENVIRONMENT AND QUALITY 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.	HCM, all Departments	Register	Year 2, ongoing	
	Identify legal and other requirements.		Register	Year 2, ongoing	
	Establish, implement and maintain programmes to mitigate identified hazards and risks.		Documents	Year 2, ongoing	
	Develop and implement standard operating procedures to manage identified hazards and risks.		Documents	Year 6, ongoing	
	Develop and implement emergency preparedness and response plans.		Documents	Year 6, ongoing	
	Conduct regular self-audits.		Reports	Year 6, annually	
	Support internal audits.			Year 6, annually	
	Support external audits.			Year 7, 9	

10.9.9 Communication programme

The purpose of this programme is to create and maintain a positive image for the park to all its stakeholders. It aims to provide key stakeholders, the public and staff with relevant and accurate information pertaining to the park’s operations, through media relations and events initiatives with the view to secure a good reputation for the park and SANParks as whole. This will be achieved through:

- External communications**
 Media relations shall ensure that the park is adequately and well presented in the media, both electronic and print in order to create and maintain a positive image for the organisation. This will be achieved by managing media coverage of contentious issues, educating the public about the park and emerging conservation issues and keeping conservation debates at the forefront of media coverage.
- Internal communications**
 Internal communication is important to facilitate an effective two-way communication process within an organisation. Employees as the Internal Stakeholders of the park have a right to information, therefore, the internal communications section exist to ensure that staff members, management and businesses operating inside the park are at all times well informed about the business activities, processes and new development in the park.

The programme is intended to ensure transparency and ongoing stakeholder relationship building. In line with the preservation of SANParks corporate memory, it seeks to establish the park’s database through information and records management; to promote accountability, transparency and good corporate governance. A future focus will be to build more capacity to engage on a meaningful basis with social media.

The Communication programme closely links with the Stakeholder Engagement programme, and is implemented in close collaboration with all departments and their associated programmes. This programme links with high-level objective 8 and objective 8.9 on page 51. To achieve the purpose of this programme, the actions listed in the table below will be implemented.



COMMUNICATION 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 build, maintain and constantly improve relations between the park and all its relevant stakeholders, both internally and externally using various mediums.

Sub-objective	Actions	Responsibility	POE	Timeframe	Reference
To develop a Communication plan as informed by the internal and external Stakeholder Engagement Plan.	Develop a communication plan based on the Stakeholder Engagement Plan, including the continuous review based on the respective internal and external programmes and stakeholder groups.	CS, all Departments	Document	Year 1, ongoing	KNP Stakeholder Engagement Plan Stakeholder engagement LLP
	Develop and disseminate a range of media products based on the respective internal and external stakeholder groups and programmes, and review continuously.		Media products	Ongoing	Communications Plan Stakeholder engagement LLP
	Strengthen collaborative multi-stakeholder partnerships and develop a joint Communication strategy and programmes on themes of joint interest.		Media products	Ongoing	Communications Plan Stakeholder engagement LLP
To inform the public through mass media about major developments or incidents that takes place in the park.	Issue relevant media releases and alerts and ensure timeous response to media queries.	CS	Media statements and alerts issued	Year 1, ongoing	SANParks Strategic Plan and APP Communications and Marketing Annual Plan Filming and Photography Protocol
	Write feature articles / opinion pieces on topical issues.		Articles published		
	Build and maintain relations with media houses across various platforms.		Updated Media database		
	Implement fact-finding media excursions for various topics or behind the scenes aspects.		Excursions implemented		
	Engage on social media platforms.		Online interactions		
	Develop capacity to meaningfully engage on social media matters and to evaluate impact.		Document		
	Administer and maintain photography and filming permits.		Number of permits issued		
	Ensure up to date online content on the SANParks platforms.	CS	Number of updates posted	Ongoing	SANParks Strategic Plan and APP Communications and Marketing Annual Plan Filming and Photography Protocol

COMMUNICATION 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 build, maintain and constantly improve relations between the park and all its relevant stakeholders, both internally and externally using various mediums.					
Sub-objective	Actions	Responsibility	POE	Timeframe	Reference
To facilitate a speedy flow of information between park management and staff using bulletins and internal newsletters, as well as to respond to general customer queries.	Develop an annual communication plan.	CS, HCM	Document	Annually	
	Timeously issue internal bulletins and information broadcast.	CS	Number of internal bulletins and information broadcasts issued	Year 1, ongoing	SANParks Strategic Plan and APP Communications and Marketing Annual Plan
	Ensure all staff members have access to information through communication forums and newsletters.		Newsletters published	Year 1, ongoing	
	To encourage line management to share and clarify fresh information.		Reports		
	Timeously respond accurately to queries both internally and externally.		Reports		SANParks Strategic Plan and APP Communications and Marketing Annual Plan
To improve the park's image amongst its stakeholders through the provision of well planned, managed and coordinated events.	Promote environmental calendar days, corporate and brand awareness events.	CS	Number of events executed	Year 1 and ongoing	SANParks Strategic Plan and APP Communications and Marketing Annual Plan
	Establish and maintain stakeholder engagement plan in line with SANParks protocol for Stakeholder Participation.		Number of Stakeholder engagement conducted		
	Update existing Stakeholder Database.		Completed database	Quarterly	
To monitor, evaluate, and review the Communication Programme.	Continuously monitor and evaluate the impact of the Communication plan, the support to various programmes, and adapt the Communication plan as required.	CS	Report	Annually	Communications Plan
	Inform the necessary revision of the Stakeholder Engagement Plan.		Report	As required	KNP Stakeholder engagement plan Stakeholder engagement LLP

10.9.10 Human wildlife conflict programme

The purpose of the programme is to promote greater awareness, transparent and efficient communication, consistency in decision-making, and a structured, professional and ethical approach to human wildlife conflict (HWC) management.

The management of HWC issues within the park (concerning Problem Animals) and adjacent to the park (concerning Damage-Causing Animals - DCAs) has been problematic ever since the park was first proclaimed, as it remains a contentious issue. Human-wildlife conflict is a worldwide occurrence which is likely to continue to escalate as protected areas are increasingly surrounded by developed and cultivated areas where humans and wildlife compete for space and resources. This situation arises when animals termed DCAs or Problem Animals pose a direct threat to the material and / or psychological well-being of people, simultaneously resulting in financial, social and ecological costs to conservation. A failure to address these issues adequately, according to Madden (2004) results in conservation efforts losing stability and progress, as well as the support of local communities. Therefore the management of HWC is a critical component of contemporary conservation. The terms DCA and Problem Animals are often used interchangeably by different management authorities in South Africa, in general referring to an animal or



group of animals that, in relation to humans, have proven to cause substantial loss to stock, wild animals, cultivated trees and crops, or other property, and which pose a threat to human life. In the SANParks context however, DCAs are animals escaping from and causing damage outside of park boundaries that need to be dealt with in terms of National Legislation while Problem Animals are managed within parks according to internal protocols.

Over time there has been an increase in the contact between visitors and animals, due to access and availability of food to animals directly in the form of littering or enticing animals to come closer to them or indirectly in the form of leaving food unattended. This has resulted in some animals particularly baboons and monkeys, being habituated and subsequently losing their fear of humans. This situation has also resulted in these animals acting aggressively to get their food directly from humans or from their storage facilities thereby causing damage in some cases to both humans and property. The human induced problem listed above has also caused other avian species e.g. glossy starlings *Lamprotornis nitens* and hornbills *Tockus spp.*, becoming a nuisance at rest camps and picnic spots, where they have become bold enough to raid food from plates while humans are dining.

The management of problem animals at local levels involves the 3-“man” local team (camp management, Section Ranger and camp maintenance) addressing all issues locally. The Section Ranger / Biodiversity Conservation Manager then responds to other interventions e.g. lethal strategies (if needed). The camp maintenance staff repairs damages immediately after detection. Ultimately, the Conservation Manager collates information from monthly reports and other stakeholders for record and future management actions and gives feedback on outcomes and management actions to local task team and relevant committees.

Responsibility for the management of DCAs, devolves to the provincial conservation authorities when the DCAs are not listed as a threatened and protected species in terms of the NEM: BA: Threatened and Protected Species (TOPS) Regulations. DCAs (such as lion, hyena, wild dog and elephant) which are listed TOPS species are managed jointly by the province and the management authority of the protected area from which the DCAs have escaped. An agreement setting out the terms and conditions for such management is signed by both the province and the relevant management authority. The conditions for payment of compensation for cases from April 2014 as outlined in the Protocol for Compensation of Livestock Deaths resulting from HWC will be an additional incentive for more responsible animal husbandry techniques which in turn will reduce the conditions under which HWC occurs (e.g. claims of livestock loss due to predators where the livestock were not herded at night will most likely not be considered for payment).

The reduced number of incidents over the past few years has been attributed to the DAFF (Directorate Animal Health) upgrading most of the western boundary disease control fence and the upgrading of certain hot spot areas along the western boundary fence which reduce predator insurgences into neighbouring areas. Challenges of permeability along drainage lines and hills however remain, and human induced fence line breakages driven by the illegal wildlife trade are increasing. Good quality and well-maintained electric fences remain the fencing standard for carnivore proofing in private game reserves, however they require an effective monitoring and maintenance system, which has proven difficult along the park's expansive western boundary. As a result, the fencing standard has shifted to the “I” Beam fence since 2008, which has been rolled out to various sections of the park. More recently, the employment of Environmental Monitors dedicated to HWC management provides the park with much needed additional human resources for effective fence line patrols, which shorten both the detection and reaction time to DCA and other fence insurgences in the north of the park. Furthermore, the Environmental Monitors living in the villages adjacent to the park, provide a valuable information gathering function regarding illegal activities.

In a further attempt to facilitate a more effective approach to HWC and DCA management, SANParks has set up MoUs with both MTPA and LEDET to enable collaborative approaches to DCA management. These agreements enable the park enforcement offices to operate in areas outside the park (which were previously outside of their formal jurisdiction), which in theory promotes a more effective detection and reaction time for DCA incidents, although capacity and resource limitations in the provincial conservation agencies do pose a continual threat to effective implementation.

This programme links with the Predation programme, Veterinary Wildlife Services Programme and Regional integration programmes.

This programme links with high-level objective 8 and objective 8.10 on page 51. To achieve the purpose of this programme, the actions listed in the table below will be implemented.

HUMAN WILDLIFE CONFLICT 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 develop a systemic understanding of the human wildlife interface and through appropriate interventions holistically manage and reduce the impacts emanating from human wildlife interactions.					
Sub-objective	Actions	Responsibility	POE	Timeframe	Reference
To effectively manage incidents of human conflict with animals inside the park and reduce the impacts associated with these human wildlife interactions through a range of holistic management practices.	Revise and update protocols, SOPs, indemnity forms, information brochures.	CM, RS, SS, T	Documents	Annually	
	Identify drivers / causes resulting in problem animal incidents and review existing drivers.	CM	Reports, minutes of meetings	Ongoing	
	Develop interventions based on a systemic understanding to adaptively respond to emerging drivers and incidents.		Documents	Ongoing	Risk Management
	Engage internal and external stakeholders to keep abreast of problem animal matters.		Minutes of meetings, reports, workshops	As required	
	Recommend resource use from problem animals as per wildlife management and resource use Protocols and Plans.	CM, RS, SED	Report	As required	
To develop an understanding of the human-wildlife interface, to better inform, support and monitor responsible land use management practices as pro-active approach to minimise the risk of human-wildlife interactions.	Review and ensure alignment with relevant Protocols, SOPs and Implementation Plans.	CM	Minutes of meetings, reports	Annually	
	Develop an understanding of the push-pull factors / drivers within various sub-regions of the adjacent Greater Kruger and review existing drivers.	CM, RS, SS	Report, articles	Year 3	
	Engage with livestock and crop farmers to implement responsible livestock and crop farming practices (through co-operative partnerships) to minimise risks associated with human wildlife interactions.	CM, SED	Programme	As per programme deliverables	
	Investigate, develop and continuously review a range of deterrent strategies to minimise human-wildlife interactions.	CM, RS, SS	Strategy, reports	As required	
	Develop and continuously review incentive framework that will promote responsible rangeland, cropping and conservation management practices.		Framework	As per programme deliverables	
	Maintain, continuously monitor and report on the fence condition to minimise the escape of DCAs from the park.	RS, DAFF	Reports	Ongoing	



HUMAN WILDLIFE CONFLICT 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 develop a systemic understanding of the human wildlife interface and through appropriate interventions holistically manage and reduce the impacts emanating from human wildlife interactions.

Sub-objective	Actions	Responsibility	POE	Timeframe	Reference
To develop an understanding of the human-wildlife interface, to better inform, support and monitor responsible land use management practices as pro-active approach to minimise the risk of human-wildlife interactions.	Review measures for the management DCAs, which should be aimed at preventing or mitigating recurring damage.	CM, RS, VWS	Documents	As required	
	Review the current range of stakeholder platforms dealing with HWC, strengthen community, conservation agency, veterinary, research, conservation area networks and NGOs to ensure a more holistic and cohesive overarching programme to HWC management.	CM, SED, VWS, State Veterinary Services, SS	Reports	Year 1	
To control DCAs that escape from the park (with mandated partners), through a range of interventions.	Record DCA incidents, and timeously assess and report on the severity of the damage and circumstances underpinning the incident.	RS, CM	Reports, DCA register	Ongoing	
	Implement a range of management responses as per legislation, policies, Protocols and DCA Norms and Standards.	RS, VWS	Reports	As required	
	Develop, review and / or amend guidelines for the translocation of DCAs only in exceptional circumstances in accordance to legislation, Policies, Protocols and guidelines.	CM, RS, VWS	Guidelines	Year 2	
	Respond to escaped animals where it might require intervention from a disease management perspective.	SSV, VWS, RS	Reports	Ongoing	
	Collate records from internal sources, affected communities, Conservation Agencies and State Veterinary departments.	CM, RS, SSV	Reports	Ongoing	
	Provide inputs into the National and International legal framework, including Norms and standards	CM, SS, RS, SED	Report	As required	NEM:BA
	To review, amend and provide inputs into the Internal policy framework, external institutional arrangements, the National and International legislative framework.	Review, develop, align and implement Agreements and Protocols.	CM	Documents	Year 3
Provide inputs into legal assessments, and respond to legal cases pertaining to DCA incidents.		LS, CM	Reports	As required	

HUMAN WILDLIFE CONFLICT 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 develop a systemic understanding of the human wildlife interface and through appropriate interventions holistically manage and reduce the impacts emanating from human wildlife interactions.

Sub-objective	Actions	Responsibility	POE	Timeframe	Reference
To strengthen good co-operative arrangements with respect to DCA management, including possible compensation as guided per relevant Protocols.	Review existing indicators and approach informing compensation, including consultation processes with a range of stakeholders and fora, and inform adaptive management approach and institutional alignment.	CM, SED, SS, State Veterinary Services	Reports	Year 1, as required	
	Consolidate information, including those of co-operative partners, to inform compensations.	SED	Reports	Year 2	
	Review the compensation protocol, principles and objectives informing compensation.	SED, CM, RS, SS	Documents	Year 2	
	Verify the compensation requests with the DCA register of incidents, State Veterinarians and associated assessments.	SED, CM	Reports	As required	
	Investigate alternative options to secure additional resources to support compensation process.	SED	Report	As required	
	Have regular meetings of the Compensation Committee to review cases paid.	SED, FS, CM, RS, RM	Database, Reports	Quarterly	
	Review and participate in range of committees and external programmes through which DCAs and its impact should be communicated, and monitor effectiveness of programmes.	SED, CS, RS, CM	Documents	As per agreements	
	Implement and / or participate in Environmental and awareness programmes.	SED	Programmes	Ongoing	
To effectively contribute to the HWC conflict knowledge base and applied research.	Facilitate processes with respect to HWC research, monitoring, adaptive management and knowledge transfer.	CM, RS, SS	Programmes	As required	
	Publish papers (including grey literature, popular) on Greater KNP studies.	SS, CM, RS	Publications	As required	
To monitor and evaluate the impact of human wildlife conflict interventions on environmental, social, economic and institutional/ legislative outcomes.	Monitor and evaluate the impact of Problem Animal and DCA management responses, and adapt as required.	CM, RS, SS	Report	Annually	
	Monitor and evaluate the impact of DCA compensation, and review the Protocol as required.	CM, RS, SS, SED	Report	Annually	
	Monitor and evaluate the impact of policy / institutional arrangements.		Report	Annually	

10.9.11 Disaster management programme

The purpose of this programme is to identify possible disaster risks, to prepare camp contingency and disaster management plans that provide risk mitigation plans, risk response plans and risk recovery plans. There are also early warning systems in place for droughts, floods, structural fires, veld fires and water contamination / river pollution / water borne diseases. The programme provides for the training of staff and provision of emergency procedures to manage disaster events *i.e.* droughts, flooding, infrastructure fires.

This programme links with high-level objective 8 and objective 8.11 on page 52. To achieve the purpose of this programme, the actions listed in the table below will be implemented.



DISASTER 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 ensure that all disaster situations that may occur in the park is addressed and managed through pre-determined contingency plans and pre-planned actions.					
Sub-objective	Actions	Responsibility	POE	Timeframe	Reference
To ensure appropriate preparedness.	Review park Disaster Management Plans and Camp Contingency Plans, update fire teams and test quarterly fire drills.	TS, all Departments	Documents	Quarterly, annual	
	Hold annual disaster meetings, planning and liaison with Provincial structures.	TS, all Departments	Minute of meetings	Monthly, quarterly, annually	

10.9.12 Veterinary wildlife services programme

The purpose of this programme is to provide guidance for effective veterinary and operational support in order for the park to achieve its conservation management objectives.

This support includes wildlife sales, animal movements between national parks and international translocations, implementing strategic research projects, disease monitoring and investigation, and clinical management of injured animals. Research has been supported by the creation and management of a biobank. The Veterinary Wildlife Services (VWS) unit will also be required to focus on detecting and managing increased interface disease threats, enabling the wildlife economy programme, promoting and funding veterinary research in response to strategic requirements, improving the biobank biosecurity and income generation through bio-prospecting, and development of novel strategies to promote wildlife sales. VWS will continue to support conservation efforts within South Africa and Africa through the translocation of endangered species, and transfer of specialist knowledge and expertise.

The park's shape and size (2 million ha) is a major challenge in delivering veterinary support to all Ranger Sections, especially in the North. The VWS section requires additional veterinary capacity to adequately support SANParks conservation objectives over the next couple of years. Additional capacity requirements include the appointment of an additional full-time specialist wildlife veterinarian, increasing veterinary support staff capabilities, and developing a PDI post-graduate veterinary training programme in collaboration with the Veterinary Faculty of the University of Pretoria. This training programme will provide long-term capacity and underpin the VWS veterinary succession strategy. Veterinary capacity will be further strengthened by formalising agreements with State Veterinarians based at Skukuza and adjacent to the park, to provide emergency support on request.

This programme links with high-level objective 8 and objective 8.12 on page 52. To achieve the purpose of this programme, the actions listed in the table below will be implemented.

VETERINARY WILDLIFE SERVICES 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 ethical and professional veterinary and wildlife services by providing capture, holding, translocation and research initiatives pertaining to wildlife.					
Sub-objective	Actions	Responsibility	POE	Timeframe	Reference
To provide support to SANParks, whilst strengthening enabling institutional partnerships.	Conduct and support research on veterinary and wildlife management aspects of importance to SANParks and national and international science communities, through promoting enabling partnerships.	VWS, SS	Reports, publications	Ongoing	
	Conduct disease monitoring, investigation and management for key wildlife species for a range of diseases, determining normal biological parameters in free-ranging animals, and investigating population dynamics and ecology using molecular technology.		Reports, publications, documents	Ongoing	
	Develop capacity and implement procedures for long-term storage of biological samples to promote research and possible bio-prospecting.	VWS, LS, SED	Reports	Ongoing	
	Periodically review and improve capture techniques and captive management of wildlife.		Documents	Ongoing	
	Respond to operational issues, such as injured animals, DCA incidents, and provide support to animal off-take operations.	VWS, RS	Reports	Ongoing	
	Provide support for wildlife translocations as per SANParks strategies.	VWS	Documents, reports	Ongoing	
	Plan and implement the necessary veterinary and operational activities to complete the annual wildlife management plan.	VWS, RS, CM, SS	Documents, reports	Ongoing	
	Advance knowledge of wildlife management and veterinary science through training staff, students, and sharing information with professional colleagues and the public.	VWS	Publications, reports, minutes of workshops / seminars	Ongoing	
To ensure monitoring and evaluation of programme implementation and effectiveness.	Monitor, evaluate and review the programme, and inform relevant risk responses and adaptive management.	VWS	Report	Annually	

10.9.13 Climate change programme

The purpose of this programme is to understand and recognise climate change effects in the park and its cascading consequences on biodiversity.

For the purpose of this document, climate change refers to a significant and long-lasting shift in normal weather conditions that affects average conditions as well as the occurrence of extremes. Current climate change is thought to be brought about due to increased earth surface temperatures, often referred to as Global Warming, that are accelerated as a result of human-induced or anthropogenic activities which release greenhouse gases.



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, Cancun Agreement and the Paris Agreement. 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 by undertaking climate change adaptation research and scenario planning for South Africa.

It is critical that the park recognise that it can play an active role in contributing to the global effort to stabilise greenhouse gas concentrations and effectively manage and / or mitigate climate change impacts. There are certain risks that climate change poses to the park. According to the SANParks Global Environmental Change Assessment compiled by van Wilgen and Herbst (2017), it is predicted that by 2050, the park could face temperature increases of between 1.3 °C (best case scenario), 2 °C (intermediate) and 2.5 °C (worst case scenario). These temperature increases could have implications for plant and animal health (e.g. through heat stress, reduced herbivory tolerance or susceptibility of plants and animals to disease), activity and movement patterns of animals, game viewing opportunities, and for the comfort and requirements (e.g. air conditioning, water use) of tourists. Climate change, and in particular extreme events, could have a major negative impact on tourist experience, visitor numbers, tourism products and infrastructure since the tourism industry is quite fragile and dependent on the environmental state of a region (Uyarra *et al.*, 2005). According to Mathivha *et al.* (2017), the park experienced 10.5 % less tourists during the 2000 / 2001 financial year which is believed to be attributed to the major floods during 2000 which damaged many camps and forced them to close for extended periods. This is important to take notice of as there are climatic changes also predicted in rainfall, which includes increased variability of extreme climatic events such as droughts and floods.

In addition to temperature increases and rainfall changes, the increased concentration of CO₂ gases in the atmosphere and nutrient deposition may accelerate bush encroachment (proliferation of bushes and shrubs in place of grasses) in the park and alter vegetation dynamics. These impacts on vegetation dynamics could have major cascading effects on our herbivores, fire management, hydrological processes, game viewing, predation and so forth. Besides the impact on our biodiversity and tourists, there are also risks associated with our organisational reputation as a conservation body if we do not strive towards climate change mitigation and adaptation as far as possible.

This programme links with high-level objective 2 and objective 2.10 on page 52. To achieve the purpose of this programme, the actions listed in the table below will be implemented.

CLIMATE CHANGE 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 understand and recognise climate change effects and its consequences on biodiversity in the park by assessing park management options under predicted climate change scenarios which is supported by continuous climate monitoring.					
Sub-objective	Actions	Responsibility	POE	Timeframe	Reference
To develop and implement an Adaption and Mitigation Response Plan aimed at reducing the park's carbon footprint.	Establish a park Climate Change Steering Committee.	CM, all departments	Minutes of meetings	Year 1	

CLIMATE CHANGE 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 understand and recognise climate change effects and its consequences on biodiversity in the park by assessing park management options under predicted climate change scenarios which is supported by continuous climate monitoring.

Sub-objective	Actions	Responsibility	POE	Timeframe	Reference
To develop and implement an Adaption and Mitigation Response Plan aimed at reducing the park's carbon footprint.	Develop and implement an Adaption and Mitigation Response Plan including to reduce the carbon footprint.	SS, CM, TS, SED, T, RM	Documents	Year 3, ongoing	Mpumalanga Biodiversity Sector Plan, Regional planning, South African National Climate Change Response White Paper
	Facilitate and encourage appropriate lifestyle choices of both staff and tourists in order to manage behaviour (e.g. waste management, recycling, being water-wise).	CM, TS, SED	Information sessions, reports, documents	Annually	Infrastructure Development programme, Social Economic Development programme
	Evaluate park preparedness and vulnerability.	SS, CM, TS, RM, SED	Report, documents	Year 2, 4, 6, 8, 10	Mpumalanga Biodiversity Sector Plan, Vulnerability Index, South African National Climate Change Response White Paper (2011), Disaster Risk Management Plan
	Inform climate change spatial priorities, adaptations strategies through modelling, and inform scenario planning.	CM, PP, SS	Report	Year 2	
To collaborate and align with International, National and Regional Climate Change Adaptation initiatives.	Participate in International, National and Regional Climate Change Adaptation initiatives.	CM, TS, SED	Minutes of meetings, reports	Ongoing	Social Economic Development programme, Integrated Development Plan, Spatial Development Framework, Mpumalanga Biodiversity Sector Plan, Mpumalanga National Adaptation Strategy, South African National Climate Change Response White Paper (2011)
	Mitigate consequences of climate change both inside and outside the park through a range of interventions, scenario planning and alignment with the Disaster risk response programme.	CM, TS, SED, RM	Minutes of meetings, reports	Ongoing	
To advocate, promote and participate in green initiatives to reduce carbon footprint in our area of influence.	Promote climate change compatible socio-economic development.	SED	Report	Year 3, 6, 9	Social Economic Development programme
	Promote sustainable business models for implementation and alignment with existing public sector programmes (e.g. EPWP).	CM, SED	Report	Year 2, 4, 6, 8, 10	Social Economic Development programme, Integrated land-use and Bioregional planning and Management programme



CLIMATE CHANGE 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 understand and recognise climate change effects and its consequences on biodiversity in the park by assessing park management options under predicted climate change scenarios which is supported by continuous climate monitoring.

Sub-objective	Actions	Responsibility	POE	Timeframe	Reference
To promote green initiatives to reduce carbon footprint in our area of interest.	Create public awareness on climate change.	C, CM, SED	Reports, pamphlets, TV Screens at main gates / reception	Ongoing	Kids in Parks
To monitor and evaluate climate change impacts, and park preparedness and adaptation.	Collect, analyse and archive climatic data.	SS	Databases	Annually	
	Document and collate impacts related to extreme climatic events in the park.	SS, CM, RS, SED	Reports	Annually	SANParks Global Environmental Change Assessment
	Keep abreast with evolving knowledge on global climate change and provide feedback.	SS, CM	Reports, minutes of meetings	Year 2, 4, 6, 8, 10	UN Framework on Climate Change, Intergovernmental Panel on Climate Change, Mpumalanga Biodiversity Sector Plan
	Audit the park's green initiatives.	CM	Report	Year 2, 4, 6, 8, 10	
	Review the adaption and mitigation strategies and impact of programme.	CM, TS, SS, SED, T, RM	Document, report	Year 2, 4, 6, 8, 10	

10.9.14 Research, monitoring and co-learning programme

The purpose of this plan is to contribute towards providing relevant and rigorous scientific evidence, enabling critical thinking and facilitating rigorous co-learning in support of increasingly difficult management and policy challenges (but also identifying opportunities) facing sustainable conservation in the socio-ecological Lowveld region.

The park has a long history of research endeavours that started in the 1950s with the establishment of a research unit in Skukuza. Based on a recent analysis of peer reviewed publications, the park is one of the most researched savanna protected area in Africa. The research emanating from the park is used to inform decision-making, challenge, adapt and reflect on current management actions, influence policy (at multiple layers from park to organisational to national level), highlight potential risks and identify opportunities as the park moves towards and prepares for the ever changing future. This two-way knowledge transfer is dependent on a well-functioning interface between scientists / researchers, managers and policy developers, with the park having a reputation for science informing management and decision-making. This science-management interface and relationship is not a given and needs continuous nurturing and development. There are numerous examples where management protocols in the park have been amended and adapted as a result of continued research, including the cessation of culling predators in the central district in the 1970's, the numerous

amendments of the Fire Protocol, the Artificial Water Provision Protocol and Alien Vegetation Clearing Protocol.

The park is also well known for its management–science–academic partnerships and these strongly support the SAM framework where the best available knowledge is used to take decisions or actions, which are continuously evaluated and refined and modified if required, facilitating a learning-by-doing approach and co-learning attitude. The bulk of research in the park is conducted (and funded) by non-SANParks scientists, academics and students, with SANParks scientists acting as research co-ordinators, facilitators and integrators of the vast body of knowledge generated. Over 700 projects have been registered in the park since 2005, with 545 peer reviewed papers published between 2003 and 2013 as a result of these registered projects. The park has various facilities to help stimulate research, including short-term visiting researcher accommodation in Skukuza, Phalaborwa, Shingwedzi and recently Pafuri, a laboratory as well as invaluable long-term datasets and field experiments. The main tasks of the scientific staff are to: (i) conduct independent research and critical monitoring actions in support of park management goals; (ii) attract and support external research projects, especially in the field of applied nature and of value to the park; (iii) re-integrate the ensuing knowledge into the understanding of the park, its management and the policy environment (on multiple levels); and (iv) curate, manage and share / communicate data, information and knowledge to various audiences in order to increase the impact and reach of science in the park and beyond. External projects are registered through a process governed by a Standard Operating Procedure. Departments within KNP need to highlight research needs to Scientific Services in order for internal scientists to assist with the relevant research and/or to leverage/source potential external expertise and collaborators that may be able to address these if and where applicable.

The park hosts an annual International Savanna Science Networking Meeting which brings together managers, scientists, academics and students who are busy with or anticipating conducting research in savannahs including the KNP and to give feedback on their projects. This 4 day science meeting is now attracting annually around 200 academics, scientists and students from all over the world.

Many of the park’s long-term experiments and data sets have proved extremely important and useful to understanding global and regional issues (such as the burn plots being used in climate change research and the herbivore exclosures for understanding herbivores as drivers of vegetation structure) as well as providing a sound basis for enhancing scientific knowledge and understanding of ecological processes. These data sets are shared with collaborating scientists and institutions, many of them world-renowned and highly rated. The park also recently established the KNP Research Supersites as geographic focal areas for studying and understanding multi-scaled and multi-disciplined systems in a data-rich and open-access environment. Whilst continuing with long-term monitoring projects that have been running for decades, the park also embraced modern technology in the past 10 years (2007 – 2017) allowing new insights at scales and detail which were previously not possible (e.g. LiDAR and e-DNA).

This programme links with high-level objective 8 and objective 8.14 on page 49. To achieve the purpose of this programme, the actions listed in the table below will be implemented.

RESEARCH, MONITORING AND CO-LEARNING 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 broad-based scientific support in order to ensure science underpins management actions, decision making and communication by conducting and facilitating appropriate research and monitoring projects, growing capacity, creating co-learning opportunities and translating and communicating science whilst maintaining and contributing to the park’s scientific history and reputation.					
Sub-objective	Actions	Responsibility	Indicators	Timeframe	Reference
To develop and manage an effective system to store, share and report on data thereby contributing to learning and preserving institutional memory.	Maintain an effective data repository (including back-up system) which ensures effective and simple data sharing and access.	SS, RS	Database	Ongoing	



RESEARCH, MONITORING AND CO-LEARNING 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 broad-based scientific support in order to ensure science underpins management actions, decision making and communication by conducting and facilitating appropriate research and monitoring projects, growing capacity, creating co-learning opportunities and translating and communicating science whilst maintaining and contributing to the park's scientific history and reputation.

Sub-objective	Actions	Responsibility	Indicators	Timeframe	Reference
To develop and manage an effective system to store, share and report on data thereby contributing to learning and preserving institutional memory.	Add and update research and monitoring data and ensure metadata for datasets remains current and relevant.	SS	Database, reports	Ongoing	
	Upload current and historical internal and field reports (institutional memory).		Database, reports	Ongoing	
To conduct and facilitate relevant and robust socio-ecological research and monitoring to support the core pillars of SANParks.	Conduct, solicit and facilitate research and monitoring and respond to research requests where applicable.	SS, VWS, CM, RS	Projects register	Ongoing	
	Implement annual Biodiversity Monitoring Plan and archive monitoring data.	SS	Reports	Ongoing	
	Provide research support for internal and external researchers.		Reports	Ongoing	
To effectively communicate socio-ecological science in order to create awareness, educate and build constituency with a broad base of academic and non-academic stakeholders.	Communicate to scientific and specialist audiences.	SS, CM, VWS	Report	Annually	
	Contribute towards SANParks Research Report (with KNP content).	SS, CS	Report	Annually	
	Communicate information to general public as part of the interpretation programme.		Report	Ongoing	
To attract and grow science capacity, skills and human capital.	Outreach to school children and student groups.	SS, CM	Report	Ongoing	
	Participate and contribute towards growing science capacity (e.g. Junior Scientist programme; Post-doc initiatives, etc.).	SS	Report	Ongoing	
	Allow and enable staff to grow science capacity.		Report	Ongoing	
To ensure science supports management actions, underpins decision-making and contributes towards effective park management and policy development.	Ensuring scientific input is provided in cross-departmental functions and engagements as well as park protocols and SANParks policies.	SS	Report	Ongoing	
	Participation in advisory groups and working groups, contributing to regional and (inter)national initiatives / programmes.	SS, CM	Report	Ongoing	

10.10 Evaluation and learning

10.10.1 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 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).

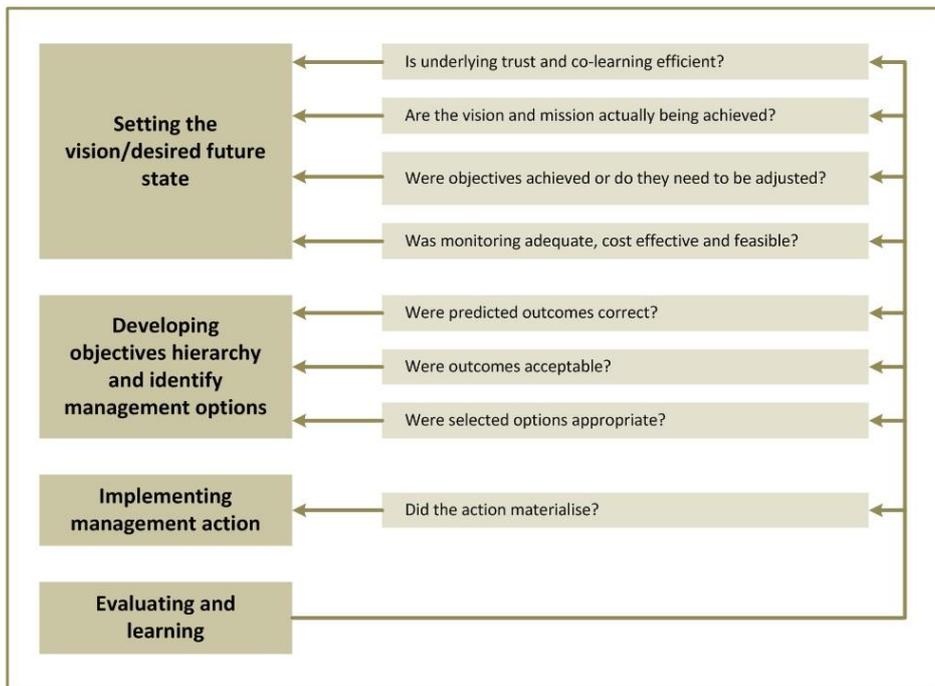


Figure 12. Feedback questions essential for adaptive learning (from Kingsford and Biggs, 2012).

10.10.2 Operationalisation

Given the desired state, and the programmes outlined in Section 10, specific action and annual 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, actions, and other associated external programmes. This involves assessment of the outcome of management interventions, but also frequent evaluation of early warning signals (referred to by SANParks as Thresholds of Potential Concern, or 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 are 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.

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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;
- Comply with 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 twenty one in total. Not all these parks are financially viable, and currently only five national parks *i.e.* Addo Elephant National Park, Augrabies 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 are 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 the park for 2018 / 2019 is budgeted at -R 1,088,777,447 increasing to an estimated -R 1,374,556,441 in 2022 / 2023. A summary is presented in Table 14.

Table 14. 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 1,088,777,447	-R 1,154,104,094	-R 1,223,350,339	-R 1,296,751,360	-R 1,374,556,441

11.3 Expenditure

11.3.1 Recurring costs

The annual directly allocated cost (including staff salaries, travel, supplies and tools) is estimated at R 693,530,508 for 2018 / 2019. These ongoing costs are split according to the programmes listed in Table 15 below.

Table 15. The estimated annual operational costs for the park for 2018 / 2019.

Programme	Amount	Percentage of total
Responsible Tourism	R 204,341,656	29.46%
Safety and security	R 173,974,444	25.09%
Infrastructure	R 134,087,522	19.33%
Socio-economic development	R 31,643,670	4.56%
Rehabilitation	R 26,272,931	3.79%
Invasive alien species	R 26,157,963	3.77%
Financial management and administration	R 11,608,672	1.67%
Research, monitoring and co-learning	R 10,424,660	1.50%
Veterinary wildlife services	R 9,767,439	1.41%
Human capital management	R 9,100,406	1.31%
Integrated catchment management	R 8,460,145	1.22%
Fire management	R 8,082,545	1.17%
Natural resource use	R 5,299,425	0.76%
Disease management	R 5,061,591	0.73%
Communication	R 4,623,572	0.67%
Species of special concern	R 3,803,345	0.55%
Cultural heritage management	R 3,187,265	0.46%
Freshwater ecosystems	R 2,465,105	0.36%
Safety, health, environment and quality	R 1,926,074	0.28%
Environmental education and interpretation	R 1,511,763	0.22%
Predation	R 1,500,119	0.22%
Risk management	R 1,491,911	0.22%
Integrated land use and regional planning and management programme	R 1,442,019	0.21%
Stakeholder engagement and relationship	R 1,341,375	0.19%
Wilderness	R 1,092,980	0.16%
Information and records management	R 937,815	0.14%
Herbivore management	R 902,348	0.13%
GLTFCA, contractual and co-operative conservation agreements	R 800,167	0.12%
Human wildlife conflict	R 634,458	0.09%
Environmental management	R 545,257	0.08%
Promoting access	R 520,144	0.07%
Climate change	R 336,127	0.05%
Disaster management	R 185,595	0.03%
Total	R 693,530,508	100.00%

11.3.2 Once-off costs

In addition to the above there is a further once-off cost estimated at R 49,574,000 over the period 2018 / 2019 – 2022 / 2023 as can be seen in Table 16 below.



Table 16. The estimated once-off cost of the various programmes.

Programme	Estimated budget
Integrated land use and bioregional planning and management	R 25,300,000
GLTFCA and conservation area contractual and co-operative models and agreements	R 11,000,000
Safety and security	R 6,364,000
Cultural heritage	R 6,150,000
Integrated water resource management	R 300,000
Safety, health, environment and quality	R 260,000
Environmental management	R 200,000
Total	R 49,574,000

11.3.3 Unallocated fixed costs

The unallocated fixed costs applicable but not allocated in Table 16 above for 2018 / 2019 amounts to R 143,279,673.

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 17. The projected maintenance for existing infrastructure is estimated at R 225,014,963 in 2018 / 2019. If the new planned infrastructure is developed, it will add a further R 16,844,142 (at 2018 / 2019 rates) to this annual maintenance budget, increasing it to R 241,859,105. The maintenance requirement was calculated as a percentage of the replacement value.

Table 17. 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	2,343,883,993	732,354,000	3,076,237,993	53,909,332	16,844,142	70,753,474
Roads and tracks	5,754,263,000	0	5,754,263,000	115,085,260	0	115,085,260
Trails	0	0	0	0	0	0
Fencing	63,219,672	0	63,219,672	885,075	0	885,075
Water system	630,543,568	0	630,543,568	8,827,610	0	8,827,610
Electricity	221,070,843	0	221,070,843	3,113,485	0	3,113,485
Other	137,422,103	0	137,422,103	3,113,485	0	3,113,485
Sewerage	123,384,000	0	123,384,000	1,727,376	0	1,727,376
Bridges etc.	7,670,667,721	0	7,670,667,721	38,353,339	0	38,353,339
Total	16,944,454,900	732,354,000	17,676,808,900	225,014,963	16,844,142	241,859,105

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 49,887,497 in 2018 / 2019, and this figure is presented in Table 18.

Table 18. The total value various categories of minor assets and replacement thereof (based on the original purchase price).

Asset type	Asset value	Provision for replacement
Aircraft	R 577,289	R 30,596
White goods	R 14,209,962	R 2,151,794
Vehicles and trailers	R 70,068,614	R 14,854,546
Air conditioners	R 9,786,356	R 1,481,933
Computer equipment	R 19,518,209	R 6,896,433
Firearms	R 3,055,565	R 323,889
Lawnmowers	R 551,444	R 194,843
Furniture	R 29,037,617	R 4,397,124
Mechanical equipment	R 113,927,159	R 17,251,826
Equipment (other)	R 140,817	R 29,853
Office equipment	R 14,863,628	R 2,250,777
Watercraft	R 112,623	R 23,875
Total	R 275,159,370	R 49,887,497

11.4 Summary

It is estimated that the park will require an annual operating budget of R 1,111,527,046 for 2018 / 2018, increasing to R 1,403,277,286 in 2022 / 2023. In addition to this amount, the park will also require R 49,574,000 over the next five-year period for once-off costs. A summary is presented in Table 19.

Table 19. A summary of the annual and once-off costs that are 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 costs	R 1,111,527,046	R 1,178,218,668	R 1,248,911,789	R 1,323,846,496	R 1,403,277,286
Once-off costs over five years	R 49,574,000				
SANParks expenditure budget for KNP	R 863,746,390	R 915,571,174	R 970,505,444	R 1,028,735,771	R 1,090,459,917
Shortfall	R 247,780,655				

The shortfall can be broken down as follows:

- An additional amount of R 179,189,937 is required to cover the current maintenance shortfall;
- An additional amount of R 35,581,221 is required to cover operational expenses; and
- An additional amount of R 35,187,497 is required for the replacement of assets.

11.5 Implications

Should the park be unsuccessful in securing the shortfall amount of R 247,780,655 then the following programmes will be affected:



- Infrastructure programme: The park will be unable to maintain the current infrastructure to a high standard;
- Various programmes will be negatively affected, notably the Safety and Security programme; and
- 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.

11.6 Future

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 194 in Government Gazette 1576 of 02 September 1926 declared the following land as part of the KNP in terms of the National Parks Act (Act No. 56 of 1926):

From the confluence of the Limpopo River with the Luvuvhu River (Pafuri River) generally southwards along the boundary of the Province of the Transvaal and Mozambique (Survey Records 1762/75) to the point where the last-named boundary is intersected by the right bank of the Komati River; thence westwards along the right bank of the said Komati River to its confluence with the Crocodile River and continuing generally westwards along the right bank of the Crocodile River to the south-eastern corner of Lot 347 in the Kaap Block Section E; thence generally north-eastwards along the boundaries of the following lots in the Kaap Block Section E so as to exclude them from this area: Lots 347, 372, 370, 366 and 367, to the south-eastern corner of the last-named lot; thence generally northwards along the right bank of the Nsikazi River to the south-eastern corner of the farm Daannel 33 JU; thence north-westwards along the boundaries of the last-named farm, so as to exclude it from this area, to the north-western beacon thereof; thence north-westwards and north-eastwards along the boundaries of the farm Numbi 32 JU, so as to include it in this area to the north-eastern beacon thereof; thence north-westwards along the north-eastern boundary of Lot 201 in the Kaap Block Section F to the southern-most beacon of the farm Rooiduiker 19 JU; thence north-westwards and northwards along the boundaries of the said last-named farm, so as to include it in this area, to the northern-most beacon thereof, and continuing north-eastwards along the south-eastern boundaries of Lots 147 and 146 in the Kaap Block Section F to the north-eastern corner of the latter lot; thence generally eastwards along the left bank of the Sabie River to the south-eastern corner of the farm Kingstown 380 KU; thence eastwards and generally northwards along the boundaries of the following farms so as to exclude them from this area: The said farm Kingstown 380 KU, Toulon 383 KU, Charleston 378 KU, Flockfield 361 KU, Malamala 359 KU, Eyrefield 343 KU, Gowrie 342 KU, Buffelshoek 340 KU, Sarabank 323 KU, Jeukpeulhoek 222 KU, Middel In 202 KU, Albatross 201 KU, Kempiana 90 KU and Vlakgezicht 75 KU to the north-eastern beacon of the last-named farm; thence north-eastwards along the north-western boundary of Portion 1 (Diagram S.G. A 1815/61) of the farm Addger 69 KU to the northern-most beacon thereof; thence generally northwards along the boundaries of the following farms so as to exclude them from this area: Ceylon 53 KU, Sumatra 47 KU, Brazillie 48 KU, Op Goedehoop 25 KU, Buffelsbed 26 KU, Roodekrantz 27 KU, Rietvley 28 KU, Diepkloof 406 KU, Portion 6 (Diagram S.G. A 8744/69) of the farm Klaseriemond 15 KU, Zeekoegat 12 KU, Portion 2 (Diagram S.G. A 6362/65) of the farm Vereeniging 11 KU, the farms Merensky 32 LU, Laaste 24 LU, Silonque 23 LU, Genoeg 15 LU and Letaba Ranch 17 LU to the north-eastern corner of the last-named farm; thence eastwards along the left bank of the Great Letaba River to its confluence with the Klein Letaba River; thence generally north-westwards along the right bank of the Klein Letaba River to the northern-most beacon of the farm Draai 2 LU; thence north-westwards in a straight line to the south-eastern beacon of the farm Alten 222 LT; thence north-westwards and north-eastwards along the boundaries of the following farms so as to exclude them from this area: The said farm Alten 222 LT, Plange 221 LT, Lombaard 220 LT, Ntlaveni 2 MU and Mhingas Location Extension 259 MT to the north-eastern beacon of the last-named farm; thence westwards along the northern boundaries of the farms Mhingas Location Extension 259 MT and Mhingas Location 258 MT to the north-western corner of the last-named farm; thence generally north-eastwards along the middle of the Luvuvhu River (Pafuri River) to the point where the prolongation southwards of boundary BA on Diagram S.G. A 58/73 of a boundary line for purposes of proclamation over State land intersects the middle of the Luvuvhu River (Pafuri River); thence northwards along the said prolongation to the point where the said prolongation intersects the Mutale River; thence generally south-eastwards along the middle of the Mutale River to its confluence with the Luvuvhu River (Pafuri River); thence generally eastwards along the middle of the last-named river to its confluence with the Limpopo River, the point of beginning.

Government Notice 210 in Government Gazette 9532 of 21 December 1984 declared the following portions of land to be part of the KNP in terms of the National Parks Act (Act No. 57 of 1976):

1. Portion 2 (a portion of Portion 1) of the farm Toulon 383 KU, Province of Transvaal, 8.9993 ha in extent, described in SG A4827/82.

Government Notice 482 in Government Gazette 15540 of 11 March 1994 declared the following portions of land to be part of the KNP in terms of the National Parks Act (Act No. 57 of 1976):

1. Remaining Extent of the farm Kempiana 90, in extent 3,960.5422 hectares;
2. the farm Lillydale 89, in extent 3,919.6874 hectares;
3. the Remaining Extent of the farm Morgenzon 199, in extent 2,114.3169 hectares;
4. the farm Springvalley 200, in extent 3,838.1499 hectares; and
5. Remaining Extent of Portion 1 of the farm Valkgezicht 75, in extent 863.8188 hectares.

Government Notice 458 in Government Gazette 19927 of 16 April 1999 declared the following portions of land from the KNP in terms of the National Parks Act (Act No. 57 of 1976):

1. The land described by the figure “aBCDEFGHJKLm middle of the Limpopo River n middle of the Luvuvhu River p middle of the Mutale River a” and referred to as “the farm Makuleke No. 6-MU” in Diagram SG No. 10710/1998 in extent 22,733.6360 hectares, situated in the Pafuri area Soutpansberg District, Northern Province. [Definition of Kruger National Park substituted by s. 2 of Act 60/79 and amended by Proc. 210/84, GN 703/89 and GN 458/99].

Government Notice 236 in Government Gazette 36295 of 27 March 2013 defines the area as such:

From the confluence of the Limpopo River with the Luvuvhu River (Pafuri River) generally southwards along the boundary of the Province of the Transvaal and Mozambique (Survey Records 1762/75) to the point where the last-named boundary is intersected by the right bank of the Komati River; thence westwards along the right bank of the said Komati River to its confluence with the Crocodile River and continuing generally westwards along the right bank of the Crocodile River to the south-eastern corner of Lot 347 in the Kaap Block Section E; thence generally north-eastwards along the boundaries of the following lots in the Kaap Block Section E so as to exclude them from this area: Lots 347, 372, 370, 366 and 367, to the south-eastern corner of the last-named lot; thence generally northwards along the right bank of the Nsikazi River to the south-eastern corner of the farm Daannel 33 JU; thence north-westwards along the boundaries of the last-named farm, so as to exclude it from this area, to the north-western beacon thereof; thence north-westwards and north-eastwards along the boundaries of the farm Numbi 32 JU, so as to include it in this area to the north-eastern beacon thereof; thence north-westwards along the north-eastern boundary of Lot 201 in the Kaap Block Section F to the southern-most beacon of the farm Rooiduiker 19 JU; thence north-westwards and northwards along the boundaries of the said last-named farm, so as to include it in this area, to the northern-most beacon thereof, and continuing north-eastwards along the south-eastern boundaries of Lots 147 and 146 in the Kaap Block Section F to the north-eastern corner of the latter lot; thence generally eastwards along the left bank of the Sabie River to the south eastern corner of the farm Kingstown 380 KU; thence eastwards and generally northwards along the boundaries of the following farms so as to exclude them from this area: The said farm Kingstown 380 KU, Toulon 383 KU, Charleston 378 KU, Flockfield 361 KU, Malamala 359 KU, Eyrefield 343 KU, Gowrie 342 KU, Buffelshoek 340 KU, Sarabank 323 KU, Jeukpeulhoek 222 KU, Middel In 202 KU, Albatross 201 KU, Kempiana 90 KU and Vlakgezicht 75 KU to the north-eastern beacon of the last-named farm; thence north eastwards along the north-western boundary of Portion 1 (Diagram S.G. A 1815/61) of the farm Addger 69 KU to the northern-most beacon thereof; thence generally northwards along the boundaries of the following farms so as to exclude them from this area: Ceylon 53 KU, Sumatra 47 KU, Brazilië 48 KU, Op Goedehoop 25 KU, Buffelsbed 26 KU, Roodekrantz 27 KU, Rietvley 28 KU, Diepkloof 406 KU, Portion 6 (Diagram S.G. A 8744/69) of the farm Klaseriemond 15 KU, Zeekoegat 12 KU, Portion 2 (Diagram S.G. A 6362/65) of the farm Vereeniging 11 KU, the farms Merensky 32 LU, Laaste 24 LU, Silonque 23 LU, Genoeg 15 LU and Letaba Ranch 17 LU to the north-eastern corner of the last-named farm; thence eastwards along the left bank of the Great Letaba River to its confluence with the Klein Letaba River; thence generally north westwards along the right bank of the Klein Letaba River to the northern-most beacon of the farm Draai 2LU; thence north-westwards in a straight line to the south-eastern beacon of the farm Alten 222 LT; thence north-westwards and north-eastwards along the boundaries of the following farms so as to exclude them from this area: The said farm Alten 222 LT, Plange 221 LT, Lombaard 220 LT, Ntlaveni 2 MU and Mhingas Location Extension 259 MT to the north-eastern beacon of the last-named farm; thence westwards along the northern boundaries of the farms Mhingas Location Extension 259 MT and Mhingas Location 258 MT to the north-western corner of the last-named farm; thence generally north-eastwards along the middle of the Luvuvhu River (Pafuri River) to the point where the prolongation southwards of boundary BA on Diagram S.G. A 58/73 of a boundary line for



purposes of proclamation over State land intersects the middle of the Luvuvhu River (Pafuri River); thence northwards along the said prolongation to the point where the said prolongation intersects the Mutale River; thence generally south-eastwards along the middle of the Mutale River to its confluence with the Luvuvhu River (Pafuri River); thence generally eastwards along the middle of the last-named river to its confluence with the Limpopo River, the point of beginning.

2. Land excluded

Government Notice 12 in Government Gazette 7988 of 15 January 1982 excluded the following portions of land from the KNP in terms of the National Parks Act (Act No. 57 of 1976):

1. A portion of the farm Kingfishers Spruit 93 KU, Province of Transvaal, 0.0450 ha in extent, described in diagram 430/1898 (DB237/13).

Government Notice 703 in Government Gazette 11822 of 14 April 1989 excluded the following portions of land from the KNP in terms of the National Parks Act (Act No. 57 of 1976):

1. Remainder of the farm Sigambule 216, Registration Division JU, in extent 547.0131 ha;
2. Portion 1 of the farm Sigambule 216, Registration Division JU, in extent 468.6482 ha;
3. Farm Matsulu 543, Registration Division JU, in extent 1,155.6013 ha; and
4. Farm Makawusi 215, Registration Division JU, in extent 1,067.1731 ha.

Government Notice 458 in Government Gazette 19927 of 16 April 1999 excluded the following portions of land from the KNP in terms of the National Parks Act (Act No. 57 of 1976):

1. The land described by the figure “aABCQq middle of the Limpopo River n middle of the Luvuvbu River p middle of the Mutale River a” in extent about 19,176 hectares, situated in the Pafuri area, Soutpansberg District, Northern Province.

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Appendix 2: Stakeholder participation report

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	Great Limpopo Transfrontier Conservation Area Joint Management Board, Administração Nacional Das Áreas De Conservação
National Government / Institutions	Departments of Environmental Affairs; Agriculture, Forestry and Fisheries; Water and Sanitation, South African National Defence Force, South African Police Service, South African National Biodiversity Institute, South African Heritage Resources Agency
Provincial government	Mpumalanga and Limpopo Departments of Health; Social Development; Finance; Home Affairs; Sports and Culture; Education; Agriculture and Rural Development and Land Administration; Agriculture, Forestry and Fisheries; Water and Sanitation; Cooperative Governance and Traditional Affairs
Provincial conservation authorities	Mpumalanga Tourism and Parks Authority, Limpopo Department of Economic Development, Environment & Tourism
District Government	Ehlanzeni Municipality, Maruleng Municipality, Vhembe Municipality
Local government	Mbombela Municipality, Nkomazi Municipality, Greater Gyani Municipality, Bushbuckridge Municipality, Ba-Phalaborwa Municipality, Mutale Municipality, Collins Chabane Municipality, Musina Municipality
Community fora	Hlanganani, Lubambiswano, Mahlamba Ndlofu, Makuye, Nkomazi, Ntirhiswano, Phalaborwa
Traditional authorities	All traditional authorities bordering the park
Land claimants	Land claimants as per National Land Claims Commissionaire settlement process
Local Resident /Neighbours/Businesses	Rural communities, conservation areas, agricultural sector, river fora, biospheres, concessions, tourism sector, Local business, Chamber of Commerce, Business associations, Environmental consultants, Taxi associations
Broader Sector Partners	Forestry: SAPPI, York, Komatiland, Inkomati Usuthu Catchment Management Agency, Mining: Foskor, Ba-Phalabora complex (including Phalaborwa Mining Componany); Rand Water; Irrigation Boards
Community based organisations	Woman's groups, Mother's union, stokvels, Youth Groups
Media	MEDIA 24
NGOs general	Endangered Wildlife Trust, Earthlife Africa, Wildlife and Environment Society of South Africa, SANParks support group, World Wide Fund for Nature, Kruger2Canyons, Conservation South Africa, Vhembe biosphere, Association and Water and Rural Development, Greater Kruger Environmental Protection Forum, South African Institute for Aquatic Biodiversity, Birdlife, Conservation Outcomes
Conservation areas bordering KNP	Mjejane, Marloth Park, Mala Mala, SSW, Manyeleti (MTPA), Timbavati, Kapama, Thornybush, Balule, Umbabat, Selati, Letaba ranch complex (LEDET), Makuya (LEDET), Makuleke Contractual Park, Limpopo National Park, Greater Limpopo Conservancy
Lifestyle estates bordering the park	Sabie Park (western boundary), Elephant Point, Lisbon, Leopard Creek, Selonque etc.
Research and Tertiary institutions	Savanna Network Research database- local and international research partners; All major Universities and other Tertiary institutions in SA, and entities such as South African Wildlife College, Wits Rural Facility, South African Environmental Observation Network, Agricultural Research Council, University of Pretoria Hans Hoheisen Wildlife Research Station

Tourist Associations	SATSA, Lowveld Tourism, MISA
Tour operator	Untamed, Siyabona Travels, Thomson Indaba, Safaris Direct, Elephant Herd, Sefapane Lodge, Open Safari Vehicle operators
Staff	Information sessions across all KNP regions with all departments
Honorary Rangers	Yes
Visitors to Park	Wild card holders, broader public invited to Public meetings
Key Focus / Interest groups	<ul style="list-style-type: none"> • Conservation Areas open and adjacent to KNP • GLTFCA • Technical Focus Groups • Water River Fora / Committees • Savanna Network Meeting and Research Institutions • Animal Health • Tourism fora (Mpumalanga Independent Safari Association, South African Tourism Services Association, Lowveld Tourism) • Safety and security clusters: Natjoints, Limpopo and Mpumalanga Provincial Commissioners, Mozambique Security cluster • Mpumalanga House of Traditional leaders • Limpopo House of Traditional leaders

Desired state workshops

A range of key stakeholders, SANParks specialists and the broader staff component 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, the local and broader stakeholder and Focus/Interest groups were invited	
Attendance	The meetings were attended by representatives from: local communities, traditional authorities, conservation area representatives, local government, tourism operators, NGOs, research institutions, sector partners such as DAFF, DARDLEA, LEDET, MTPA, river fora, media, honorary rangers, businesses, tourism operators and associations, SAPS, environmental consultants, life-style areas bordering KNP, GLTFCA parties, DEA, DWS, SAHRA etc.	
Desired State workshop	Meetings were held in 15 local and metropolitan areas as shown below.	
Venue	Date	Number of stakeholders that attended
Mutale	18 April 2017	310
Maphophe	19 April 2017	335
Malamulele	20 April 2017	499
Giyani	21 April 2017	390
Ba-Phalaborwa	24 April 2017	226
Hoedspruit	25 April 2017	40
Acornhoek	26 April 2017	353
Hazyview	2 May 2017	350
Ka-bokweni	3 May 2017	434
Kwa-Mhlushwa	4 May 2017	411
Cape Town	24 May 2017	9
Pretoria	25 May 2017	22
Johannesburg	26 May 2017	9
White River	27 May 2017	55
Durban	3 June 2017	22
Total number		3465

Summary of focus / interest group meetings that provided input into various sections of the KNP Management Plan

Focus / interest group	Dates
GLTFCA programme – Conservation areas	10 May 2017
GLTFCA programme - GLTFCA	23 June 2017
GLTFCA programme – Greater Kruger Living with Wildlife multi-sector workshop	12-13 July 2017
GLTFCA programme – Greater Kruger stakeholders	7 September
GLTFCA programme – GLTFCA JMC	23 October 2017
GLTFCA programme – GLTFCA JMC	29 January 2018
GLTFCA programme –GLTFCA JMB	30 January 2018



Focus / interest group	Dates
Infrastructure Development	May 2017, Polokwane
Infrastructure Development	May 2017, Nelspruit
Integrated land use programme-Zonation and buffer delineation – conservation partners	8 November 2016
Integrated land use programme – buffer and municipal meeting	28 January 2017
Integrated land use programme – buffer delineation external partners	28 February 2017
Integrated land use – zonation and buffer mechanisms – mostly internal partners	4 April 2017, 12 April 2017, 1 June 2017
Integrated land use meeting	16 September 2017
Integrated land use meeting	9-10 October 2017
Integrated land use – spatial, buffer	5-7 September 2018
Integrated land use programme - Biospheres	6 July 2017
Integrated water resource management programme – Crocodile River Forum	30 June 2017
Integrated water resource management programme- Sabie River forum	19 June 2017
Integrated water resource management programme – Focus group meeting	November 2017
Safety and Security - NATJOINTS	6 April 2017
Safety and Security – Provincial Commissioner Limpopo	14 April 2017
Safety and Security – Provincial Commissioner Mpumalanga	13 April 2017
Research Programme - Savanna Network meeting	17 March 2017
Responsible Tourism - MISA	9 May 2017
Responsible Tourism – Lowveld Tourism	10 May 2017
Responsible Tourism - SATSA	11 May 2017
Veterinary Wildlife Support	15 June 2017
Visitor Management	Several workshops during November 2017

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.

Media	Description
1. Direct e-mail	<p>All the stakeholders that were registered during the 2008 management plan development were informed about the revision process.</p> <p>Emails were sent to all stakeholders / organisation representatives captured in the KNP stakeholder database updated database (updated in 2016 / 2017 / 2018) covering all functionalities.</p> <p>Focus / interest group and other stakeholder representatives of strategic partners / organisations were send personal invites to attend the public sessions as well as thematic discussion groups.</p>
2. National media advertisements	<p>Advertisements to inform interested and affected parties to attend and comment on the draft park management plan were placed in the following national newspapers / media:</p> <p>Desired state meetings:</p> <ul style="list-style-type: none"> • Media 24/ City press: 26/05/2017, 27/05/2017, 8/05/2017 • Sunday Times: 26/03/2017 • Business Times: 14/05/2017 • Independent Newspaper 29/05/2017, 31/05/2017, 02/06/2017 <p>Draft KNP Management plan meetings:</p> <ul style="list-style-type: none"> • City Press: 28/01/2018 • Sunday Times, Rapport: 21/01/2018 • Traveller24: 02/02/2018

Media	Description
3. Local media advertisements	<p>An English advert was placed in the following local newspapers (direct placements, as well as shared in other media):</p> <p>Desired state meetings:</p> <ul style="list-style-type: none"> • NewsHorn: 12/04/2018 • Lowveld media: 26/05/2017 • Phalaborwa Herald: 28/04/2017 • Kruger 2 Canyon: 05/05/2017 <p>Draft KNP Management plan meetings:</p> <ul style="list-style-type: none"> • Lowvelder: 30/01/2018 • City Press: 28/01/2018 • Phalaborwa Herald: 01/02/2018 • Limpopo Mirror: 02/02/2018 • Zoutpansberger: 28/02/2018
4. Radio	<p>Stakeholders were informed about public meetings through National and Local radio stations.</p> <p>Desired state meetings:</p> <ul style="list-style-type: none"> • SAFM: 24/05/2017 • Rise FM: 10/04/2017 <p>Draft KNP Management Plan:</p> <ul style="list-style-type: none"> • SABC news – 02/02/2018 • Bushbuckridge FM: 06/02/2018 • RSG: 06/02/2018 • Talk Radio 702: 06/02/2018 • Mala FM : 08/02/2018 • Giyani FM : 08/02/2018 • Univen FM : 09/02/2018 • Phalaborwa FM : 09/02/2018 • SABC: 12/02/2018 • RFM : 15/02/2018 • SABC SA FM : 15/02/2018 <p>General</p> <ul style="list-style-type: none"> • Talk Radio 702 • RSG • Munghana Lonene FM • Ligwalalagwala FM
5. Internet	<p>Stakeholders were able to access the SANParks website to gain information regarding the revision process.</p> <p>Stakeholder were also invited to the public meetings through adverts (and further shared by the media) on the following online media sites:</p> <ul style="list-style-type: none"> • Travel 24: – 15 /05/2017 • Africa Geographic: 15/05/2017 • Eyethu News: 10/04/2017 • Overport Rising Sun: 10/04/2017 • Estcourt & Midlands News: 10/04/2017 • GPS News: 11/04/2017; 16/05/2017 • Northern Natal Courier: 10/04/2017
6. Registration at meetings	<p>Participants were also able to register at the desired state workshop and the KNP Management meetings:</p>
7. Public information notices / offices	<p>Official invites were sent and notices placed at Traditional authority offices and at local municipalities (see detailed list attached)</p>



Media	Description
8. Invites to focus / interest groups	<p>Official invites were sent to members of the following Focus/Interest Groups:</p> <ul style="list-style-type: none"> • Conservation Areas open and adjacent to KNP • GLTFCA • Technical Focus Groups • Water River Fora / Committees • Savanna Network Meeting and Research Institutions • Animal Health • Tourism fora (MISA, SATSA, Lowveld Tourism) • Safety and security clusters: Natjoints, Limpopo and Mpumalanga Provincial Commissioners, Mozambique Security cluster • Mpumalanga House of Traditional leaders • Limpopo House of Traditional leaders

Public days to allow comment on the draft management plan

Fifteen public day meetings were held.

Venue	Date	Number of stakeholders that attended
Mutale	13 February 2018	95
Malamulele	14 February 2018	182
Maphophe	15 February 2018	166
Giyani	16 February 2018	366
Phalaborwa	13 February 2018	244
Hoedspruit	14 February 2018	20
Acornhoek	15 February 2018	249
Hazyview	13 February 2018	224
Ka-bokweni	14 February 2018	302
Ka-mhlushwa	15 February 2018	392
White River	16 February 2018	33
Durban	12 February 2018	2
Cape Town	13 February 2018	2
Pretoria	14 February 2018	8
Johannesburg	15 February 2018	12
Total number		2297

Dissemination of documentation and feedback to stakeholders

Item	Action	Date
Draft park management plan for comment placed in public venues.	The draft management plan was placed on the SANParks website, and an email invite to comment on the Plan was sent to all the registered stakeholders. The draft Management plan was also placed at Traditional authority offices and local government offices.	30 January 2018 -14 February 2018
Draft park management plan for comment placed on SANParks website.	https://www.sanparks.org/conservation/park_man/	30 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
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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 (adjoining buffer zone, with land use activities determined by the municipal LUMS). 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 legal definition. Pristine natural environment, essentially undeveloped and roadless. Controlled non-motorised access - usually on foot visitors. 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 20 is to indicate which products already exist, which new products may be allowed, and in which visitor use zones these may occur.

Table 20: Tourism product development framework for the park.

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	
Over-night facilities	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	NOT APPLICABLE									√
	Tree houses / platforms		√	√			√		√	√	√
	Fly camp / platform / sleep out		√	√			√	√	√	√	√
	Accommodation (budget)	√		√					√	√	√
	Accommodation (economy)	√		√					√	√	√
	Accommodation (premium) / guest house		√	√					√	√	√
	Accommodation backpacking / youth hostels		√	√					√	√	√
	Dormitories / school groups / educational facilities	√		√					√	√	√
	Houseboat (economy)	NOT APPLICABLE									√
Houseboat (premium)	NOT APPLICABLE									√	
Camping	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	NOT APPLICABLE										√
	Cableway	NOT APPLICABLE										√
	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)	NOT APPLICABLE										
	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	NOT APPLICABLE									√
	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	NOT APPLICABLE									√
	Jogging / running		√	√		√	√	√	√	√	√
	Kayaking / paddling		√		√	√	√	√	√	√	√
	Kayaking / paddling trails		√		√	√	√	√	√	√	√
	Kitesurfing / kiteboarding / fly surfing	NOT APPLICABLE									√
	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)	√		√		√	√	√	√	√	√	

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	
Leisure / recreational	Picnicking (no facilities)	√		√					√	√	√
	Quad biking		√	√		√			√	√	√
	Railway		√	√					√	√	√
	Rap jumping (deepelling)		√		√						√
	River rafting		√		√						√
	Rock climbing		√		√						√
	Sailing		√		√						√
	Sand boarding	NOT APPLICABLE									√
	Self-drive night drives		√		√						√
	Skate boarding / roller blading		√		√						√
	Skate boarding / roller blading (downhill)		√		√						√
	Skydiving		√		√						√
	Snorkelling	NOT APPLICABLE									√
	Spear fishing	NOT APPLICABLE									√
	Speed gliding	NOT APPLICABLE									√
	Sports facilities (e.g. tennis, squash, bowls, etc.)		√	√					√	√	√
	Stairway (via ferrata / iron way)		√		√						√
	Stargazing	√		√		√	√	√	√	√	√
	Surf Skiing	NOT APPLICABLE									
	Surfing	NOT APPLICABLE									
	Swimming	√		√					√	√	√
	Trail running		√	√		√	√	√	√	√	√
	Trail running (night time)		√		√						√
	Tubing		√		√						√
	Vessels (cruise boats, yachts, river/paddle boats)		√		√						√
	Walking		√	√		√	√	√	√	√	√
Walks - day	√		√			√	√	√	√	√	
Walks - night		√	√			√	√	√	√	√	
Wildlife / game viewing	√		√			√	√	√	√	√	
Wing suit flying / wing suiting	NOT APPLICABLE									√	
Airborne (Implications of CAA)	Drones over national parks		√		√						√
	Flights over national parks, as per NEM: PAA		√		√						√
	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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		YES	NO	YES	NO	Within boundaries of national-/ contractual park					Buffer / adjoining
						1	2	3	4	5	6
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	NOT APPLICABLE									
	Specialised training / courses		√	√			√	√	√	√	√
	Survey and mapping skills		√	√			√	√	√	√	√
	Survival skills		√	√			√	√	√	√	√
	Tracking skills		√	√			√	√	√	√	√
	Training - ranger	√		√			√	√	√	√	√
Volunteering		√	√			√	√	√	√	√	
Wilderness search and rescue		√	√			√	√	√	√	√	

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						1	2	3	4	5	6
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. Skukuza marathon		√	√			√	√	√	√	√
	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		√	√				√	√	√	√
	Laundromats and laundry service	√		√				√	√	√	√
Pharmacies		√	√				√	√	√	√	

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		YES	NO	YES	NO	Within boundaries of national-/ contractual park					Buffer / adjoining
						1	2	3	4	5	6
	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 utilisation of resources		✓	✓		✓	✓	✓	✓	✓	✓

Intentional left blank



Appendix 4: Gertenbach vs Venter land types

A comparison between the Gertenbach (1983) and Venter (1990) land types.

Gertenbach landscapes	Venter land types
15 Colophospermum mopane forest	Marithenga - BU02 (32%), Madzaringwe - PA02 (24%), Tsotsi - BU03 (21%)
22 Combretum spp/ Colophospermum mopane Rugged Veld, 23 Colophospermum mopane Shrubveld on Basalt	Mooiplaas - LE03 (47%), Manyeleti - LE04 (15%), Shingwedzi - LE05, (12%), Letaba - LE02 (8%)
9 Colophospermum mopane savanna on basic soils 11 Tsende Sandveld, 12 Colophospermum mopane/Senegalia nigrescens savanna, 27 Mixed Combretum spp / Colophospermum mopane Woodland	Mahlangueni - PH07 (21%), Tsende - PH08 (17%), Babubu - PH10 (14%), Mphongolo - PH11 (14%)
10 Letaba River Rugged Veld, 7 Olifants River Rugged Veld	Mahlangueni - PH07 (50%), Tsheri - PH03 (42%)
6 Combretum spp/ Colophospermum mopane Woodland of the Timbavati area, 8 Phalaborwa sandveld	Phalaborwa - PH04 (33%), Houtboschrand - PH01 (22%) Shidyamanani - PH02 (16%), Shivhulani - PH05 (9%)
24 Colophospermum mopane Shrubveld on Gabbro	Shilawuri - LE07 (47%), Tsende - PH08 (16%), Mahlangueni - PH07 (15%)
34 Punda Maria sandveld on Waterberg Stone, 16 Punda Maria Sandveld on Cave Sandstone, 33 Pterocarpus rotundifolius / Combretum collinum Woodland	Punda - PA01 (40%), Dothole - PH12 (16%), Lanner Gorge - PA03 (15%)
32 Nwambia Sandveld, 30 Pumbe Sandveld	Nwambiya - NW01 (83%), Pumbe - SP03 (14%)
13 Senegalia welwitschii thickets on Karoo sediments	Vutome - VU01 (91%)
Dense thickets (5-6 m) and poorly developed ground layer; <i>Baphia massaliensis</i> , <i>Cleistanthus schlecteri</i> and <i>Gulbourtia conjugata</i> most conspicuous trees in Nwambiya, well developed shrub layer with <i>Eragrostis mogii</i> in ground layer	Sand Forest (100%)

Gertenbach landscapes	Venter land types
5 Mixed Combretum spp / Terminalia sericea Woodland, 4 Thickets of the Sabie and Crocodile Rivers, 3 Combretum collinum / Combretum zeyheri Woodland	Nhlanguleni - SK08 (17.5%), Skukuza - SK07 (17%) Lwakahle - SK04 (14%), Renosterkoppies - SK06 (11%) Napi - SK02 (11%),
17 Sclerocarya caffra / Senegalia nigrescens savanna, 18 Dwarf Senegalia nigrescens savanna, 21 Combretum spp/ Senegalia and Vachellia spp Rugged Veld, 20 Bangu Rugged Veld, 14 Kumana Sandveld	Satara - SA01 (52%), Mavumbye - SA02 (17%), Baltule - SA04 (9%)
19 Thornveld on Gabbro	Orpen - SA05 (47%), Muzandzeni - SK09 (19%), Salife - SA06 (9%)
1 Lowveld Sour Bushveld of Pretoriuskop	Pretoriuskop - SK01 (87%), Orpen - SA05 (11%)
2 Malelane Mountain Bushveld	Malelane - MA01 (62%), Stolsnek - MA02 (19%), Pretoriuskop - SK01 (9%)
29 Lebombo South, 31 Lebombo North	Sabiepoort - SP01 (41%), Klipkoppies - KL02 (27%), Rietpan - SP02 (10%)
23 <i>Colophospermum mopane</i> shrubveld on basalt (79%), 32 Nwanthiya, Sandveld (14.5%)	Manyeleti - LE04 (51%), Mooiplaas - LE03 (28%), Nwanthiya - NW01 (14.5%)
35 <i>Salvadora angustifolia</i> floodplains (64%), 28 Limpopo / Luvuvhu Floodplains (27%)	Shingwedzi - LE05 (44%), Bububu - PH10 (20%), Pafuri - PA05 (19%)
28 Limpopo / Luvuvhu Floodplains (84%), 25 <i>Adansonia digitata</i> / <i>Colophospermum mopane</i> Rugged Veld (8%)	Pafuri - PA05 (84%)
34 Punda Maria Sandveld on Waterberg sandstone (66%), 25 <i>Adansonia digitata</i> / <i>Colophospermum mopane</i> Rugged Veld (14.5%), 16 Punda Maria, Sandveld on Cave Sandstone (16%), 15 <i>Colophospermum mopane</i> Forest (5%)	Punda - PA01 (63%), Madzaringwe - PA02 (22%)



Appendix 5: Internal rules

The following internal rules are applicable to all visitors in terms of Section 52 of the National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003). The internal rules for the park can be broadly divided for those that are applicable for staff (as outlined by the Code of Conduct, January 2015), concessionaires (tourism, services and contractors) operating in the park (as outlined by the concession operation manual, 2012), researchers (SOP for visiting researchers) and tourists (outlined below). All documents are available on request as they are park internal operating documents.

The internal rules applicable to tourists are listed below:

1. Tourists can enter and exit the park at the following main gates (Crocodile, Kruger, Malelane, Numbi, Orpen, Pafuri, Phabeni and Punda Maria) as well as the Giryondo Border Post, whereby all immigration procedures must be completed and that a one night stay in the park or LNP park is compulsory before visitors will be allowed to travel via the park to or from Mozambique.
2. Tourists staying within the boundaries of the park do not need to stamp their passports and therefore do not need to move through immigration.
3. All tourists arriving or leaving the rest camps must firstly report to reception.
4. Visitors must remain inside their vehicles at all times – unless in a designated area.
5. No open game drive or game viewing vehicles or vehicles modified for the use of photographic purposes with an open or lifted roof or open or fold down side panels or window panels where occupants will be partly or fully exposed or outside the vehicle with no proper protection will not be allowed in the park.
6. The maximum speed limit is 50 km/h on tar and 40km/h on gravel roads for tourist. Official vehicles may travel a maximum of 65 km/h for official reasons. Speed enforcement is done throughout the park by means of radar. All speeding transgressors will be fined according to the latest fines as approved by the local magistrate.
7. Overnight visitors are only allowed to stay at a designated overnight facility inside the park and must report at reception before occupying any accommodation or camping site.
8. All accommodation and camping sites may be occupied from 14:00 on the day of arrival and must be vacated by 10:00 on the date of departure.
9. Gate times must be strictly adhered to. Guests should be inside their allocated overnight camp by the time the gate is closed. The gate times are as such:

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Camp gates: OPEN	04:30	05:30	05:30	06:00	06:00	06:00	06:00	06:00	06:00	05:30	04:30	04:30
Entry gates: OPEN	05:30	05:30	05:30	06:00	06:00	06:00	06:00	06:00	06:00	05:30	05:30	05:30
Camp and entry gates: CLOSE	18:30	18:30	18:00	18:00	17:30	17:30	17:30	18:00	18:00	18:00	18:30	18:30
Giryondo Border Post	08:00 - 16:00			08:00 - 15:00				08:00 - 16:00				

10. All fire-arms/weapons must be declared and sealed at the entrance gate.
11. Smoking is not allowed inside any of the park facilities.
12. No children below the age of 6 years will be allowed on game drives.
13. No children under the age of 12 years will be allowed on walking trails, excluding the Olifants River Trails that requires the ages 16 to 65.
14. All commercial filming and photography is only allowed according to the SANParks filming policy.
15. When stopped by park officials, visitors must be able to deliver their relevant permits at all times.

16. No loud noise is allowed between 21:00 and 06:00.
17. The use of motorbikes and quad bikes are not allowed in the park.
18. The collection of firewood or any part of plant or animal is strictly prohibited.
19. Do not drink alcohol and drive. General rules of the road apply within the park. It is an offence to drive on South African roads under the influence of alcohol.
20. A valid driver's licence is required when driving on South African roads.
21. Vehicles must remain on designated roads at all times. Not all roads are accessible to caravans and in the cases of high rainfall; certain tourist roads might be closed. Under NO circumstance may you enter a CLOSED or NO ENTRY road.
22. Feeding or disturbing animals is a serious offence.
23. The park is a pet free zone and no animals of any kind may be brought into the park.
24. The park is a Malaria zone and we advise that all visitors adhere to medical doctors instructions.
25. Littering is prohibited, as it can be dangerous for animals.
26. Poaching and killing of animals is strictly prohibited and severely punishable by law.
27. Fires may not be started unless in designated areas. Completely extinguish cigarette butts must be disposed in the bins provided.
28. Under no circumstances are guests allowed to stray off marked pathways.

Non-adherence to these rules and regulations constitutes an offence, and offenders will be liable to a fine or prosecution.



Appendix 6: Infrastructure

1. Current administrative infrastructure in the park.

Infrastructure	Status	Zone
Crocodile Bridge ranger section		
Crocodile Bridge camp artificial wetland	Operational	HIL
Crocodile Bridge camp borehole		
Crocodile Bridge camp generator room		
Crocodile Bridge camp laundry		
Crocodile Bridge camp linen room		
Crocodile Bridge camp oxidation pond		
Crocodile Bridge camp water treatment works		
Crocodile Bridge gate ablutions		
Crocodile Bridge gate living quarters		
Crocodile Bridge gate offices		
Crocodile Bridge gate reception		
Crocodile Bridge gate staff housing		
Crocodile Bridge gate septic tank system		
Crocodile Bridge ranger artificial wetland		
Crocodile Bridge ranger borehole		
Crocodile Bridge ranger generator room		
Crocodile Bridge ranger staff housing		
Crocodile Bridge ranger staff living quarters		
Fences around Crocodile Bridge rest camp and ranger staff housing		Various
Makhohlola SHR camp		Primitive
Management roads		Various
Tourist roads		Primitive
Various management and veterinary gates		Primitive
Houtboschrand ranger section		
Balule camp borehole	Operational	LIL
Balule camp generator room		
Balule camp septic tank system		
Balule camp solar power plant		
Balule camp staff housing		
Fences around Balule, pump station, ranger staff housing and Roodewal bush lodge		
Houtboschrand ranger artificial wetland		
Houtboschrand ranger borehole		
Houtboschrand ranger generator room		
Houtboschrand ranger staff housing		
Houtboschrand ranger staff living quarters		
Management roads		Primitive
Roodewal bush lodge borehole		LIL
Roodewal bush lodge generator room		

Infrastructure	Status	Zone	
Houtboschrand ranger section			
Roodewal bush lodge septic tank system	Operational	LIL	
Roodewal bush lodge staff housing		Various	
Tourist roads			
Various pickets			
Kingfisherspruit ranger section			
Fences around Orpen rest camp, Maroela camp, ranger staff housing, Talamati bush camp and Tamboti camp	Operational	Various	
Kingfisherspruit ranger staff housing		LIL	
Kingfisherspruit ranger staff living quarters			
Kingfisherspruit ranger borehole			
Kingfisherspruit ranger generator room			
Kingfisherspruit ranger septic tank system			
Management roads		Primitive	
Maroela camp borehole		LIL	
Maroela camp septic tank system			
Maroela camp staff housing		HIL	
Orpen day visitor site artificial wetland			
Orpen day visitor site borehole			
Orpen gate reception			
Orpen rest camp artificial wetland			
Orpen rest camp borehole			
Orpen rest camp generator room			
Orpen rest camp oxidation pond			
Orpen linen room			
Orpen rest camp staff housing			
Repeater site			Primitive
Tamboti tent camp borehole			LIL
Tamboti tent camp artificial wetland			
Tamboti tent camp generator room			
Talamati bush camp artificial wetland			
Talamati bush camp borehole			
Talamati bush camp generator room			
Talamati bush camp linen room			
Talamati bush camp staff accommodation			
Tamboti tent camp artificial wetland			
Tamboti tent camp borehole			
Tamboti tent camp generator room		Various	
Timbavati picnic site borehole			
Timbavati picnic site generator room			
Timbavati picnic site septic tank system	Primitive		
Timbavati picnic site staff housing			
Tourist roads	Various		
Various pickets			
Various management and veterinary gates	Primitive		
Letaba ranger section			
Fences around Letaba rest camp and ranger staff housing	Operational	HIL	
Letaba airfield			
Letaba rest camp artificial wetland			
Letaba rest camp borehole			
Letaba rest camp generator room			
Letaba rest camp offices			



Infrastructure	Status	Zone	
Letaba ranger section			
Letaba rest camp linen room	Operational	HIL	
Letaba rest camp living quarters			
Letaba rest camp oxidation ponds			
Letaba rest camp reception			
Letaba rest camp staff housing			
Letaba rest camp water treatment works			
Letaba ranger staff housing			
Letaba ranger staff living quarters			
Management roads			Primitive
Repeater site			Various
Tourist roads			
Various pickets			
Lower Sabie ranger section			
Fences around Lower Sabie rest camp and ranger staff housing	Operational	HIL	
Lower Sabie rest camp artificial wetland			
Lower Sabie rest camp borehole			
Lower Sabie rest camp generator room			
Lower Sabie rest camp offices			
Lower Sabie rest camp oxidation ponds			
Lower Sabie rest camp reception			
Lower Sabie ranger staff housing			
Lower Sabie ranger staff living quarters			
Lower Sabie water treatment works			
Lower Sabie waste site and solar farm			
Management roads			Primitive
Mlondozi picnic site staff accommodation			LIL
Nkuhlu enclosure			HIL
Nkuhlu picnic site generator			
Nkuhlu picnic site solar farm			
Nkuhlu picnic site staff accommodation			
Nkulu solar plant			
Tourist roads		Various	
Various management and veterinary gates		Primitive	
Various pickets			
Mahlangeni ranger section			
Fences around Mopani rest camp, ranger staff housing and Tsendze camp site		Operational	Various
Management roads			
Mahlangeni ranger artificial wetland			LIL
Mahlangeni ranger borehole			

Infrastructure	Status	Zone
Mahlangueni ranger section		
Mahlangueni ranger generator room	Operational	LIL
Mahlangueni ranger septic tank system		
Mahlangueni ranger staff housing		
Mahlangueni ranger staff living quarters		
Mooiplaas picnic site borehole		
Repeater site		Primitive
Fences around Shimuwini bush camp		LIL
Shimuwini bush camp artificial wetland		
Shimuwini bush camp borehole		
Shimuwini bush camp generator room		
Shimuwini bush camp solar power plant		
Shimuwini bush camp staff housing		
Shimuwini bush camp staff living quarters		
Tsendze camp site artificial wetland		
Tsendze camp site borehole		
Tsendze camp site staff housing		
Tourist roads		Various
Various management and veterinary gates		Primitive
Various pickets		Various
Malelane ranger section		
Afsaal picnic site borehole	Operational	HIL
Afsaal picnic site generator room		
Afsaal picnic site septic tank system		
Afsaal picnic site staff accommodation		LIL
Biyamiti bush camp artificial wetland		
Biyamiti bush camp borehole		
Biyamiti bush camp generator room		HIL
Biyamiti bush camp staff housing		
Berg en Dal rest camp artificial wetland		
Berg en Dal rest camp borehole		
Berg en Dal rest camp generator room		
Berg en Dal rest camp laundry		
Berg en Dal rest camp linen room		
Berg en Dal rest camp oxidation ponds		
Berg en Dal rest camp water treatment works		
Berg en Dal rest camp reception and conference complex		
Fences around Berg en Dal rest camp, Biyamiti and Malelane camps and ranger staff housing		Various
Management roads		Primitive
Malelane day visitor site septic tank system		LIL
Malelane camp borehole		
Malelane camp oxidation ponds		
Malelane camp septic tank system		HIL
Malelane gate ablutions		
Malelane gate generator room		
Malelane gate reception		
Malelane gate septic tank system		
Malelane gate staff housing		
Malelane gate water treatment works		LIL
Malelane ranger artificial wetland		
Malelane ranger borehole		



Infrastructure	Status	Zone	
Malelane ranger section			
Malelane ranger septic tank system	Operational	LIL	
Malelane ranger staff housing			
Malelane ranger living quarters			
Repeater site		Primitive	
Tourist roads		Various	
Various management and veterinary gates			
Various pickets			
Mooiplaas ranger section			
Giriyondo border post ablutions	Operational	HIL	
Giriyondo border post artificial wetland			
Giriyondo border post generator room			
Giriyondo border post offices			
Giriyondo border post reception			
Giriyondo border post staff housing			
Letaba enclosure			Primitive
Makhadzi picnic site artificial wetland		LIL	
Makhadzi picnic site borehole			
Makhadzi picnic site generator room			
Makhadzi picnic site staff housing			
Makhadzi picnic site staff living quarters			
Management roads			
Mooiplaas picnic site septic tank system			
Mooiplaas picnic site staff housing			
Mooiplaas ranger generator room			
Mooiplaas ranger septic tank system			HIL
Mooiplaas ranger staff housing			
Mooiplaas ranger staff living quarters			
Mopani rest camp artificial wetland			
Mopani rest camp borehole			
Mopani rest camp conference centre			
Mopani rest camp generator room			
Mopani rest camp oxidation ponds			
Mopani rest camp reception			
Mopani rest camp staff living quarters			
Mopani rest camp staff housing			
Mopani rest camp water treatment works			
Repeater site		Various	
Tourist roads			
Twanana staff camp			
Various management and veterinary gates		Primitive	
Various pickets		Various	

Infrastructure	Status	Zone
Nwanetsi ranger section		
Fences around ranger staff housing	Operational	LIL
Management roads		Primitive
Nwanetsi picnic site borehole		LIL
Nwanetsi picnic site staff housing		
Nwanetsi ranger artificial wetland		
Nwanetsi ranger borehole		
Nwanetsi ranger generator room		
Nwanetsi ranger staff housing		
Nwanetsi ranger staff living quarters		Primitive
Repeater site		Various
Tourist roads		Primitive
Various management and veterinary gates		
Various pickets		
Olifants ranger section		
Fences around Olifants rest camp and ranger staff housing	Operational	HIL
Management roads		Primitive
Olifants rest camp artificial wetland		HIL
Olifants rest camp borehole		
Olifants rest camp conference centre		
Olifants rest camp generator room		
Olifants rest camp laundry		
Olifants rest camp linen room		
Olifants rest camp oxidation ponds		
Olifants rest camp reception		
Olifants rest camp staff living quarters		
Olifants rest camp staff housing		
Olifants rest camp water treatment works		
Olifants rest camp workshops		
Olifants ranger staff housing		
Olifants ranger staff living quarters		
Tourist roads		Various
Various management and veterinary gates		Primitive
Various pickets		
Pafuri ranger section		
Fences around Pafuri Border camp and Njalaland Wilderness trails camp	Operational	Various
Management roads		Primitive
Pafuri border camp artificial wetland		HIL
Pafuri border camp generator room		
Pafuri border camp solar power plant		
Pafuri border camp staff housing		
Pafuri entrance gate ablutions		
Pafuri entrance gate artificial wetland		
Pafuri entrance gate generator room		
Pafuri entrance gate offices		
Pafuri entrance gate reception		
Pafuri entrance gate staff housing		
Pafuri picnic site septic tank system		
Pafuri picnic site staff housing		
Pafuri picnic site staff living quarters		



Infrastructure	Status	Zone		
Pafuri ranger section				
Pafuri ranger artificial wetland	Operational	HIL		
Pafuri ranger generator room				
Pafuri ranger living quarters				
Pafuri ranger septic tank system				
Pafuri ranger staff housing				
Repeater site			Primitive	
Tourist roads			Various	
Various management and veterinary gates			Primitive	
Various pickets			Various	
Phalaborwa ranger section				
Fences around Phalaborwa gate staff housing and	Operational	HIL		
Management roads		Primitive		
Masorini picnic site borehole		HIL		
Masorini picnic site septic tank system				
Phalaborwa gate ablutions				
Phalaborwa gate generator room				
Phalaborwa gate reception				
Phalaborwa gate staff housing				
Phalaborwa gate staff living quarters				
Regional offices				
Phalaborwa ranger living quarters				
Phalaborwa ranger staff housing				
Tourist roads			Various	
Various management and veterinary gates				
Various pickets				
Pretoriuskop ranger section				
Doispan staff accommodation			Operational	Primitive
Fences around Pretoriuskop rest camp and ranger staff housing		HIL		
Hlanguleni enclosure	Various			
Management roads	Primitive			
Numbi gate ablutions	HIL			
Numbi gate reception and shop				
Phabeni Environmental School				
Phabeni gate reception				
Phabeni K9 training facility with support infrastructure				
Phabeni gate ablutions				
Pretoriuskop day visitor site artificial wetland				
Pretoriuskop day visitor site septic tank system				
Pretoriuskop rest camp artificial wetland				
Pretoriuskop rest camp borehole				
Pretoriuskop rest camp generator room				

Infrastructure	Status	Zone
Pretoriuskop ranger section		
Pretoriuskop rest camp laundry	Operational	HIL
Pretoriuskop rest camp linen room		
Pretoriuskop rest camp reception		
Pretoriuskop rest camp offices		
Pretoriuskop rest camp oxidation ponds		
Pretoriuskop rest camp staff housing		
Pretoriuskop rest camp staff living quarters		
Pretoriuskop rest camp water treatment works		
Pretoriuskop ranger artificial wetland		
Pretoriuskop ranger generator room		
Pretoriuskop ranger septic tank system		
Pretoriuskop ranger water treatment works		
Repeater site		
Tourist roads		
Various management and veterinary gates		Primitive
Various pickets		Various
Punda Maria ranger section		
Fences around Punda Maria rest camp and ranger staff housing	Operational	HIL
Management roads		Primitive
Punda Maria airstrip		HIL
Punda Maria camp artificial wetland		
Punda Maria camp borehole		
Punda Maria camp generator room		
Punda Maria camp oxidation ponds		
Punda Maria camp water treatment works		
Punda Maria camp staff housing		
Punda Maria gate ablutions		
Punda Maria gate artificial wetland		
Punda Maria gate reception		
Punda Maria gate staff housing		
Punda Maria day visitor site and EE centre ablutions		
Punda Maria day visitor site and EE centre borehole		
Punda Maria ranger borehole		
Punda Maria ranger solar power plant		
Punda Maria ranger staff housing		
Punda Maria ranger staff living quarters		
Repeater site		LIL
Tourist roads		Various
Various management and veterinary gates	Primitive	
Various pickets	Various	
Satara ranger section		
Buffalo enclosure	Operational	Various
Fences around Satara rest camp, Mathikithi wilderness trails camp and ranger staff housing		Primitive
Management roads		LIL
Mudzandzeni picnic site borehole		HIL
Mudzandzeni picnic site generator room		
Mudzandzeni picnic site staff housing		
Satara airstrip		
Satara rest camp artificial wetland		



Infrastructure	Status	Zone	
Satara ranger section			
Satara rest camp borehole	Operational	HIL	
Satara rest camp generator room			
Satara rest camp laundry			
Satara rest camp linen room			
Satara rest camp oxidation ponds			
Satara rest camp reception			
Satara rest camp staff housing			
Satara rest camp staff living quarters			
Satara ranger generator room			
Tourist roads			Various
Various pickets		Primitive	
Shangoni ranger section			
Fences around ranger staff housing	Operational	HIL	
Management roads		Various	
Repeater site		LIL	
Shangoni ranger artificial wetland			
Shangoni ranger generator room			
Shangoni ranger septic tank system			
Shangoni ranger staff housing			
Shangoni ranger staff living quarters			
Various management and veterinary gates			Various
Various pickets		Primitive	
Shingwedzi ranger section			
Fences around staff housing and Shingwedzi rest camp	Operational	HIL	
Louise se gat staff accommodation		Primitive	
Management roads		HIL	
Repeater site			
Shingwedzi airstrip			
Shingwedzi camp artificial wetland			
Shingwedzi camp conference centre			
Shingwedzi camp generator room			
Shingwedzi camp offices			
Shingwedzi camp oxidation ponds			
Shingwedzi camp staff living quarters			
Shingwedzi camp staff housing			
Shingwedzi camp water treatment works			
Shingwedzi camp workshops			
Shingwedzi ranger staff housing			
Shingwedzi ranger staff living quarters			
Shingwedzi research camp and workshops			
Tourist roads			Various

Infrastructure	Status	Zone
Shingwedzi ranger section		
Various management and veterinary gates	Operational	Primitive
Various pickets		Various
Skukuza ranger section		
5-minutes staff camp site	Operational	Primitive
25-minutes staff camp site		HIL
Fences around Skukuza rest camp and staff housing		Primitive
Management roads		HIL
N'waswitshaka research camp – fence and storeroom		
Paul Kruger gate ablutions		
Paul Kruger gate artificial wetland		
Paul Kruger gate generator room		
Paul Kruger gate living quarters		
Paul Kruger gate reception		
Paul Kruger gate septic tank system		
Paul Kruger gate staff housing		
Repeater site		
Skukuza airport and staff housing		
Skukuza auditorium		
Skukuza conference facility		
Skukuza cricket field and facilities		
Skukuza finance administrative building		
Skukuza game processing plant and staff housing		
Skukuza generator room		
Skukuza golf course and clubhouse		
Skukuza Human Resources and Technical Services administration building		
Skukuza industrial laundry		
Skukuza laundry		
Skukuza linen room		
Skukuza Nature Conservation administration building		
Skukuza Nature Conservation workshops, storeroom and offices		
Skukuza nursery		
Skukuza Primary school and crèche		
Skukuza oxidation ponds		
Skukuza reception complex including Post Office and First National Bank		
Skukuza scientific services administration building, laboratories and storerooms		
Skukuza science centre		
Skukuza solar power plant		
Skukuza soccer field and facilities		
Skukuza staff housing and living quarters		
Skukuza strong rooms		
Skukuza staff village swimming pool, tennis courts, gymnasium and community centre.		
Skukuza Tourism administration building		
Skukuza Training Department administration building		
Skukuza veterinary Wildlife Services laboratories and offices		
Skukuza ware houses and buyers' offices		
Skukuza water treatment works		



Infrastructure	Status	Zone
Skukuza ranger section		
Skukuza K9, wildlife bomas, facilities	Operational	Various
Tourist roads		Primitive
Various management and veterinary gates		
Various pickets		Various
Stolsnek ranger section		
Fences around Bushman, Napi and Wolhuter wilderness trails camps, ranger staff housing	Operational	Various
Management roads		Primitive
Stolsnek ranger artificial wetland		LIL
Stolsnek ranger borehole		
Stolsnek ranger generator room		
Stolsnek ranger septic tank system		
Stolsnek ranger living quarters		
Stolsnek ranger staff housing		
Tourist roads		Various
Various management and veterinary gates		Primitive
Various pickets		
Tshokwane ranger section		
Fences around ranger staff housing	Operational	LIL
Nhlanguleni picnic site borehole		
Nhlanguleni picnic site generator room		
Nhlanguleni picnic site septic tank system		
Nhlanguleni picnic site staff housing		Primitive
Management roads		LIL
Orpen dam picnic site borehole		
Orpen dam picnic septic tank system		Primitive
Sand River bush camp borehole		
Sand River bush septic tank system		Various
Tourist roads		LIL
Tshokwane airstrip and hanger		
Tshokwane picnic site artificial wetland		
Tshokwane picnic site borehole		
Tshokwane picnic site generator room		
Tshokwane picnic site oxidation ponds		
Tshokwane picnic site septic tank system		
Tshokwane ranger artificial wetland		
Tshokwane ranger borehole		
Tshokwane ranger generator room		
Tshokwane ranger staff housing		
Tshokwane ranger living quarters		
Tshokwane solar plant		

Infrastructure	Status	Zone		
Tshokwane ranger section				
Repeater site	Operational	Primitive		
Various management and veterinary gates				
Vlakteplaas ranger section				
Babalala borehole	Operational	LIL		
Babalala septic tank system				
Babalala staff living quarters		LIL		
Fences around ranger staff housing and Sirheni bush camp				
Management roads			Primitive	
Sirheni bush camp artificial wetland			LIL	
Sirheni bush camp generator room				
Sirheni bush camp solar power plant				
Sirheni bush camp staff housing				
Tourist roads				
Vlakteplaas ranger artificial wetland				
Vlakteplaas ranger generator room				
Vlakteplaas ranger septic tank system				
Vlakteplaas ranger staff housing				
Vlakteplaas ranger staff living quarters				
Various management and veterinary gates				Primitive
Various pickets				Various
Xingomeni staff facility				Primitive
Xirombe staff facility				
Woodlands ranger section				
Bateleur bush camp artificial wetland	Operational	LIL		
Bateleur bush camp generator room				
Bateleur bush camp septic tank system				
Bateleur bush camp staff housing		Primitive		
Fences around Bateleur bush camp and ranger staff housing				
Management roads		Various		
Repeater sites				
Tourist roads				
Woodlands ranger artificial wetland		LIL		
Woodlands ranger generator room				
Woodlands ranger septic tank system				
Woodlands ranger staff housing				
Woodlands ranger staff living quarters				
Various pickets			Primitive	

2. Current visitor facilities and points of interest in the park.

Infrastructure	Status	Zone
Crocodile Bridge ranger section		
Crocodile bridge fuel station	Operational	HIL
Crocodile bridge shop		LIL
Hippo pools lookout point		Various
Water points		
Houtboschrand ranger section		
Ngotso lookout point	Operational	LIL
Ratel pan bird hide		



Infrastructure	Status	Zone
Houtboschrand ranger section		
Water points	Operational	Various
Kingfisherspruit ranger section		
Bobbejaankrans lookout point	Operational	HL
Orpen day visitor site		
Orpen ablutions		
Orpen fuel station		
Orpen shop		
Orpen swimming pool		LIL
Mondzweni lookout point		
Rabelais hut		
Timbavati picnic site and ablutions		Various
Water points		
Letaba ranger section		
Letaba elephant hall	Operational	HIL
Letaba fuel station		
Letaba shop and restaurant		
Letaba swimming pool		
Longwe get out point		LIL
Matambeni bird hide		
Water points		
Lower Sabie ranger section		
Lower Sabie ablutions	Operational	HIL
Lower Sabie day visitor site		
Lower Sabie fuel station		
Lower Sabie shop and restaurant		
Lower Sabie swimming pool		
Mlondozi picnic site and ablutions		LIL
Nkulu picnic site and ablutions		HIL
Nthandanyathi bird hide		LIL
Various water points		Various
Mahlangeni ranger section		
Water points	Operational	Various
Mooiplaas picnic site and ablutions		LIL
Malelane ranger section		
Afsaal picnic site and ablutions	Operational	HIL
Berg-en-Dal day visitor site		
Biyamiti bird hide		LIL
Gardenia bird hide		
Water points		Various

Infrastructure	Status	Zone
Mooiplaas ranger section		
Makadzi picnic site and ablutions	Operational	LIL
Mopani conference centre, restaurant and shop		HIL
Mopani day visitor site		
Mopani fuel station		
Mopani swimming pool		
Pioneer dam bird hide		
Shipandani bird hide		
Water points		
N'wanetsi ranger section		
N'wanetsi picnic site and ablutions	Operational	LIL
Sweni bird hide		Various
Water points		
Olifants ranger section		
N'wamanzi get out point	Operational	HIL
Olifants lookout point		LIL
Olifants day visitor site		HIL
Olifants fuel station		
Olifants shop and restaurant		
Olifants swimming pool		
Pafuri ranger section		
Mazanje lookout point	Operational	HIL
Pafuri picnic site and ablutions		LIL
Thulamela cultural site		Various
Water points		
Phalaborwa ranger section		
Community shop at Phalaborwa gate	Operational	HIL
Masorini picnic site and ablutions		LIL
Mingerhout lookout point		
Sable dam bird hide		
Water points		Various
Pretoriuskop ranger section		
Albasini ruins	Operational	HIL
Community shop at Numbi gate		
Nyamundwa lookout point		
Pretoriuskop day visitor site		
Pretoriuskop fuel station		
Pretoriuskop swimming pool		
Water points		Various
Punda Maria ranger section		
Coetzee dam bird hide	Operational	HIL
Dzundzwini lookout point		LIL
Punda Maria day visitor site		HIL
Punda Maria fuel station		
Punda Maria swimming pool		
Various water points		Various
Witsand lookout point		LIL
Satara ranger section		
Muzandzeni picnic site and ablutions	Operational	LIL
Satara day visitor site		HIL
Satara fuel station and car wash		



Infrastructure	Status	Zone
Satara ranger section		
Satara swimming pool	Operational	HIL
Various water points		Various
Shingwedzi ranger section		
Shingwedzi day visitor site	Operational	HIL
Kannidood bird hide		LIL
Nyawutsi bird hide		HIL
Shingwedzi fuel station		
Shingwedzi restaurant and shop		
Shingwedzi swimming pool		LIL
Shipirivirhi lookout point		Various
Water points		
Skukuza ranger section		
Community shop at Kruger gate	Operational	HIL
Lake panic bird hide		LIL
Mathekenyane get out point		HIL
Skukuza day visitor site		
Skukuza fuel station and car wash		
Skukuza swimming pool		
Skukuza Stevenson-Hamilton library		LIL
Stevenson-Hamilton memorial / get out point		
Water points		Various
Stolsnek ranger section		
Matjulu lookout point	Operational	LIL
Water points		Various
Renosterpan lookout point		LIL
Tshokwane ranger section		
Baobab tree lookout point	Operational	HIL
Nkumbe get out point		
Olifant drinkgat lookout point		
Kruger tablets		
Vlakteplaas ranger section		
Babalala picnic site and ablutions	Operational	LIL
Magamba lookout point		HIL
Water points		Various
Woodlands ranger section		
Olifantsbadpan lookout point	Operational	HIL
Red rocks viewpoint		
Silwervis get pout point		
Tshanga get out point		Primitive

3. Current accommodation facilities in the park.

Infrastructure	No of units	Status	Zone
Crocodile Bridge ranger section – Crocodile bridge rest camp			
Bungalow (2 bed)	2	Self-catering – serviced – economy accommodation	HIL
Bungalow (3 bed)	18	Self-catering – serviced – economy accommodation	
Camp site, power (max 6 persons)	20	Self-catering – serviced – budget accommodation	
Safari tent (2 bed)	8	Self-catering – serviced – economy accommodation	
Houtboschrand ranger section – Balule satellite camp			
Hut (3 bed)	3	Self-catering – serviced – economy accommodation	LIL
Camp site, no power (max 6 persons)	18	Self-catering – serviced – budget accommodation	
Olifant wilderness trails camp			
8 beds	1	Catered – serviced – economy accommodation	Primitive
Roodewal bush lodge			
Family cottage (4 bed unit)	3	Self-catering – serviced – economy accommodation	LIL
Family cottage (6 bed unit)	1	Self-catering – serviced – economy accommodation	
Kingfisherspruit ranger section – Maroela satellite camp			
Camp site, no power (max 6 persons)	4	Self-catering – serviced – budget accommodation	LIL
Camp site, power (max 6 persons)	20	Self-catering – serviced – budget accommodation	
Orpen rest camp			
Bungalow (2 bed)	12	Self-catering – serviced – economy accommodation	HIL
Guest cottage (6 bed)	3	Self-catering – serviced – economy accommodation	
Talamati bushveld camp			
Cottage (4 bed)	3	Self-catering – serviced – economy accommodation	LIL
Guest cottage (6 bed)	12	Self-catering – serviced – economy accommodation	
Tamboti satellite camp			
Safari tent (2 bed)	15	Self-catering – serviced – economy accommodation	LIL
Luxury safari tent (3 bed)	10	Self-catering – serviced – economy accommodation	
Safari tent (4 bed)	15	Self-catering – serviced – economy accommodation	
Letaba ranger section – Letaba rest camp			
Bungalow (2 bed)	32	Self-catering – serviced – economy accommodation	HIL
Bungalow (3 bed)	54	Self-catering – serviced – economy accommodation	
Camp site (max 6 persons)	60	Self-catering – serviced – budget accommodation	
Hut (3 bed)	5	Self-catering – serviced – economy accommodation	
Fish Eagle guest house (8 bed)	1	Self-catering – serviced – premium accommodation	
Guest cottage (6 bed)	10	Self-catering – serviced – economy accommodation	



Infrastructure	No of units	Status	Zone
Letaba ranger section – Letaba rest camp			
Melville guest house (9 bed)	1	Self-catering – serviced – premium accommodation	HIL
Safari tent (2 bed)	10	Self-catering – serviced – economy accommodation	
Safari tent (4 bed)	10	Self-catering – serviced – economy accommodation	
Lower Sabie ranger section – Lower Sabie rest camp			
Bungalow (2 bed)	34	Self-catering – serviced – economy accommodation	HIL
Bungalow (3 bed)	24	Self-catering – serviced – economy accommodation	
Camp site, power (max 6 persons)	38	Self-catering – serviced – budget accommodation	
Hut (1 bed)	4	Self-catering – serviced – economy accommodation	
Hut (2 bed)	10	Self-catering – serviced – economy accommodation	
Hut (3 bed)	12	Self-catering – serviced – economy accommodation	
Hut (4 bed)	6	Self-catering – serviced – economy accommodation	
Hut (5 bed)		Self-catering – serviced – economy accommodation	
Family cottage	4	Self-catering – serviced – economy accommodation	
Luxury safari tent	6	Self-catering – serviced – economy accommodation	
Kearlfield Guest House	1	Self-catering – serviced – premium accommodation	
Mahlangeni ranger section – Boulders bush lodge			
(12 beds)	1	Self-catering – serviced – premium accommodation	LIL
Shimuwini bushveld camp			
Cottage (4 bed)	5	Self-catering – serviced – economy accommodation	LIL
Guest cottage (5 bed)	9	Self-catering – serviced – economy accommodation	
Guest cottage (6 bed)	1	Self-catering – serviced – economy accommodation	
Shipandani hide			
6 bed	1	Self-catering – serviced – budget accommodation	LIL
Tsendze rustic camp site			
Camp site, no power (max 6 persons)	34	Self-catering – serviced – budget accommodation	LIL
Malelane ranger section – Berg en Dal rest camp			
Bungalow (3 bed)	69	Self-catering – serviced – economy accommodation	HIL
Camp site, power (max 6 persons)	82	Self-catering – serviced – budget accommodation	

Infrastructure	No of units	Status	Zone
Malelane ranger section – Berg en Dal rest camp			
Family cottage (6 bed)	23	Self-catering – serviced – economy accommodation	HIL
J. Le Roux Guest House (6 bed)	1	Self-catering – serviced – premium accommodation	
Rhino Guest House (8 bed)	1	Self-catering – serviced – premium accommodation	
Biyamiti bushveld camp			
Cottage (2 bed)	5	Self-catering – serviced – economy accommodation	LIL
Guest cottage (5 bed)	10	Self-catering – serviced – economy accommodation	
Malelane satellite camp			
Bungalow (3 bed)	1	Self-catering – serviced – economy accommodation	LIL
Bungalow (4 bed)	4	Self-catering – serviced – economy accommodation	
Camp site, no power (max 6 persons)	2	Self-catering – serviced – budget accommodation	
Camp site, power (max 6 persons)	15	Self-catering – serviced – budget accommodation	
Mooiplaas ranger section – Mopani rest camp			
Bungalow (4 bed)	45	Self-catering – serviced – economy accommodation	HIL
Cottage (4 bed)	12	Self-catering – serviced – economy accommodation	
Guest cottage (6 bed)	45	Self-catering – serviced – economy accommodation	
Xanatseni guest house (8 bed)	1	Self-catering – serviced – premium accommodation	
Olifants ranger section – Olifants rest camp			
Bungalow (2 bed)	76	Self-catering – serviced – economy accommodation	HIL
Bungalow (3 bed)	30	Self-catering – serviced – economy accommodation	
Bungalow (4 bed)	3	Self-catering – serviced – economy accommodation	
Guest cottage (4 bed)	2	Self-catering – serviced – economy accommodation	
Lebombo guest house (8 bed)	1	Self-catering – serviced – premium accommodation	
Nkambako bungalow (4 bed)	1	Self-catering – serviced – economy accommodation	
Nshawu guest house (8 bed)	1	Self-catering – serviced – premium accommodation	
Pafuri ranger section – Pafuri Border rest camp			
Dr. Guest house (6 bed)	1	Self-catering – serviced – premium accommodation	HIL
Mockford cottage (4 bed)	1	Self-catering – serviced – premium accommodation	
Mockford house (8 bed)	1	Self-catering – serviced – premium accommodation	
Nyalaland wilderness trails camp			
8 Beds	1	Catered – serviced – economy accommodation	Primitive



Infrastructure	No of units	Status	Zone
Shidzivane wilderness trails camp			
8 Beds	1	Catered – serviced – economy accommodation	Primitive
Phalaborwa ranger section – Sable hide			
9 Beds	1	Self-catering – serviced – economy accommodation	HIL
Pretoriuskop ranger section – Pretoriuskop rest camp			
Bungalow (2 bed)	46	Self-catering – serviced – economy accommodation	HIL
Bungalow (4 bed)	6	Self-catering – serviced – economy accommodation	
Bungalow (6 bed)	2	Self-catering – serviced – economy accommodation	
Camp site, power (max 6 persons)	51	Self-catering – serviced – budget accommodation	
Hut (2 bed)	27	Self-catering – serviced – economy accommodation	
Hut (3 bed)	14	Self-catering – serviced – economy accommodation	
Hut (5 bed)	3	Self-catering – serviced – economy accommodation	
Hut (6 bed)	2	Self-catering – serviced – economy accommodation	
Family cottage (6 bed)	4	Self-catering – serviced – economy accommodation	
Doherty Bryant Guest House (9 bed)	1	Self-catering – serviced – premium accommodation	
P. Joubert Guest House (8 bed)	1	Self-catering – serviced – premium accommodation	
Punda Maria ranger section – Punda Maria rest camp			
Bungalow (2 bed)	18	Self-catering – serviced – economy accommodation	HIL
Bungalow (3 bed)	4	Self-catering – serviced – economy accommodation	
Camp site, no power (max 6 persons)	21	Self-catering – serviced – budget accommodation	
Camp site, power (max 6 persons)	40	Self-catering – serviced – budget accommodation	
Family cottage (6 bed)	2	Self-catering – serviced – economy accommodation	
Russel guest cottage (4 bed)	1	Self-catering – serviced – economy accommodation	
Safari tent (2 bed)	7	Self-catering – serviced – economy accommodation	
Satara ranger section – Mathikithi Trails camp			
8 Beds	1	Catered – serviced – economy accommodation	Primitive

Infrastructure	No of units	Status	Zone
Satara ranger section – Satara rest camp			
Bungalow (2 bed)	149	Self-catering – serviced – economy accommodation	HIL
Bungalow (3 bed)	28	Self-catering – serviced – economy accommodation	
Camp site, no power (max 6 persons)	25	Self-catering – serviced – budget accommodation	
Camp site, power (max 6 persons)	92	Self-catering – serviced – budget accommodation	
Guest cottage (5 bed)	1	Self-catering – serviced – economy accommodation	
Guest cottage (6 bed)	9	Self-catering – serviced – economy accommodation	
R. Frankel Guest House (10 bed)	1	Self-catering – serviced – premium accommodation	
Stanley Guest House (9 bed)	1	Self-catering – serviced – premium accommodation	
Wells Guest House (6 bed)	1	Self-catering – serviced – premium accommodation	
Shingwedzi ranger section – Shingwedzi rest camp			
Bungalow (2 bed)	38	Self-catering – serviced – economy accommodation	HIL
Bungalow (3 bed)	28	Self-catering – serviced – economy accommodation	
Camp site, no power (max 6 persons)	15	Self-catering – serviced – budget accommodation	
Camp site, power (max 6 persons)	86	Self-catering – serviced – budget accommodation	
Cottage (4 bed)	1	Self-catering – serviced – economy accommodation	
Hut (3 bed)	12	Self-catering – serviced – economy accommodation	
Rentmeester guest house (6 bed)	1	Self-catering – serviced – premium accommodation	
Skukuza ranger section – Skukuza rest camp			
Bungalow (2 bed)	112	Self-catering – serviced – budget accommodation	HIL
Bungalow (3 bed)	86	Self-catering – serviced – budget accommodation	
Camp site (max 6 persons)	85	Self-catering – serviced – budget accommodation	
Family cottage (2 bed)	1	Self-catering – serviced – economy accommodation	
Elsie Clark Guest Cottage (4 bed)	1	Self-catering – serviced – economy accommodation	
Guest cottage (4 bed)	6	Self-catering – serviced – economy accommodation	
Guest cottage (6 bed)	8	Self-catering – serviced – economy accommodation	
Moni guest house (8 bed)	1	Self-catering – serviced – economy accommodation	
Nyathi guest house (8 bed)	1	Self-catering – serviced – premium accommodation	
Safari tent (2 bed)	12	Self-catering – serviced – economy accommodation	
Safari tent (4 bed)	9	Self-catering – serviced – economy accommodation	
Struben historical family cottage (6 bed)	1	Self-catering – serviced – economy accommodation	
Waterkant 1 guest house (8 bed)	1	Self-catering – serviced – premium accommodation	



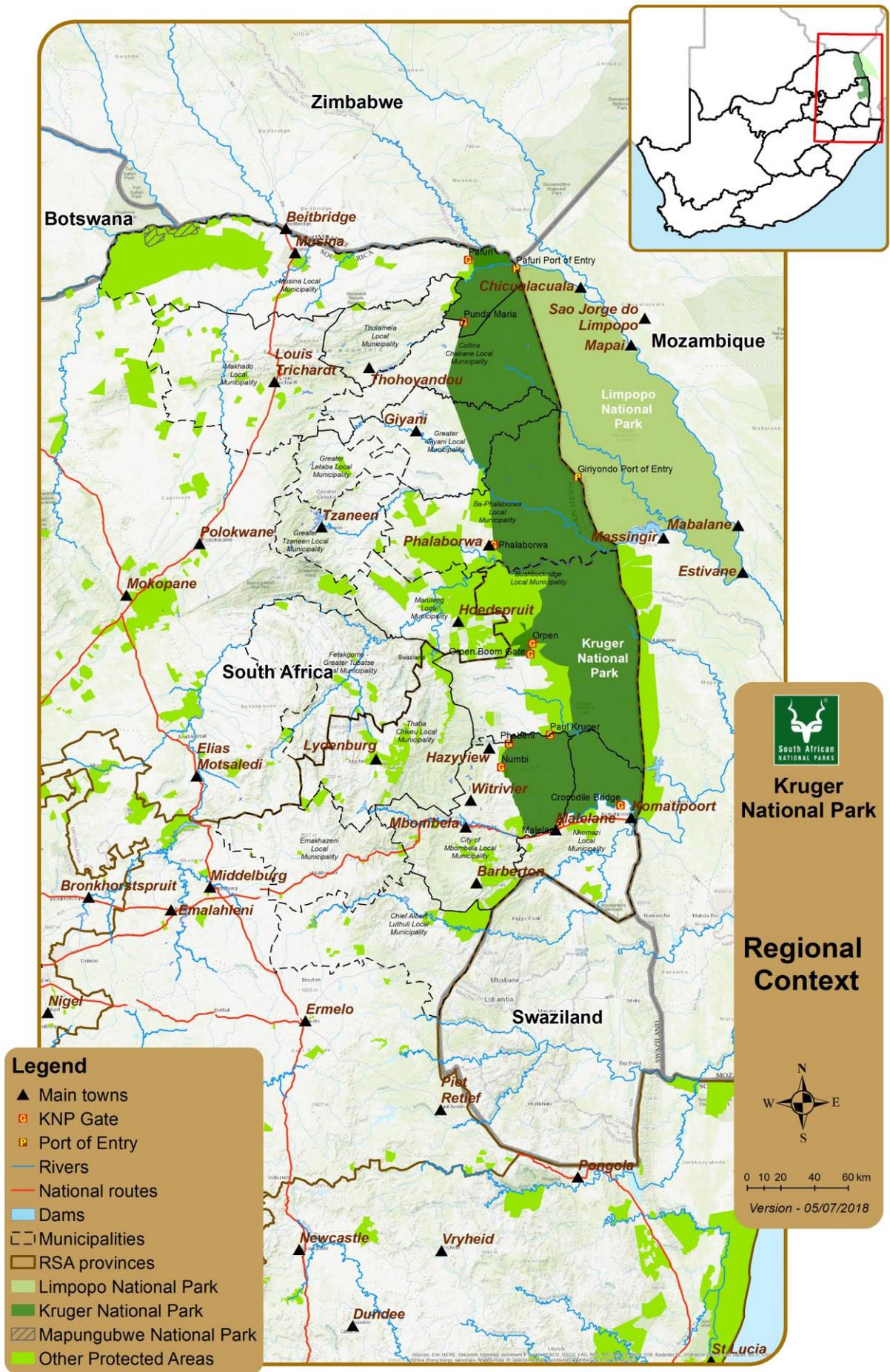
Infrastructure	No of units	Status	Zone
Skukuza ranger section – Skukuza rest camp			
Wild Fig guest house (12 bed)	1	Self-catering – serviced – premium accommodation	HIL
Stolsnek ranger section - Napi wilderness trails camp			
8 Beds	1	Catered – serviced – economy accommodation	Primitive
Vlakteplaas ranger section – Sirheni bushveld camp			
Cottage (4 bed)	5	Self-catering – serviced – economy accommodation	LIL
Guest cottage (6 bed)	10	Self-catering – serviced – economy accommodation	
Woodlands ranger section – Bateleur bushveld camp			
Guest cottage (4 bed)	4	Self-catering – serviced – economy accommodation	LIL
Guest cottage (6 bed)	3	Self-catering – serviced – economy accommodation	

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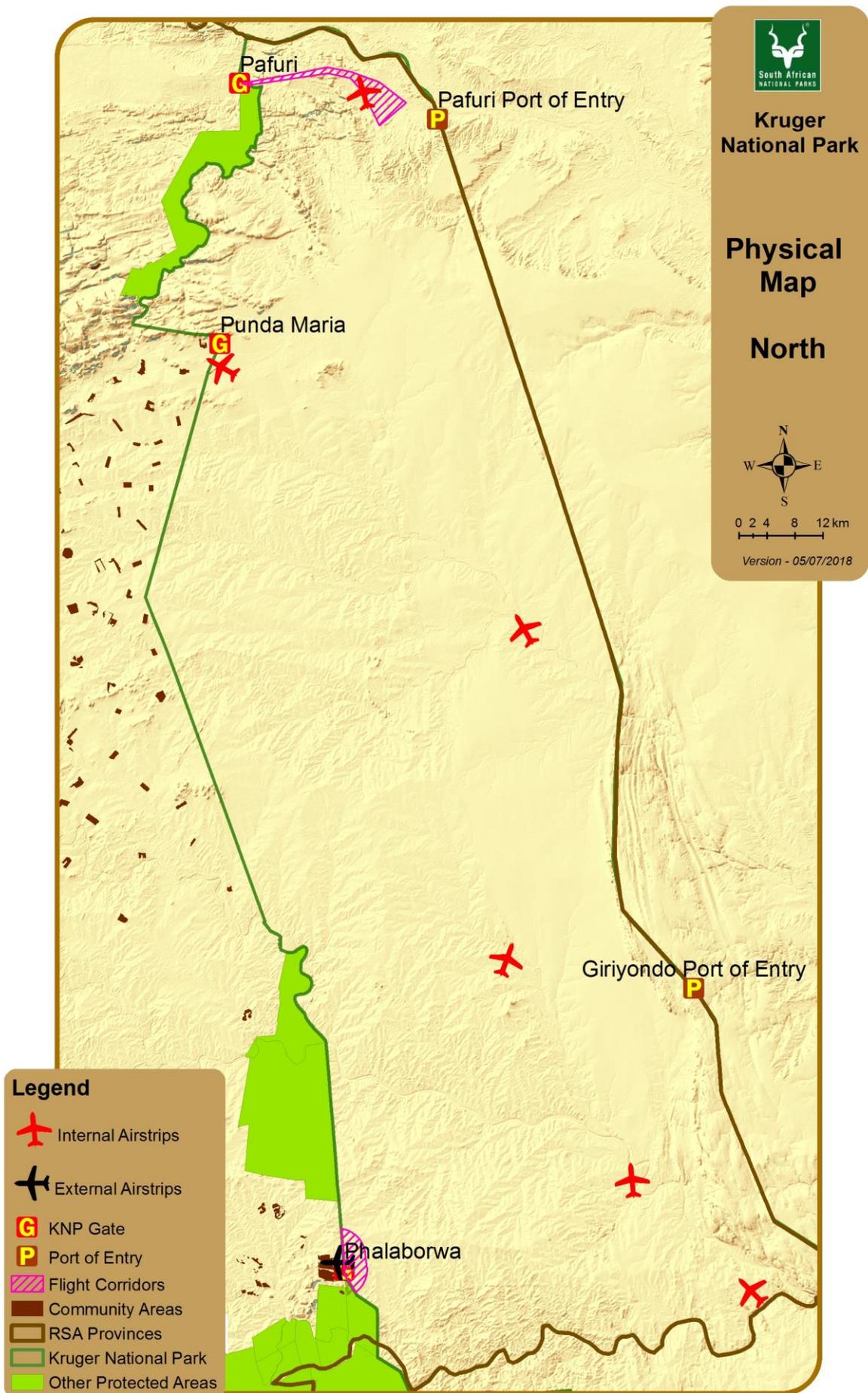


Appendix 7: Maps

- Map 1: Regional context
- Map 2a: Physical features – North
- Map 2b: Physical features – South
- Map 3: Land tenure and park expansion
- Map 4a: Zoning –North
- Map 4b: Zoning – Central
- Map 4c: Zoning – South
- Map 5a: Zoning with sensitivity value – North
- Map 5b: Zoning with sensitivity value – Central
- Map 5c: Zoning with sensitivity value – South
- Map 6: Buffer areas
- Map 7a: Infrastructure – North
- Map 7b: Infrastructure – Central
- Map 7c: Infrastructure – South
- Map 8: Vegetation



Map 1: Regional context



Map 2a: Physical features – North



Kruger National Park

Physical Map

South

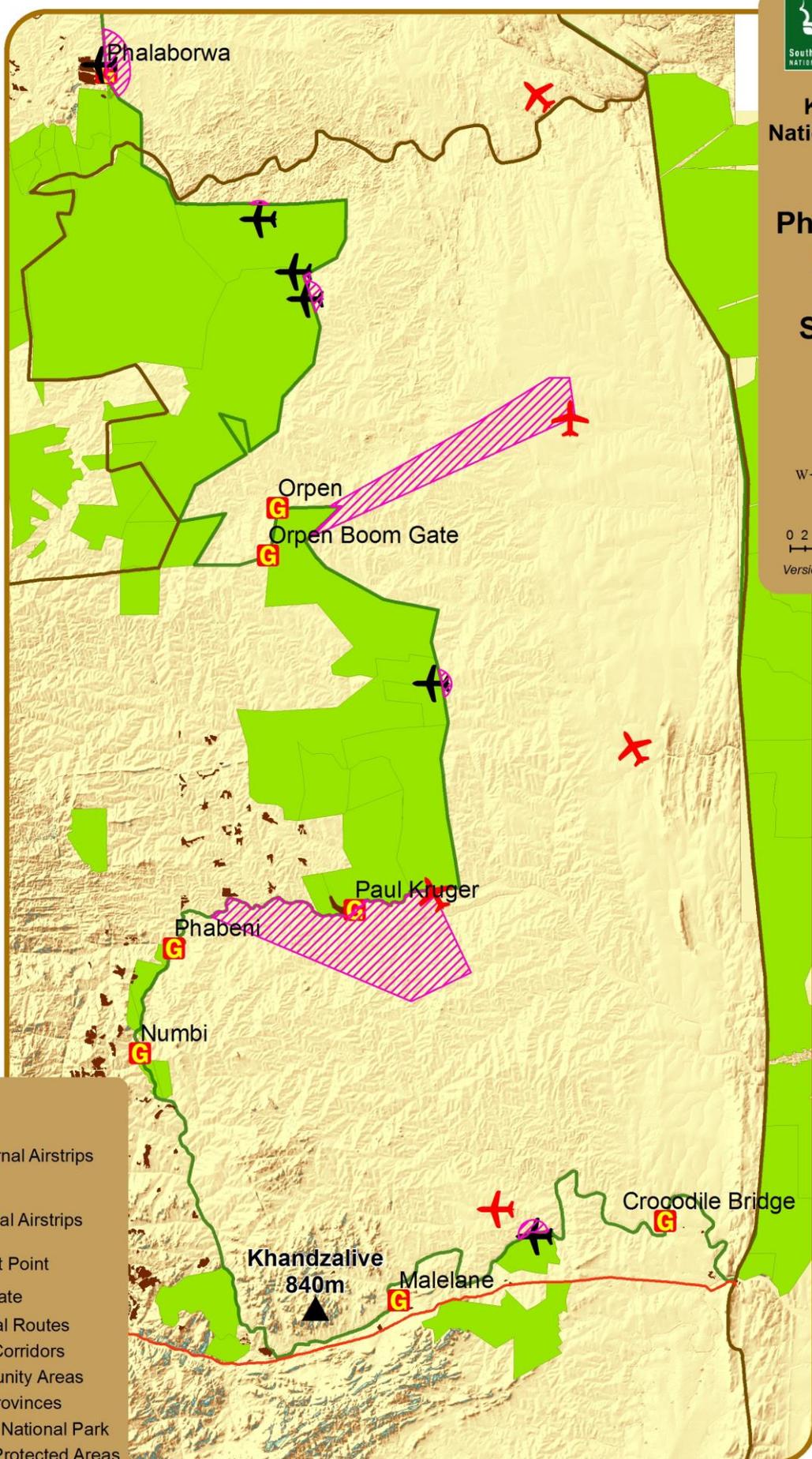


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Legend

-  Internal Airstrips
-  External Airstrips
-  Highest Point
-  KNP Gate
-  National Routes
-  Flight Corridors
-  Community Areas
-  RSA Provinces
-  Kruger National Park
-  Other Protected Areas



Map 2b: Physical features – South



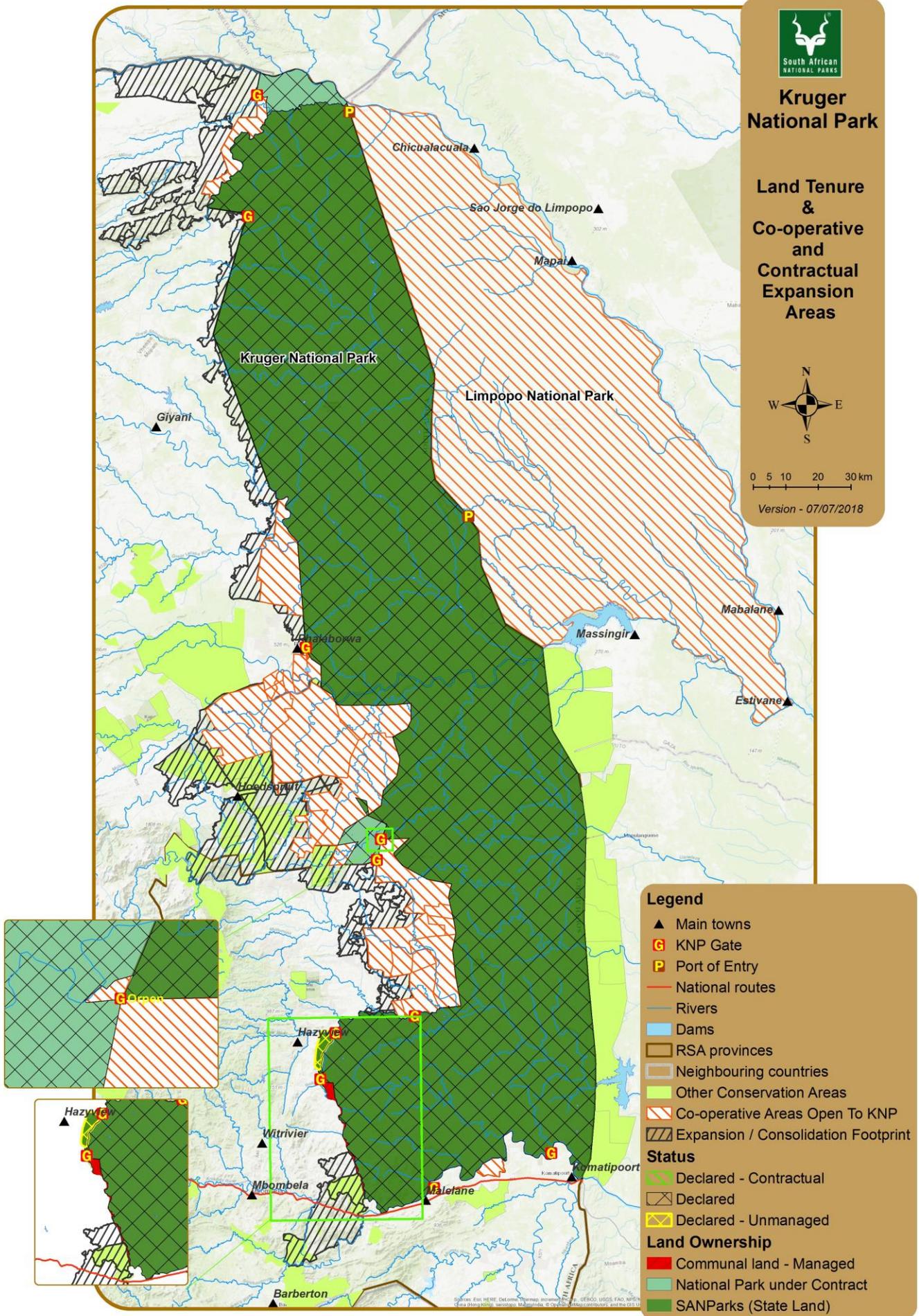
Kruger National Park

Land Tenure & Co-operative and Contractual Expansion Areas

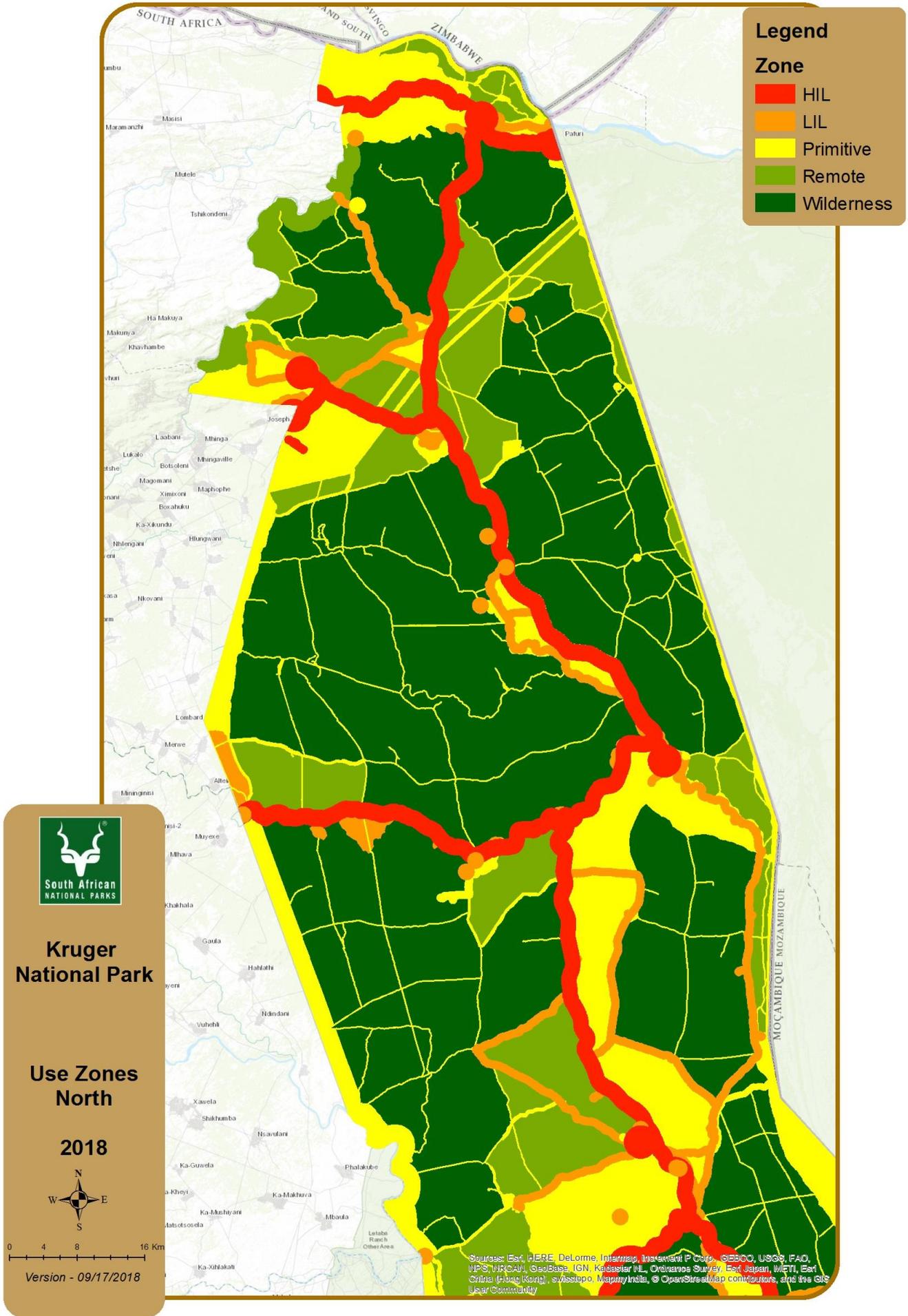


0 5 10 20 30 km

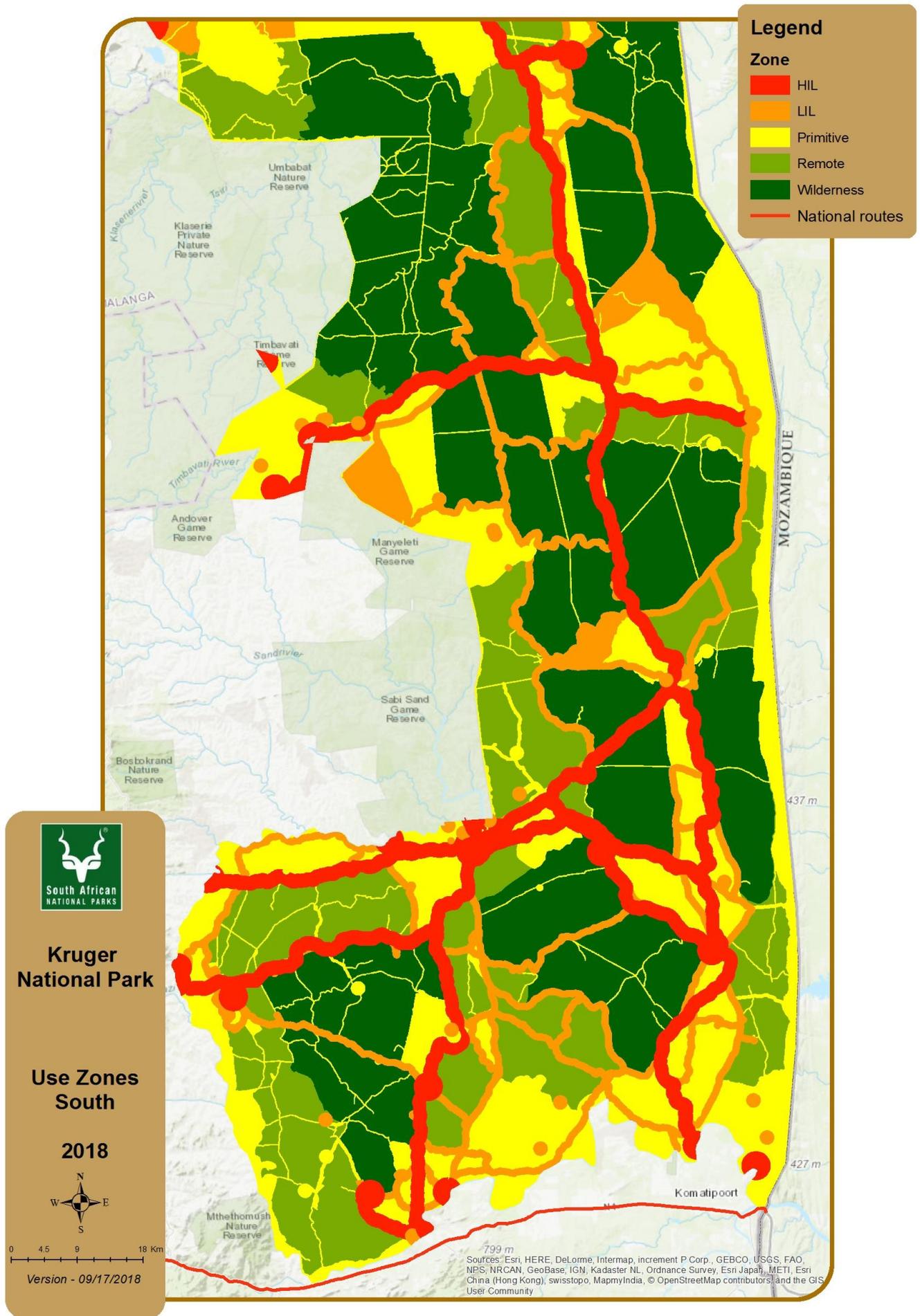
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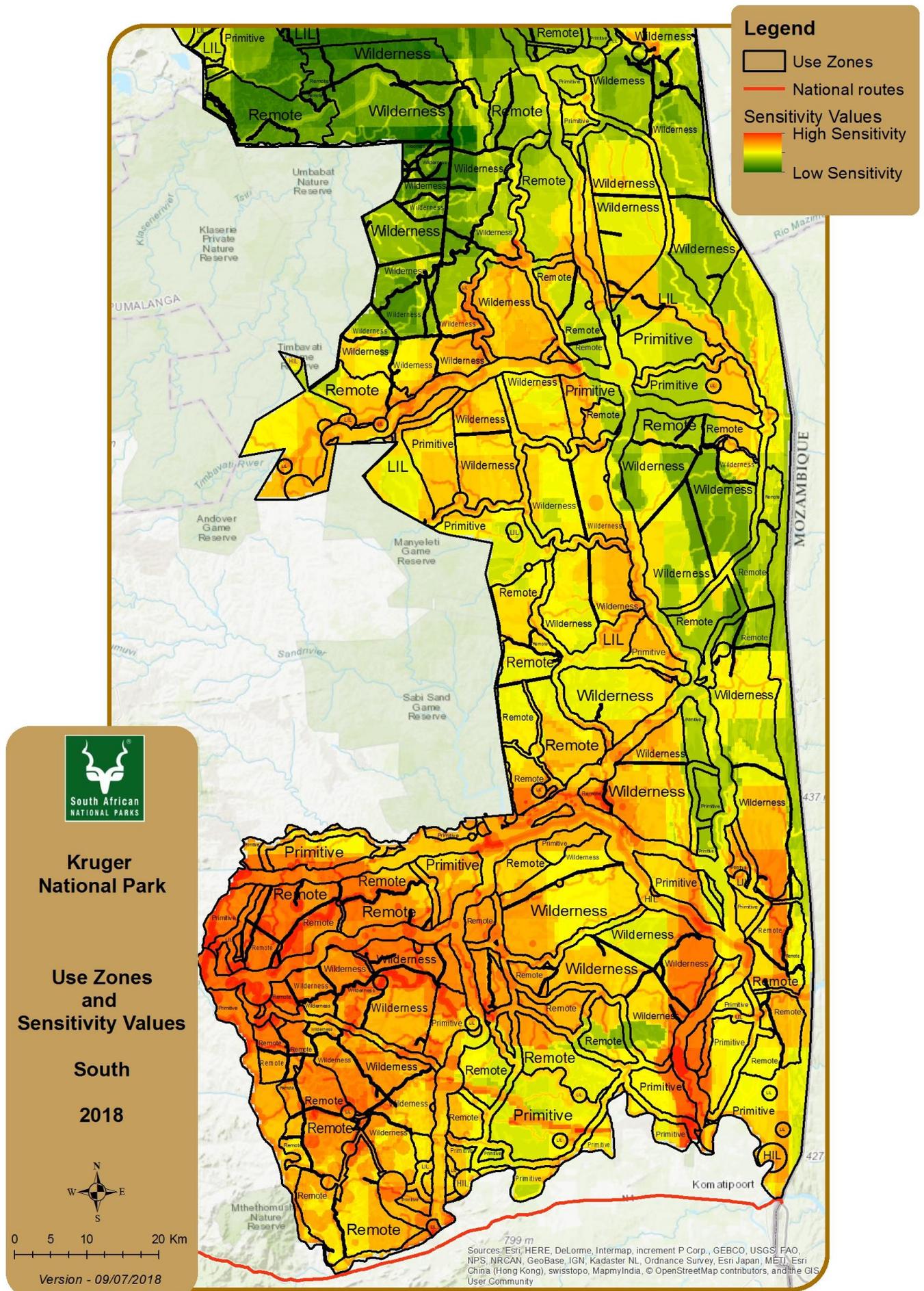
Map 3: Land tenure and potential expansion



Map 4a: Zoning – North



Map 4c: Zoning – South



Map 5c: Zoning and sensitivity – South



Kruger National Park

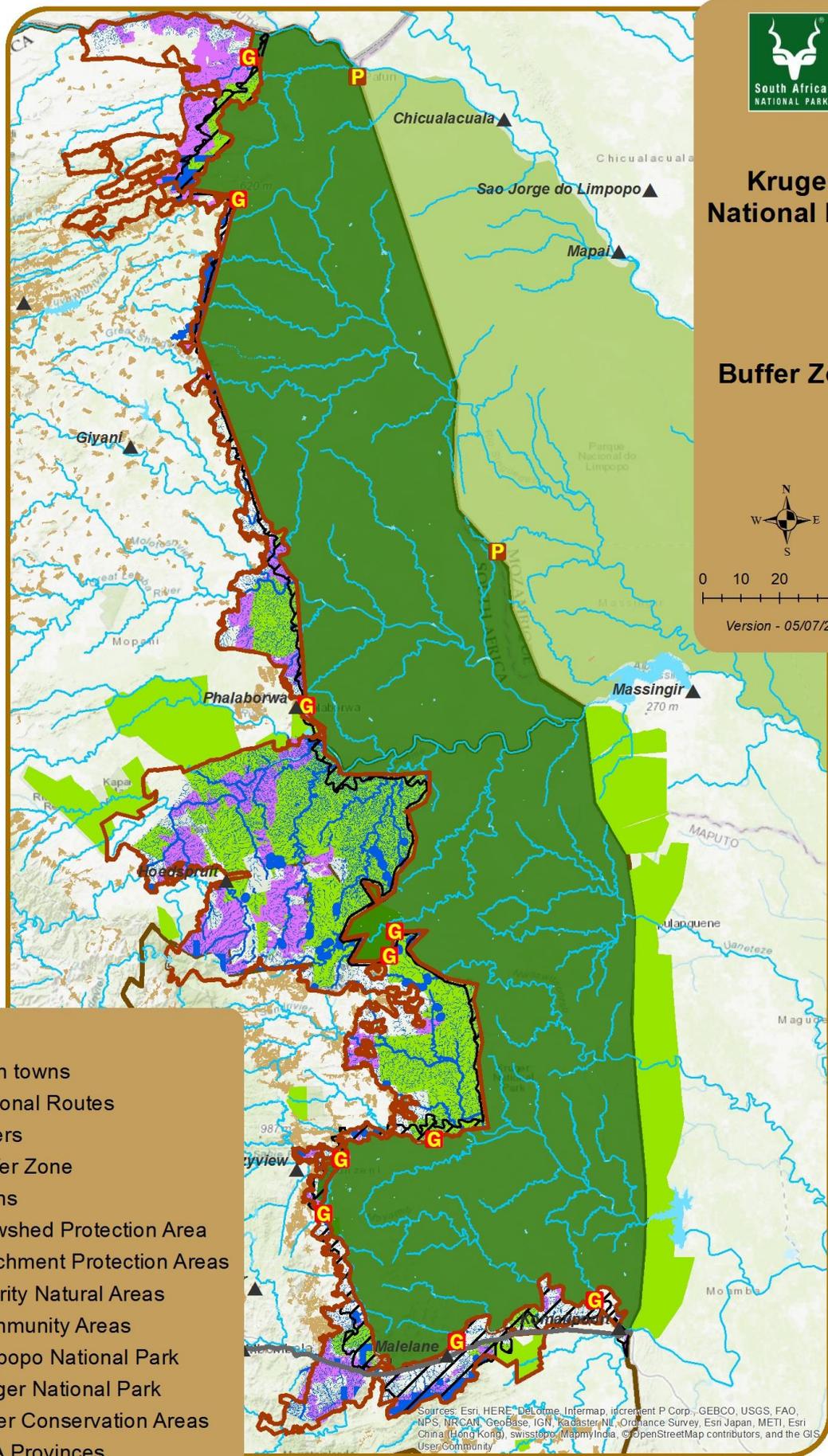
Buffer Zone



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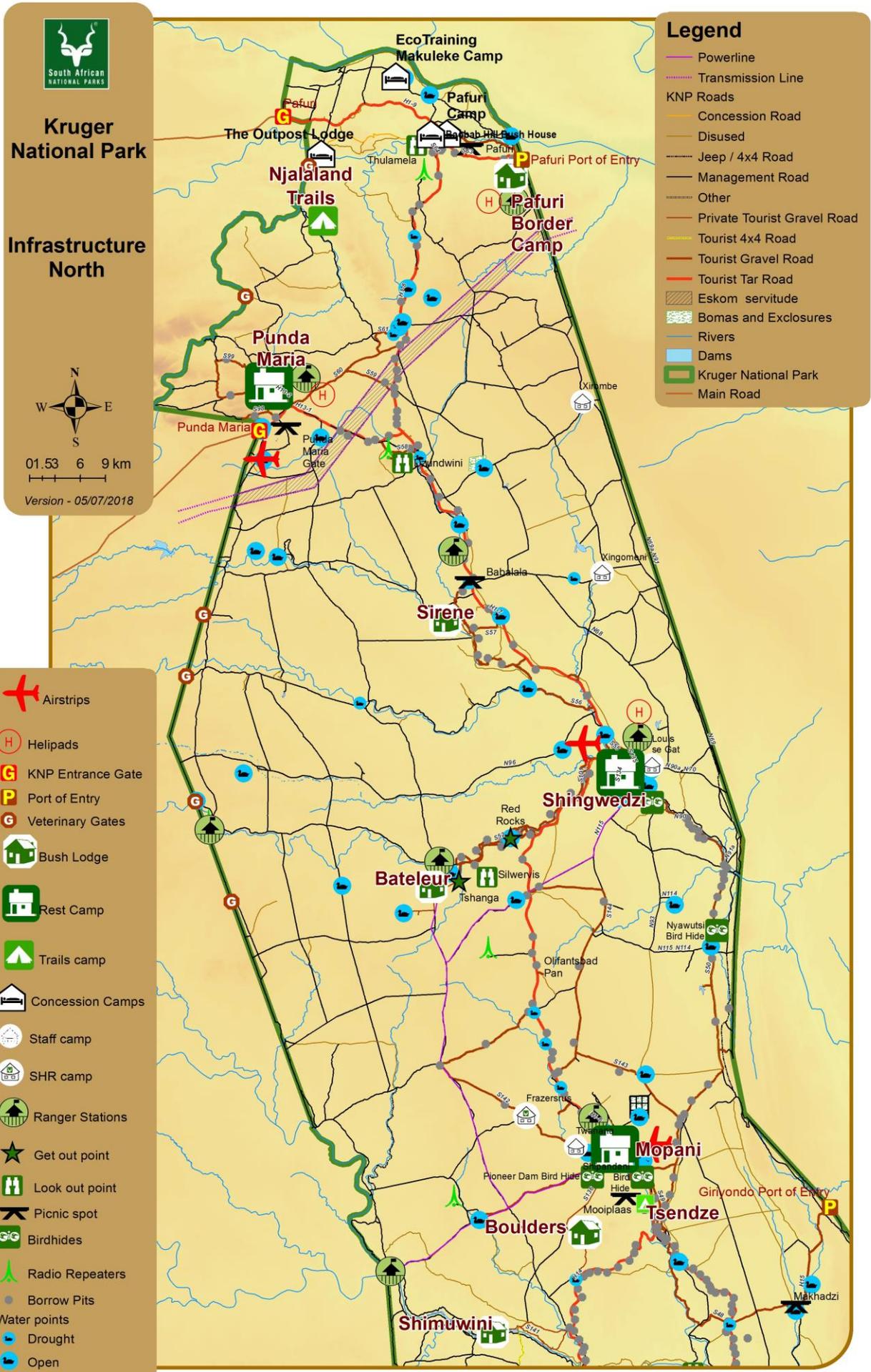
Legend

- ▲ Main towns
- National Routes
- Rivers
- Buffer Zone
- Dams
- ▨ Viewshed Protection Area
- Catchment Protection Areas
- Priority Natural Areas
- Community Areas
- Limpopo National Park
- Kruger National Park
- Other Conservation Areas
- RSA Provinces

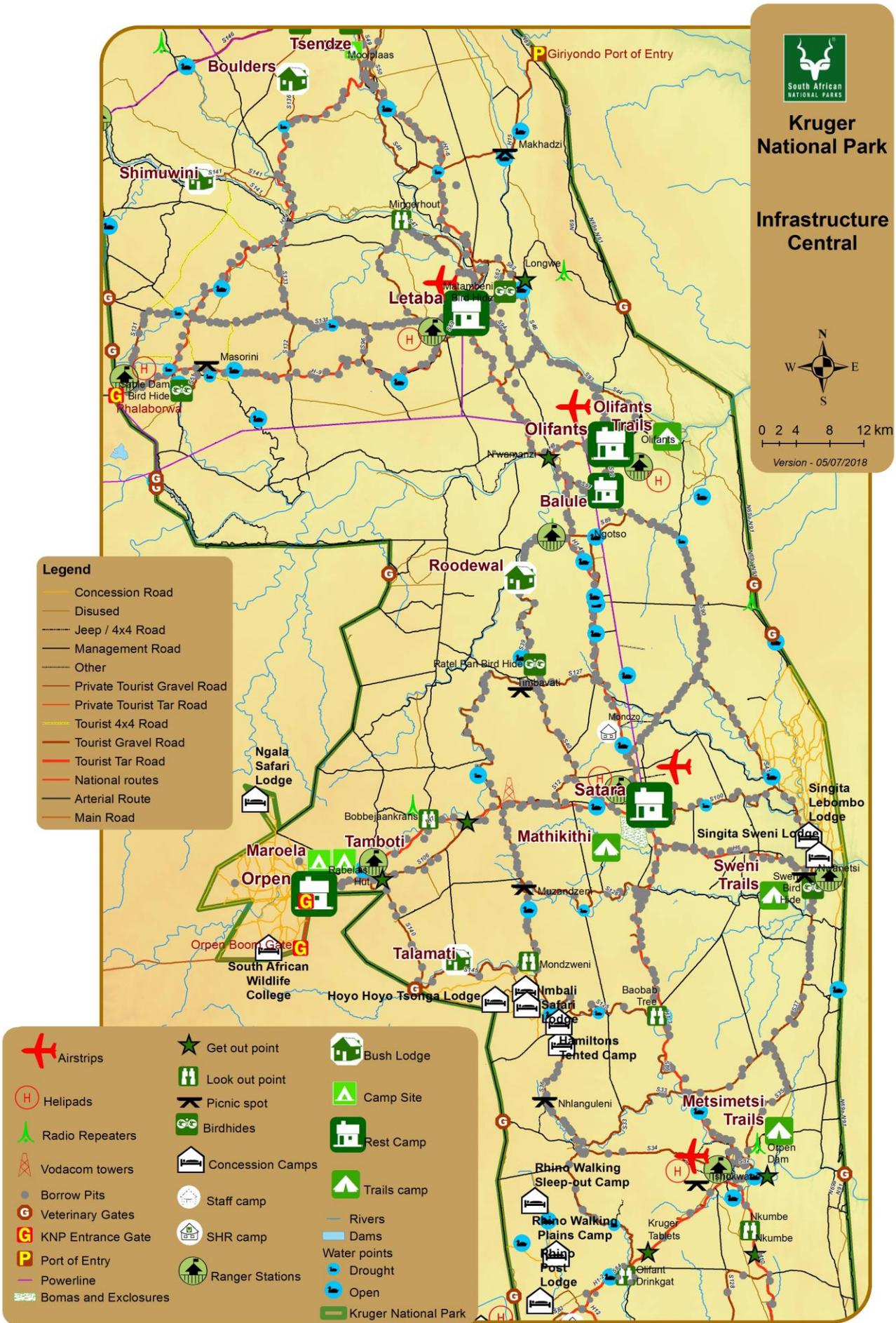


Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, ©OpenStreetMap contributors, and the GIS User Community

Map 6: Buffer zone



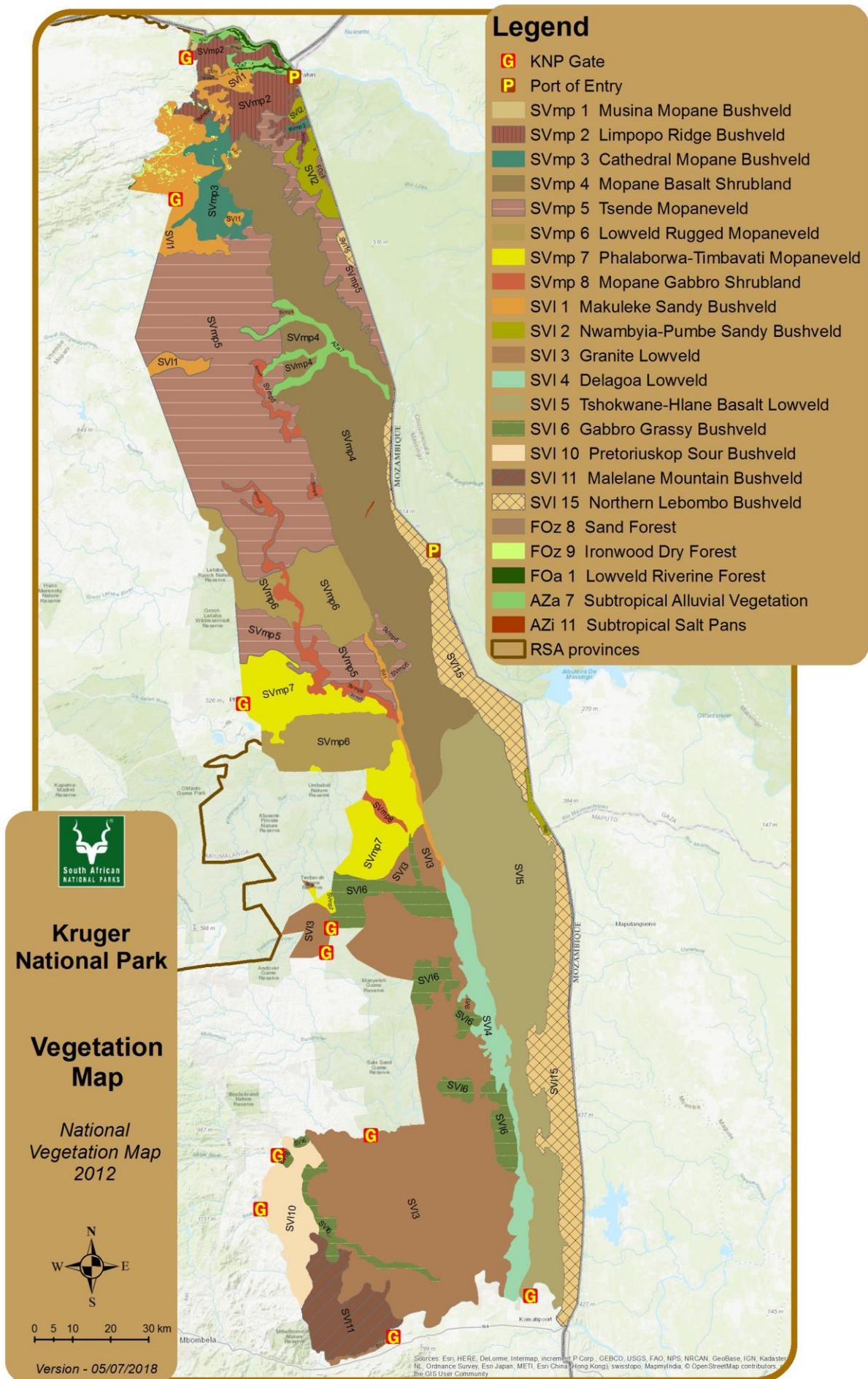
Map 7a: Park infrastructure - North



Map 7b: Park infrastructure - Central



Map 7c: Park infrastructure - South



Map 8: Vegetation