South African NATIONAL PARKS

United Nations Educational, Scientific and Cultural Organization

Mapungubwe Cultural Landscape inscribed on the World Heritage List in 2003

Mapungubwe National Park and World Heritage Site

Integrated Management Plan

For the period 2019 - 2028

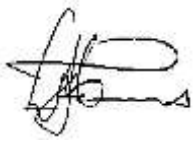
Acknowledgement

This plan was prepared by Mr André Spies, with significant input and help from Dr Hugo Bezuidenhout, Dr Nicola Bredenkamp, Mr Stefan Cilliers, Dr Marisa Coetzee, Me Letsie Coetzee, Dr Corli Wigley Coetzee, Mr Nicholas Cole, Mr Ernest Daemane, Mr Sam Dagada, Dr Sam Ferreira, Dr Llewellyn Foxcroft, Dr Danny Govender, Me Jayshree Govender, Me Cathy Greaver, Mr Thabo Kgomommu, Dr Mike Knight, Mr Innocent Lebepe, Me Tintswalo Mhlongo, Me Livhuwani Mulaudzi, Mr Reuben Ngwenya, Mr Robin Peterson, Mr André Riley, Mr Conrad Strauss, Mr Joep Stevens, Me Louise Swemmer, and various stakeholders.

Cover page photograph by: Ms C. Greaver

Section 1: Authorisation

This management plan is hereby internally accepted and authorised as required for managing the Mapungubwe National Park and World Heritage Site in terms of Sections 39, 40 and 41 of the National Environmental Management: Protected Areas Act [(Act No. 57 of 2003) (NEM: PAA)] and chapter 4 of the World Heritage Convention Act (Act No. 49 of 1999).



Mr C. Strauss
Park Manager: Mapungubwe National Park and World Heritage Site — Date: 31 March 2019

Mr R. Ngwenya — Date: 31 March 2019
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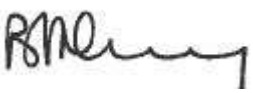
Ms J. Yawitch
Chair: SANParks Board — Date: 29 August 2019

Approved by the Minister of Environment, Forestry and Fisheries



Ms B.D. Creecy, MP — Date: 14 November 2019
Minister of Environment, Forestry and Fisheries

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Glossary

Aircraft	Means an airborne craft of any type whatsoever, whether self-propelled or not, and includes hovercraft and drones.
Climate change adaptation	Ways of living with and making changes to lower the risks posed by increased temperatures and rainfall uncertainty.
Climate change mitigation	Actions taken to limit climate change and reduce carbon emissions.
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.
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.
Extra-limital	Those species occurring outside their historical distribution range.
Ia land type	Ia land type – refers to a land types with a soil pattern difficult to accommodate elsewhere, at least 60% of which comprises pedologically youthful, deep (> 1.0m) unconsolidated deposits.
Ib land type	Ib land type – refers to a land type with exposed rock covering 60 – 80% of the area.
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.
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.
Objectives hierarchy	The objectives for a park, with the most important, high-level objectives at the top, cascading down to objectives at finer levels of detail, and eventually to operational actions at the lowest level.
Responsible tourism	Tourism that maximises benefits to local communities, minimises negative social or environmental impacts, and helps local people conserve fragile cultures, habitats and species.
Servitude	A "servitude" shows a registered right that an entity / person has over the immovable property of another. It allows the holder of the servitude to do something with the other person's property, which may infringe upon the rights of the owner of that property.
Stakeholder	A person, an organ of state or a community contemplated in section 82(1)(a); or an indigenous community contemplated in section 82(1)(b) of the National Environmental Management: Biodiversity Act, (Act No. 10 of 2004) (NEM: BA).

Strategic adaptive management	Srategic 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	APO	Annual Plan of Operations
3	BSC	Balance Scorecard
4	BSP	Biodiversity Social Projects
5	CAPEX	Capital Expenditure
6	CARA	Conservation of Agricultural Resources Act (Act No. 43 of 1983)
7	CBD	Convention on Biological Diversity
8	CDF	Conservation Development Framework
9	CITES	Convention on International Trade in Endangered Species
10	CM	Conservation Management
11	CPF	Co-ordinated Policy Framework
13	CRMF	Corporate Risk Management Framework
14	CS	Communication
15	CSD	Conservation Services Division
16	CSIR	Council for Scientific and Industrial Research
17	DAFF	Department of Agriculture, Forestry and Fisheries
18	DCA	Damage Causing Animal
19	DEA	Department of Environmental Affairs
20	DEAT	Department of Environment Affairs and Tourism
21	DPW	Department of Public Works
22	DWS	Department of Water and Sanitation
23	EE	Environmental Education
24	EIA	Environmental Impact Assessment
25	EMP	Environmental Management Plan
26	EPWP	Expanded Public Works Programme
27	FEPA	Freshwater Ecosystem Priority Area
28	FMD	Foot and Mouth Disease
29	GG	Government Gazette
30	GMTFCA	Greater Mapungubwe Transfrontier Conservation Area
31	GN	Government Notice
32	HCM	Human Capital Management
33	HIL	High Intensity Leisure
34	HOD	Head of Department
35	HSM	Hospitality Services Manager
36	HWC	Human Wildlife Conflict
37	IAS	Invasive and Alien Species
38	IBA	Important Bird Area
39	IDP	Integrated Development Plan
40	l	Litre
41	LIL	Low Intensity Leisure
42	LIMCOM	Limpopo Watercourse Commission
47	LLP	Lower Level Plan
48	m	Metre
49	MaB	Man and the Biosphere
50	MCL	Mapungubwe Cultural Landscape
51	MoU	Memorandum of Understanding
52	MPNP	Mapungubwe National Park
53	METT	Management Effectiveness Tracking Tool
	mm	Millimeter

55	m/s	Millimeter per second
56	NBSAP	National Biodiversity Strategy and Action Plan
57	NEMA	National Environmental Management Act (Act No. 107 of 1998)
58	NEM: BA	National Environmental Management: Biodiversity Act (Act No. 10 of 2004)
59	NEM: PAA	National Environmental Management: Protected Areas Act (Act No. 57 of 2003)
60	NGO	Non-governmental organisation
61	NHRA	National Heritage Resources Act (Act No. 25 of 1999)
62	NPAES	National Protected Areas Expansion Strategy
63	NPTSA	National Parks Trust of South Africa
64	NTSS	National Tourism Sector Strategy
65	OHS	Occupational Health and Safety
66	OPEX	Operational Expenditure
67	P&C	People and Conservation Section
68	PFMA	Finance Management Act (Act No. 1 of 1999)
69	PM	Park Manager
70	PPD	Park Planning and Development
71	RCS	Regional Communication Services
72	RMM	Regional Marketing Manager
73	RS	Ranger Services
74	SADC	Southern African Development Community
75	SAEON	South African Environmental Observation Network
76	SAHRA	South African Heritage Resources Agency
77	SAM	Strategic Adaptive Management
78	SANBI	South African National Biodiversity Institute
79	SANDF	South African National Defence Force
80	SANParks	South African National Parks
81	SANS	South African National Standard
82	SAPS	South African Police Service
83	SDF	Spatial Development Framework
84	SED	Socio-economic Development
85	SHEQ	Safety, Health, Environment and Quality
86	SHR	South African National Parks Honourary Rangers
87	SMME	Small, Medium and Micro Enterprise
88	SoAIM	State of Area Integrity Management
89	SoB	State of Biodiversity
90	SOP	Standard Operating Procedure
91	SS	Scientific Services
92	SSC	Species of Special Concern
93	TFCA	Transfrontier conservation area
94	TOPS	Threatened or Protected Species
95	TPC	Threshold of Potential Concern
96	TS	Technical Services
97	UA	Universal access
98	UNESCO	United Nations Educational, Scietific and Cultural Organisation
99	VBR	Vhembe Biosphere Reserve
100	V-STEEP	Values - Social, Technological, Ecological, Economic and Political
101	VWS	Veterinary Wildlife Services
	WWF	World Wildlife Fund

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Executive summary

SANParks is the management authority tasked with the responsiblility to manage the Mapungubwe National Park and World Heritage Site.

In compliance with the NEM: PAA, SANParks is required to develop a management plan for each of its protected areas. The object of a management plan is to ensure the protection, conservation and management of the protected area concerned in a manner which is consistent with the objectives of the NEM: PAA and for the purpose for which it was declared. During the revision of the current management plan for the Mapungubwe National Park and World Heritage Site, 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, adapative management and good governance.

An important objective for SANParks is to promote responsible experiencial 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 suppliment 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 Mapungubwe National Park and World Heritage Site 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, Responsible Tourism, Cultural Heritage, Stakeholder Engagement, Access and Benefits and Effective Park Management.

The focus on intergrated land use over the next ten years will seek to deliver on the Greater Mapungubwe 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. Managing biodiversity conservation within the context of an open system that spans three countries will be challenging. Equally important, will be the emphasis placed on stakeholder engagement to improve relationship building, while simultaneously improving access to the park and beneficiation. Heritage tourism (natural and cultural) opportunities have been indetified and park management will endeavour to improve the current products and activities, while also aiming to launch new / upgraded products and activities.

The first management plan for the park was submitted to and approved by the Department of Environment Affairs and Tourism (DEAT) in 2008. The first revised management plan was approved by the Department of Environmental Affairs (DEA) in 2013. This second review builds on the foundation of the previous plans 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 DEA (Cowan and Mpongoma, 2010), whilst also incorporating the adaptive planning process adopted by SANParks. The integrated approach within the management plan serves in the first place to link, balance and co-ordinate the needs of the tangible cultural heritage with the with the socio-economic and ecologic needs. Further the integrated approach is used to protect and promote the outstanding universal value of the Mapungubwe Cultural Landscape (MCL). 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, 40 and 41 of the 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 and maps.

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Section 2: Legal status

2.1 Name of the area

The name of the area is the Mapungubwe National Park and World Heritage Site (hereafter referred to as the park). The park was initially declared on 9 April 1998 (Government Notice (GN) 409 in Government Gazette (GG) 18814 dated 09 April 1998). A full list of the declarations appears in Appendix 1.

2.2 Location

The park is located on the border between South Africa, Zimbabwe and Botswana. It is located on the South African side of the confluence between the Shashe and Limpopo Rivers (Appendix 5, Map 1). The Limpopo River forms the northern boundary and the R572 and R521 Provincial tar roads form the southern and western boundaries respectively. The core stretches from the farm Rhodes Drift in the west for 35 km to the farm Riedel in the east, and from the Limpopo River in the north to the R572 tar road in the south.

2.3 History of establishment

The process of recognising this area as a place of natural and cultural significance began in 1922 when nine farms were set aside as a botanical reserve and following much controversy, was declared as a wildlife sanctuary in 1947. A change of governing party led to this declaration being repealed the next year, with subsequent settlement by white farmers. By 1967 there was a renewed lobby for park status, now also including the important archaeological values. As a consequence, the site known as K2 was declared a national monument on 9 September 1983 and Mapungubwe Hill and its southern terrace were declared on 17 August 1984 in terms of the former National Monuments Act (Act No. 28 of 1969). During the later apartheid years, there was a significant military presence on the farm Greefswald which left a legacy of fences and other infrastructure, much of which had been removed as it did not complement the aesthetics of the landscape. After the small provincial Vhembe nature reserve (consisting of three farms) was declared in 1967, there was renewed interest in investigating national status of the park as a larger area intended for a tourism hub in the late 1980s, a move which was later supported by De Beers following the establishment of the Venetia diamond mine to the south, in 1990.

On 9 June 1995 an agreement was signed between SANParks and what was then the Northern Province Government committing them to the development of a new national park in the Shashe / Limpopo River border area of South Africa. In terms of the agreement the Northern Province (re-named the Limpopo Province in 2002) would make the farm Greefswald, then part of the Vhembe nature reserve, available to SANParks, to be declared a national park in terms of the National Parks Act (Act No 57 of 1976 as amended). The Vhembe / Dongola National Park was declared in 1998. The park name was changed to Mapungubwe National Park (MPNP) on 30 July 2004 (GN 900 in GG 26602). The park also forms the core of the Vhembe Biosphere Reserve. The MCL was gazetted as a National Heritage Site by the South African Heritage Resources Agency (SAHRA) in December 2001. The MCL which covers the boundary of the national park was subsequently inscribed on the United Nations Education, Scientific and Cultural Organization's (UNESCO) World Heritage List in 2003. In Government Notice No. 71 Government Gazette 31832 of 30 January 2009 the then Minister of Environmental Affairs and Tourism, Marthinus van Schalkwyk announced the MCL as a World Heritage Site in terms of the World Heritage Convention Act (Act No. 49 of 1999), and delegated specified powers of management to SANParks.

The status of the MPNP and MCL in terms of its National and World Heritage designation makes up an important component of international context, with the Department of Environmental Affairs and the SAHRA ensuring that the values supported by national legislation are met.

At international level, close liaison is required with the UNESCO World Heritage Centre and the Greater Mapungubwe Transfrontier Conservation Area (GMTFCA) involving Botswana, Zimbabwe and South Africa. The development for a major national park in the area, provisionally known as the Vhembe / Dongola National Park, was not only to spur the development of the eco-tourism industry in Limpopo Province, but to also serve as a regional growth point for tourism and conservation because of the positioning of the park on the international borders between Botswana, Zimbabwe and South Africa. The ultimate objective stated at the time was that the park should become a major component of a Transfrontier conservation area shared by the three countries. The memorandum of understanding for the GMTFCA was signed on 22 June 2006. Innovative strategies will be required to balance the varying activities and demands that are likely to occur in the GMTFCA, not least of which include elephant-related issues, tourist circulation, benefits and area security. These require that SANParks takes utmost care in planning its infrastructural development in order to create harmony between tourism offerings and preserving the Outstanding Universal Value of the MCL.

2.4 Description of the MCL

The core site covers nearly 30,000 ha. This is supported by a buffer zone of just over 104,000 ha. The MCL contains substantial areas of 'natural' landscape of very high quality – in the north of the area bordering the rivers. To the south the boundary cuts across geometrical citrus farms – which over time will change from agriculture to conservation. The proposed boundaries correspond with those of the Mapungubwe National Park. The northern boundary of the MCL is the Limpopo River, which forms the frontier between the Republic of South Africa and the neighbouring states of Botswana and Zimbabwe.

The following criteria apply to the Mapungubwe Cultural Landscape:

- Criterion (ii): The Mapungubwe Cultural Landscape contains evidence for an important interchange of human values that led to far-reaching cultural and social changes in Southern Africa between AD 900 and 1300.

- Criterion (iii): The remains in the Mapungubwe Cultural Landscape are a remarkably complete testimony to the growth and subsequent decline of the Mapungubwe State which at its height was the largest kingdom in the African subcontinent.

- Criterion (iv): The establishment of Mapungubwe as a powerful state trading through the East African ports with Arabia and India was a significant stage in the history of the African sub-continent.

- Criterion (v): The remains in the Mapungubwe cultural landscape graphically illustrate the impact of climate change and record the growth and then decline of the Kingdom of Mapungubwe as a clear record of a culture that became vulnerable to irreversible change.

Integrity

All remains of the main settlements are in the nominated property, as are all major phases of the Mapungubwe kingdoms' development and decline. The property contains substantial areas of virtually untouched cultural landscape of very high quality but, pending their decommissioning, these are separated by some areas of modern citrus plantations and circular irrigated agricultural fields in private ownership.

The considerable agricultural enterprise of the final phase at Mapungubwe has vanished. Although much of the core landscape has returned to its unimproved state with wild grazing game animals, the recent opening up of the property to big game, especially elephants needs to be considered, and is being monitored.

The Messina area is a rich mining area and the diamond mining operations at Riedel (small scale) and Venetia (major operation) could have a potential impact on the property. There is also a possibility that deposits of other valuable minerals may yet be found. With mining rights being recently returned to the State, better future control was anticipated but the granting of a mining licence for coal 5 km from the boundary of the property, in a highly sensitive area adjacent to the Limpopo river and in the proposed buffer zone that was submitted at the time of the inscription, is a considerable threat.

The integrity of the site has been affected by the standard of the excavations in the 1930s which it could be argued led to valuable evidence being lost – and thus the completeness of the site, in both physical and intellectual terms has been compromised.

Authenticity

The nominated property and buffer zone have largely not been subjected to any destructive form of human intervention since the remains were abandoned, and the current agricultural activities have not had a major impact on the cultural landscape in terms of its ability to convey its value. However there is a need to ensure that old excavations are not eroded by climatic forces or by uncontrolled visitors.

Protection and management requirements

The Mapungubwe site and the buffer zone are legally protected through the National Heritage Resources Act (Act No. 25 of 1999), the World Heritage Convention Act (Act No. 43 of 1999) and the National Environmental Management Act (Act No. 73 of 1989).

The property is also recognized as a protected area in terms of the NEM: PAA. This legislation implies that mining or prospecting will be completely prohibited from taking placing within the property and the buffer zone. Furthermore, any development with a potential impact on the property will be subjected to an environmental impact assessment.

SANParks is the management authority for the property and provides overall management involving coordinating government and local community efforts to conserve the site. SANParks is currently updating the Integrated Management Plan. Regular consultative meetings with stakeholders and local communities take place on the site through the park forum and by other means of engagement.

A Trilateral Memorandum of Understanding is also being drawn up with the objective of establishing the Limpopo-Shashe Transfrontier Conservation Area (TFCA). This very extensive area of 5,040 km² will, when established, constitute an effective buffer zone. It is intended that each participating country will concentrate on one facet of protection: cultural heritage in South Africa; wildlife in Botswana; and living cultures in Zimbabwe.

To help guarantee long-term protection for the property there is a need to complete the Integrated Management Plan and to submit the buffer zone for approval by the World Heritage Committee.

There is also a need to ensure that any consideration of mining licenses is in line with the recommendations of the Technical Workshop on World Heritage and Mining adopted at the 24th session of the World Heritage Committee, to ensure that mining does not constitute a threat to the property, its buffer zone or its wider setting.

2.5 Contractual agreements

Contractual agreements remain one of the options available for communities and private landowners to become part of the park and to 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. In this regard the National Parks Trust of South Africa (NPTSA), World Wildlife Fund (WWF) and De Beers have made land acquired by the trust, available for inclusion into the park. As per the notarial agreements, these land parcels are fully managed by SANParks. Table 1 below provides a summary of the privately-owned land that was contractually included into the park. The following land parcels were incorporated:

Table 1. Private land included, by declaration and still to be declared, into the park.

Title deed	Farm name	Portion No	Extent (Ha)	Owner	Government Gazette No	Declaration date	Period
T103911/1995	Riedel 48	1	2,569.772	NPTSA	22231	26 April 2001	99 years
T37654/1990	Schroda 46	Remainder of	929.0942	De Beers	25562	17 October 2003	
T37654/1990	Schroda 46	4	929.0942				
T25629/1990	Schroda 46	7	1,295.4212				
T47452/1990	Schroda 46	8	419.9119				
T154756/2000	Tuscanen 17	3	1,301.038	WWF of SA	26615	30 July 2004	
T103662/1997 and T46309/1998	Welton No.16	3	708.0486	NPTSA (0.6) and SANParks (0.3)	31461	03 October 2008	
	Mona 19	0	560.4003	Friends of Peace Parks	Not yet declared		-
	Armenia 20	0	856.5320				
	Armenia 20	1	69.3806				
	Little Muck 26	0	2,147.6169				
	Rhodes Drift 22	Remaining extent of	865.0285	Peace Parks Foundation			

There is currently two lease agreements with ZZ2 and Ruan Gouws. The leased land has been completely transformed for agricultural purpuses namely, citrus and vegetable farming. A decision was taken to allow the farming practises to continue on these portions, thereby assisting job security within an area prone to unemployment. The Samaria lease agreement can further assist towards building capacity within the Den Staat community and contribute towards a sustainable farming practise that will benefit the community.

ZZ2:

- A certain portion of portion 3 of the farm Welton Nr. 16, Registration division MS Limpopo province, measuring approximately 52,2 ha, which excludes the indigenous forest; and
- The period of lease will be for five years with an option to renew after each period of expiry.

Ruan Gouws:

- Portion 3 of the farm Samaria Nr. 28, Registration division MS Limpopo province, measuring approximately 431.9858 ha as well as the remainder of the farm Samaria Nr. 28, Registration division MS Limpopo province, measuring approximately 431.9858 ha.; and
- The period of lease will be for two years with an option to renew after each period of expiry.

2.6 Co-management agreements

There are currently no co-management agreements effective.

2.7 Total area

The park is currently 19,697 ha in size of which 15,191 ha are declared while 4,505 ha are in the process of being declared (Appendix 5, Map 3). The core area of the MCL comprises 28,168 ha. Various privately owned properties make up the MCL buffer zone, which comprises 104,800 ha (Appendix 5, Map 6 a+b). This reflects the MCL and its buffer as adopted by UNESCO at the 38th session of the World Heritage Committee in Doha in 2014.

2.8 Highest point

The highest point in the park is in the south-western corner of the park at 626 m (2,053 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 5, Map 2). Therefore, the park's airspace ranges from ground level to 4,553 feet AMSL.

2.9 Municipalities within which the park falls

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

- Vhembe District Municipality (VDM); and
- Musina Local Municipality (MLM).

2.10 Land claims

The Machete community lodged a land restitution claim in December 1998 pursuant of the restitution of Land Rights Act (Act No. 22 of 1994) on properties proclaimed as part of the park and on others that were under the management but not owned by the park through the agreements signed between the park and the land owners.

In December 2008, after the conclusion of the research process, the Machete Land claim was determined to be valid by the Regional Land Claims Commission and thereafter the Bathwamapa Ba Ga-Machete Communal Property Association was registered to hold and manage land on behalf of Machete Community.

A counter land restitution claim was lodged by the Tshivhula Community on many of the properties claimed by the Machete Community. The Regional Land Claims Commission are conducting research on the validity of the claim.

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.

2.11 International, national and provincial listings

The park was gazetted as a National heritage site in December 2001. As noted, the MCL was listed as a World heritage site by UNESCO in July 2003. Proposed initially in the late 1990s the transfrontier conservation initiative culminated in the formal establishment of the GMTFCA in June 2006 with the signing of a memorandum of understanding by the Governments of Botswana, South Africa and Zimbabwe. The MCL also falls within the core area of the UNESCO listed Vhembe Biosphere Reserve (VBR).

2.12 Environmental authorisations

At the time of approval no environmental authorisations have been issued for new projects. However, SANParks is in the process of applying for environmental authorisations for the following projects:

- Construction of the overnight youth facility;
- Upgrade of Mapungubwe Hill; and
- Construction of the orientation centres.

2.13 Biophysical description

2.13.1 Climate

2.13.1.1 Historic

According to Woodborne *et al.* (2016), during the Medieval Warm period (c 950 – c 1250) there was a regional shift from wet conditions to a drier climate during the Little Ice Age which followed. According to Mucina & Rutherford (2006), the region is characterised by a semi-arid, summer rainfall climate (September – April), with a mean annual precipitation of 419 mm per annum. The winters are generally mild, although frost may occur with temperatures occasionally dropping to a minimum of -5 °C (McKenzie, 1990). However, according to the rainfall data received from weather testing stations in the region, the mean annual rainfall in the region for the period 1990 - 2006 was approximately 300 mm per annum. During this time South Africa experienced one of the worst droughts on record during which flow of the Limpopo River ceased completely during the summer. In 2000, one of the largest floods on historical records occurred, with 907.7 mm rain recorded in the park. Mean annual rainfall ranges from 350 – 400 mm in this semi-arid region, with highly variable rainfall mainly occurring during the summer months, between October and March (Götze, 2002). Due to its unpredictable climate, extended periods of below average rainfall can occur.

According to Mucina & Rutherford (2006), the mean annual temperature for the region is measured at 21.6 °C, but the temperature data received from the Noordgrens rainfall station indicated an average daily temperature of 22.7 °C, which was measured over a two year period (June 2005 – June 2007). It is, however, not uncommon for temperatures to rise up to 45 °C in the summer months (Robinson, 1996). The mean annual evaporation potential from free water surfaces is 2,303 mm per year (Mucina & Rutherford, 2006), but could exceed over 2,500 mm per year in most parts of the region (Robinson, 1996).

2.13.1.2 Future

In the 50 years between 1960 and 2009, average minimum and maximum temperatures recorded at Musina increased by roughly 1.2 ^{o}C (van Wilgen *et al*., 2016). Continued increases will have dramatic effects on the number of extremes (hot days) experienced. For example, Musina experienced an additional 22 days per year where temperatures exceeded 35 ^{o}C at in 2009, compared to 1960 (van Wilgen & Herbst, 2017). Further increases of between 1.3 ^{o}C (best case), 2.2 ^{o}C and 2.7 ^{o}C (worst case) are predicted by 2050, which will exacerbate prolonged hot conditions in summer and overall warmer weather (DEA, 2013; Driver *et al*., 2012; Holness & Bradshaw, pers. comm.). In the worst-case scenario, up to 60 % of summer days might be hotter than 35 ^{o}C (van Wilgen & Herbst, 2017).

In addition to changes in average temperature, the absolute minimum temperature increased by 3.05 ^{o}C between 1960 and 2009 (van Wilgen & Herbst, 2017). This means that the coldest spells are no longer taking place. Not having these cold snaps can be particularly significant because organisms that become dormant or have delayed growth during cold periods may be released to continue growing / breeding. In some instances, this may be seen as positive, but can also have catastrophic consequences when it comes to the spread of pests, diseases and invasive species.

Future predictions for rainfall in the Mapungubwe area range from an increase of roughly 38 % to a decrease of 62 % (*i.e.* less than half of current rainfall) under the driest scenario for 2050 (DEA, 2013; Driver *et al*., 2012; Holness & Bradshaw, pers. comm.). Intermediate scenarios of change predict a 14 % 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 are for more erratic rainfall (high in some years, low in others, or more infrequent but heavier rainfall downpours in place of lighter steadier rain events with an increase in floods and droughts). Erratic rainfall could have negative biodiversity consequences in the future, even if on average (across years) rainfall increases or does not change (van Wilgen & Herbst, 2017).

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 'fertilisation' will also play a role. Atmospheric carbon dioxide (CO_2) has increased by approximately 40 % since pre-industrial times. Higher levels of CO_2 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.

2.13.2 Topography

The topography is generally flat with sandstone and conglomerate ridges and outcrops (Gandiwa *et al*., 2016). Elevation is generally low with the escarpment merely 20 – 30 m high and lies at roughly 600 - 620 m AMSL (Kuman *et al*., 2005) with the highest point at 626 m. Towards the south, the elevation continues in the form of a sand-mantled plateau. Surface drainage is mostly in a northerly direction towards the Limpopo River. South of the Limpopo River the topography tends to be flat with sandstone and conglomerate ridges and koppies. Nearer the Limpopo River the plains give way to a rugged, hilly terrain (Götze, 2002).

2.13.3 Geology, geomorphology and soil

The Limpopo Mobile Belt, as it is called, includes the Shashe-Limpopo basin which lies between two ancient continents, the Zimbabwe craton and the Kaapvaal craton of South Africa. Granite forms the two cratons to the north and south, while millions of years of erosion are responsible for the sandstone currently present in the basin. When the continents moved, magma moved up through the cracks that appeared in the earth's crust and formed basalt sheets and dolerite dykes (Huffman, 2005).

Conglomerate ridges and koppies are visible south of the Limpopo River and are accompanied by flat sandstone fields. Closer to the river, the sandstone flats give way to a more rugged terrain with plenty of hills. Soils of the Limpopo valley are derived from the southern Archaean granite formations, and in general from the Karoo-system (Stormberg, Ecca and Beaufort Series) (Scholtz, 2007). The park comprises of an attractive semi-arid landscape with varying geological structures and formations, including extremely old Archaean rocks, metamorphics of intermediate age, karoo sandstone / conglomerate uplands that are about 200 million years old, and recent alluvium and sands. Kimberlites about 100 million years old are found in the region, which explains the existence of a large diamond mine at Venetia, about 50 km south of the park boundary. Coal reserves have been identified in the park and on neighbouring properties.

The soils of the Limpopo Valley are derived from rocks of the Archaean granite formations in the south and, more generally, from the Karoo-system (Stormberg, Ecca and Beaufort Series). Large areas are characterised by sandy, lime-rich soils generally deeper than 750mm and other areas are characterised by brown to dark brown clays with high silt content (Bezuidenhout, 2002; Götze, 2002). Soils generally have a low agricultural potential, with the irrigated alluvial tending to become brackish as a result of the accumulation of salts due to the strong evaporation. This poor agricultural soil is easily degraded by overgrazing (Els, 2010). The most primitive rocks of South Africa were laid down on this original crust. These were formed by magmatic activity as well as erosion of rocks of the original crust. The park is surrounded by terrain of the Archaean granulite-grade rocks (Beit Bridge gneisses) of the Central Zone of the Limpopo Belt, believed to have developed during the collision of the Kaapvaal Craton (from the south) and the Zimbabwe Craton (from the north) 2,700 million years ago (McCarthy & Rubidge, 2005). Kramers *et al*. (2006) believes that if the aforementioned collision theory is true, this would make the Limpopo Belt the oldest such episode in the world. Subsequent studies and surveys revealed that around 2,650 Ma, intense metamorphism led to widespread crustal melting, followed by additional clustering on metamorphic ages roughly 2,000 Ma (Kramers *et al*., 2006). Subsequently, this province is distinct from the adjoining Kaapvaal and Zimbabwe Cratons due to these structures, ages and metamorphism. According to Kramers *et al*. (2006), the Limpopo Belt's exposed strike length is nearly 700 km and 200 km wide.

The park has paleotology bearing rocks but has not been fully surveyed to determine the occurance of fossils.

2.13.4 Freshwater ecosystem

Surface drainage is predominantly in a northern direction towards the Limpopo River (Robinson, 1996). Ground water provisions are mostly scarce in the region except where they occur along fault lines, which are usually well developed (Van den Heever, 1983; Scholtz, 2007).

A large diamond mine is situated at Venetia, about 50 km south of the park boundary, drawing water from the Limpopo system inside the park. According to Klapwijk (1990), the water abstracted from the Limpopo aquifer on the farm Greefswald can supply the intermediate requirement of 0.6 million m³ of water per year to the Venetia Mine as well as the long-term requirement of 4.2 million m³ water per year. Geo-hydrological studies of the Limpopo alluvial aquifer on the farm Greefswald were carried out and a mathematical model was developed, which indicated that a 4 m draw down limit in the riparian forest and a 2 m draw down at the eastern pool (Poachers Corner) should not be exceeded at any stage (CSIR Environmental Services, 1992).

The lowering of the water table will have direct effects on the regional riparian vegetation in general (Le Maitre *et al*., 1999). According to Le Maitre *et al*. (1999): "many plant communities, particularly those of wetlands and riparian strips are highly susceptible to changes in the depth of the groundwater, both annual and seasonal." Several studies were done in the past to understand the effect of different pumping rates by farmers and mines on the riparian vegetation. Coombes and Kemper (1992) concluded that changes in the water regime of the basin due to major water usage will have severe implications on the present and future condition of the riparian forest trees, and water as a limiting factor in the Limpopo basin show the effect of high water pumping activities.

Rivers

Since none of the rivers in the region is perennial, the value of the Limpopo River as a water source for the cultivation of crops is limited (Robinson, 1996). The confluence of the seasonally-flowing Shashe and Limpopo Rivers are the dominant hydrological feature. The Limpopo is an incised river which cuts into the landscape and flows east, increasing in size and flow rate once the Shashe River from Botswana joins it at the Greefswald area. The Shashe River is a highly ephemeral river, with flow generally restricted to a few days of the year. The river contributes 12.2 % of the mean annual runoff of the Limpopo Basin. The lower Shashe is a sand filled channel, with extensive alluvial aquifers in the river channel and below the alluvial plains. Various other smaller, with steeper gradient, seasonal tributaries occur in the park, flowing north onto the Limpopo floodplain.

Geohydrology

The high deposition environment at Greefswald results in the deposition of mainly coarse sand and gravel with silt lenses. There are six hydraulic zones in the river bed aquifer formed by silt, sand, gravel, clay and bedrock. The bedrock consists of sandstone, siltstone, faults and dykes. The primary aquifer is a deep continuous channel with an average depth of 20 m and a width of 100 m. The secondary fracture bedrock is not considered part of the primary aquifer, although interaction between the bedrock and the primary aquifer does takes place. As a result of the previous agricultural practices in the Limpopo basin, there are large numbers of bore holes present in the area, especially close to the Limpopo River. The latter, as well as the large quantities of water extracted from the river by the Venetia mine, could have devastating effects on the groundwater resources of the region. The water required by the mine is drawn from well-fields on the farms Greefswald and Schroda, which are situated along the Limpopo River south of the confluence of the Limpopo and Shashe Rivers (Klapwijk, 1990). The average borehole yields in the primary aquifer are in the order of 20L/s and 1-2L/s in the secondary bedrock aquifer.

Wetlands

The Limpopo and the Kolopi floodplain wetlands are the dominant wetland type. These two floodplains ultimately form one system towards the confluence of the Shashe and Limpopo Rivers. The Limpopo floodplain exhibits some classical floodplain features such as oxbow lakes, depressions (pans), and riparian forests. The Kolopi on the other hand, is a much drier system with strong alluvial fan features and a major depression wetland, Leeupan, occurring in its distal area. Various seeps and springs have been noted and are mostly associated with the dolerite intrusions, the fault zones and also with contacts between different lithologies.

2.13.5 Flora

As can be expected from the varying substrates and topography, a variety of vegetation and animal habitats occur within the park. Diverse plant communities on koppies stand above *Commiphora-Colophospermum*

veld (Kanniedood and Mopane) on the surrounding undulating terrain. River and floodplain associated vegetation includes fever tree *Vachellia xanthophloea*, African ivory nut palm *Hyphaene petersiana* palmveld, narrow-leaved mustard tree *Salvadora australis* shrubveld on the floodplains, and vlei thorn *Vachellia stuhlmanni* communities on old lands.

The current vegetation map is based on the work of Götze *et al*. (2003) and Bezuidenhout (2002) (Appendix 5, Map 8). Götze (2002) initially, before the park was proclaimed, identified, classified and described plant communities in order to propose land types that could be used to inform recommendations regarding restoration and rehabilitation. An initial 12 plant communities in five land types (Land Type Survey Staff, 2004) were eventually simplified to eight vegetation types. Götze and co-workers (Götze *et al*., 2003; 2008) published plant communities in two land types (*i.e.* Ia and Ib) and these are examples of the type of communities found in the different land types. The Ia land type includes the riverine and non-perennial wetland vegetation on deep to moderately deep soils with a high silt and clay content. Götze *et al*. (2003) divided the Ia land type into four communities; *Salvadora australis – Cucumis zeyheri* community, *Hyphaene petersiana – Vachellia tortilis* community, *Croton megalobotrys – Combretum microphyllum* community and *Diplachne fusca – Vachellia xanthophloea* community. Götze *et al*. (2003) mentioned that many of the communities of the Ia land type had highly compacted surfaces created by previous and current overgrazing by cattle and game with a high degree of surface runoff and surface erosion in some cases. Land type Ib indicates land types with exposed rocks, stones or boulder outcrops covering 60 - 80 % of the area (Land type survey staff, 2000). Götze *et al*. (2008) divided the Ib land type into two communities; *Hexalobus monopetalus – Croton gratissimus* var. subgratissimus community and the *Terminalia prunioides – Grewia bicolor* community. The vegetation types and associated communities were used to create seven "ecologically sound" management types. These management types were based not only on vegetation types but also on environmental variables and anthropogenic influences.

Nationally, Rutherford *et al*. (2006) classified three main vegetation types for the area of Mapungubwe: Subtropical Alluvial Vegetation, Musina Mopane Bushveld and Limpopo Ridge Bushveld (see Table 2 for comparison with finer-scaled management types). The riparian forest on the Limpopo River is classified as Lowveld Riverine Forest (Von Maltitz *et al*., 2003). Gandiwa *et al*. (2016) recently shown that the floodplain alluvial soils on which forests occur have the highest median tree height, canopy volume, basal area and most importantly, species diversity, of vegetation communities in the MCL and Von Maltitz *et al*. (2003) proposed that these subtropical riverine forest is an unique habitat with high biodiversity. The Lowveld Riverine Forest is endangered because it has been largely removed outside of protected areas (Bezuidenhout 2010), particularly during the construction of border fences and during agricultural activities. Even within the park the forest is facing some challenges; in 1990 true riparian forest still existed in the Greefswald section, dominated by giant fever trees *Vachellia xanthophloea*, ana trees *Faidherbia albida*, sycamore figs *Ficus sycomorus*, apple-leaf *Philenoptera violacea* and nyala trees *Xanthocercis zambesiaca*. Independent research by Prof. Tim O'Connor revealed that 15 years later a quarter of these had been lost; despite little change in the forest for 35 years prior to 1990 (1991 was also coincidentally the first year ever that the Limpopo River stopped flowing seasonally). Many factors have been proposed: elephants, drought, floods, pumping of groundwater for a nearby diamond mine and extraction upstream. Elephant impact may be unnaturally high due to extensive farmland on either side of the park, which forces large numbers of elephants to utilise relative short stretches of river during the dry season and elephants are usually blamed for the demise of the riparian trees. However, long-term monitoring by South African Environmental Observation Network and SANParks have found that extraction of water, both locally and regionally, is more important for the loss of riparian forest (at least for the two species of highest concern; ana tree and fever tree, Anthony Swemmer, pers. comm.) than elephants (Wigley-Coetsee *et al*., 2016).

Table 2. Main South African vegetation (veld) types found in the park with characteristics (Rutherford *et al.* 2006) and overlap of specific management types (as proposed by Götze 2002).

National vegetation types	Landscape	Geology and soils	Characteristic vegetation	Management types
SVmp1 Musina Mopane Bushveld	Undulating to very irregular plains, with some hills	Mostly underlain by Beit Bridge complex. Variable soils from deep red/brown clays to heavy clays to deep, freely drained sandy soils to shallower types. Land types mainly Ae, Ah, Fc and Db	*Colophospermum mopane* with various combinations of other dominant species (*e.g.*, *Combretum apiculatum* and *Terminalia prunioides*) depending on soils	*Colophospermum mopane - Brachiaria deflexa* closed Woodland (53%); *Salvidora australis - Acacia stuhlmannii* open shrubland (42%); *Commiphora species - Sesamothamnus lugardii - closed Shrubland (4%)*
SVmp2 Limpopo Ridge Bushveld	Extremely irregular plains with ridges and hills	Mostly rocks of the Beit Bridge complex, sediments (including sandstones of the Clarens formation) and basalt. Shallow gravel and sand to calcareous clayey soil. Including land type Ib	*Kirkia acuminata* on ridges, *Adansonia digitata* on shallow calcareous gravel, *Catophractes alexandri* on calc-silicate soils	*Acacia senegal - Barleria sinensis* closed Shrubland (58%); *Hexalobus monopetalus - Bulbostylis hispidula* open Shrubland (19%); *Commiphora* species - *Sesamothamnus lugardii* - closed Shrubland (15%); *Colophospernum mopane - Brachiaria deflexa* closed Woodland (7%)
Subtropical * alluvial vegetation	Flat alluvial riverine terraces supporting an intricate complex of macrophytic vegetation, marginal reed belts as well as extensive flooded grasslands, ephemeral herblands and riverine thickets	Recent alluvial deposits with deep, fine-structured sandy to loamy soils, salt often accumulates in the soil. Land type Ia	*Croton megalobotrys* with various large riverine trees such as *Faidherbia albida* and *Vachellia xanthophloea*	*Croton megalobotrys - Combretum microphyllum* closed Woodland (55%); *Faidherbia albida - Panicum maximum* closed Woodland (26%); *Salvidora australis - Acacia stuhlmannii* open Shrubland (19%)
*the mapping of this vegetation type reflects current poor knowledge and lack of data according to Mucina *et al*. (2006), the vegetation of the Lowveld alluvia is found in a complex of azonal vegetation called Subtropical Riverine Forests				

2.13.6 Fauna

Mapungubwe hosts a wide spectrum of faunal diversity due to the open access across the landscapes of Botswana, Zimbabwe and South Africa, and animals move freely across these landscapes. Inventory lists include 58 large and 52 small mammal species, 15 amphibian, 295 bird, roughly 27 fish and 36 reptile species.

Amphibians

The availability of diverse habitats on the Limpopo floodplain, wetlands, seeps and seasonal rivers, affords the sanctuary to a wide variety of frog species, such as the northern pigmy toad *Poyntonophrynus fenoulheti*, guttural toad *Amietophrynus gutturalis*, bubbling kassina *Kassina senegalensis*, dwarf puddle frog *Phrynobatrachus natalensis* and Africa bullfrog *Pyxicephalus adspersus* to name but a few (Pienaar, 1976).

Unfortunately, amphibian research has been lacking and a detailed inventory and increased focus on the state of amphibians is required.

Birds

The park is listed as an Important Bird Area (IBA) which includes the entire park as well as neighbouring properties that hold important habitats for birds. The status of the IBA was raised from sub-regional to global, as it contains a number of globally threatened bird species. 387 Bird species have been officially recorded within the IBA. The riverine forest provides habitat for secretive, subtropical, river-dependent species such as Pel's fishing owl *Scotopelia peli*. The taller trees provide nesting sites for some species, particularly White-backed vulture *Gyps africanus*. The Limpopo and Maloutswa floodplain are important for many wetland-dependent and associated birds, such as black stork *Ciconia nigra*, woolly-necked stork *Ciconia episcopus*, saddle-billed Stork *Ephippiorhynchus senegalensis* and white-crowned lapwing *Vanellus albiceps*. Great white pelican *Pelecanus onocrotalus*, lesser moorhen *Gallinula angulata* and Allen's gallinule *Porphyrio alleni* occur in small numbers when conditions are suitable. Kori bustard *Ardeotis kori* is regularly recorded in the park.

Several large, wide-ranging species are found here, including marabou stork *Leptoptilos crumeniferus*, white-backed vulture, martial eagle *Polemaetus bellicosus*, bateleur *Terathopius ecaudatus* and tawny eagle *Aquila rapax*. The varied woodland communities support red-crested korhaan *Eupodotis ruficrista*, white-throated robin-chat *Cossypha humeralis* and burnt-necked eremomela *Eremomela usticollis* (Birdlife South Africa, 2015). Many bird species reach the southern limit of their Afrotropical range along the Limpopo River valley (Birdlife South Africa, 2015). Although extremely rare within South Africa, they are considerably more common and widespread outside the country's borders. Such species are tropical boubou *Laniarius major*, broad-billed roller *Eurystomus glaucurus* and meves's starling *Lamprotornis mevesii*.

Globally threatened species are white-backed vulture (breeding) and kori bustard (possibly breeding). The only regionally threatened species is the greater painted-snipe *Rostratula benghalensis*. Biome-restricted species that are common are kurrichane thrush *Turdus libonyanus*, meves's starling, white-bellied sunbird *Cinnyris talatala* and white-throated robin-chat (Birdlife South Africa, 2015).

Fish

Species richness is high with 27 resident indigenous species recorded, namely, yellow fish *Labeobarbus marequensis*, three-spot barb *Barbus trimaculatus,* sharptooth catfish *Clarias gariepinus* and red-nose labeo *Labeo rosae* (Russell, 2011). A population *of* African tigerfish *Hydrocynus vittatus* in the Schroda Dam actively prey on barn swallows *Hirundo rustica* in flight. This behaviour was discovered during a radio telemetry study and documented using a motion picture video camera (O'Brien *et al*., 2014). The alien invasive Nile tilapia *Oreochromis niloticus* poses an ecologically threat to indigenous tilapia species which are at risk of extinction through hybridisation and competition exclusion (Zengeya *et al.*, 2013).

Invertebrates

Not much invertebrate research has been completed in the park. There was however an in-house research project (lead by Ms N. Tantsi) that did an inventory of ant species at different sites that experienced different degrees of degradation and rehabilitation. The study found a total of 22 ant species where most (15 species) were found at sites that were starting to be colonised by grass. The sites with the least species (nine species) were sites that were still degraded. The mopane tree occurring in the park hosts the moth *Imbrasia belina* which is better known as mopane worm during its larva form. The sporadic outbreak of the caterpillar often forms spectacular defoliation of the trees during the December and April outbreaks which plays an important herbivory role. De Swardt (et al. 2018) found that the mopane catepillars are an important contributor of the nutrient cycling on the generally nutrient-poor Kalahari sands.

Mammals

Several mammal species occur within the park. Medium-sized herbivores include blue wildebeest *Connochaetes taurinus,* eland *Tragelaphus oryx*, gemsbok *Oryx gazella*, impala *Aepyceros melampus*, kudu *Tragelaphus strepsiceros*, waterbuck *Kobus ellipsiprymnus* and zebra *Equus quagga burchellii*. Mega-herbivores such as African elephant *Loxodonta africana* and white rhinoceros *Ceratotherium simum* are also present. Large carnivores such as lion *Panthera leo*, leopard *Panthera pardus*, spotted hyaena *Crocuta crocuta*, and brown hyena *Hyaena brunnea* are present whilst wild dog *Lycoan pictus* traverse the park.

The burrowing, nocturnal aardvark *Orycteropus afer* is a medium-sized mammal which also roams the Mapungubwe landscape. Limited research and knowledge about this species attributes to the "least concern" status on the red data list. The importance of the aardvark in the landscape is undoubtedly a key facilitator for other highly endangered species *i.e.* the wild dog. Many other species like hedgehogs *Atelerix frontalis,* aardwolf *Proteles cristata* and bat-eared fox *Otocyon megalotis* might be eliminated from the landscape due to the loss of suitable aardvark habitat. These animals depend on the safety of aardvark burrows and opened termite mounds to shelter themselves and rear their offspring successfully. In the dry Mapungubwe landscape the reduction of the vegetation and grass layer by termites plays an important role in the survival of grazing species. Research has proven that aardvark significantly reduces termite numbers which increases the availability of grass fodder to antelope.

While most of the animal populations have variable trends within the park due to it forming part of a larger region over which species roam, no immediate threats to the environment are foreseen with the exception of the impact of elephants. Elephant use of the landscape is constrained by water distributions and fences in the Mapungubwe area, but also other human activities in the region.

Reptiles

Two reptile species, the Nile crocodile *Crocodylus niloticus* and the African rock python *Python sebae* are on the NEM: BA list with the status of Vulnerable and Protected respectively. Nile crocodile, African rock python, eopard tortoise *Geochelone pardalis* and rock monitor *Varanus exanthematicus* are all listed as Appendix 2 species on the Convention on International Trade in Endangered Species (CITES) list. The geology of the park with its rock formations holds the promise of finding a few more gecko and rock-living reptile species. A thorough herpetological surveys of the area is required.

2.14 Archaeology and cultural heritage

Sustainable human settlement in the MCL has a long history and extends beyond the boundaries of the park into Botswana and Zimbabwe. The earliest archaeological sites date back more than a million years with evidence of early Stone Age tools made by ancestors of modern humans found within the park. Several sites have been excavated (Kuman *et al.,* 2004; Kuman *et al.,* 2005; Pollarolo & Kuman, 2009). In addition, there are sites dating to the middle Stone Age and late Stone Age as well (Hall & Smith, 2000; Van Doornum, 2005). These Stone Age people were all hunter-gatherers who lived both within rock shelters and out in the open. Within the last few thousand years, the San made numerous rock paintings that illustrate animals such as giraffe, elephant and rhino (Eastwood & Blundell, 1999; Eastwood, 2003; Eastwood & Eastwood, 2006). Archaeological excavations in several rock shelters indicate that ancestors of the San occupied the MCL for nearly thirteen thousand years (Van Doornum, 2005), moving away only after interaction with the incoming iron age farmers for several hundred years between 900 and 1300 AD (Hall & Smith, 2000).

Archaeological research between the 1930s (Fouché, 1937; Galloway, 1959; Gardner, 1963) and the present (Hanisch, 1980, 1981; Voigt, 1983; Steyn, 1994; Meyer, 1998, 2000; Huffman, 2000, 2005; Steyn & Nienaber, 2000; Huffman *et al.,* 2004; Calabrese, 2000, 2005; Van Schalkwyk & Hanisch, 2002) has

provided much evidence for the most significant period of human settlement in the MCL when it was the centre of the first known powerful indigenous kingdom in southern Africa, established by cultural ancestors of many of the peoples living in present-day Limpopo Province. Archaeological evidence shows that Great Zimbabwe and the smaller empires of Thulamela and Changamire have cultural links to the Mapungubwe Kingdom (Ancient pages, 2016). Evidence of this occupation and history is preserved in more than a thousand archaeological sites on the South African side and scores more in Botswana and Zimbabwe (Huffman, 2000, 2005). Wealth accrued by its leaders through trade from the Indian Ocean network (Wood, 2000) among other factors, resulted in social organisation changing to a situation in which the ruling elite lived separately from commoners. Due to a combination of economic, political and possibly climate change, the people of the kingdom dispersed around AD 1300, with the centre of regional power shifting to Great Zimbabwe, north of the Limpopo River (Smith, 2005).

The archaeological wealth of Mapungubwe was realised in the 1930s when extensive archaeological research uncovered valuable artefacts on the sacred hill (Fouché, 1937; Tiley, 2006). More recent research at several related sites has uncovered the extensive historical importance of the wider region (Carruthers, 2006). However, very limited oral history exists to understand the social and historical relationship of the people occupying the areas next to Mapungubwe before colonial occupation began (Ralushai, 2003).

Pre-colonial land-use included usage of different landscape positions in the Early Stone Age (river terraces) (Pollarolo & Kuman, 2009), Middle Stone Age (talus slopes, that is slopes covered with loose rock) and Late Stone Age (caves) by hunter-gatherers, and within the last 2000 years by Khoi herders (Hall & Smith, 2000).

Early Bantu-speaking farmers kept livestock and grew crops on lower-lying ground with better soils, while hilltops were favoured by the elite and were considered important for rain-making (Huffman *et al.,* 2004; Huffman, 2005). White farmers in the 20th century tended to occupy land near the river for irrigation, or farm in the areas away from the river with cattle and / or game-based ventures on the extensive semi-arid range. Military, mining in surrounding areas and conservation land usage has added to the mix over the past century.

All the archelogical and historic sites, as well as the associated movable objects, have been recorded and are maintain through an inventory that is continuously updated.

2.15 Socio-economic context

The area around the park is characterised by a sparse human population, and long distances for infrastructural lines of support. Land use and ownership within the park and the buffer are unusually diverse and include contractual partners, private land owners, land claimants, private tourism operations, game farms and local communities. The nearest larger populations of people are in the towns of Alldays and Musina. Coal mining is likely to develop in the surrounding region over the next ten years, bringing changes in population distribution and traffic. Influx of people from Zimbabwe and to a lesser extent Botswana exacerbates the social challenges in the area.

The population in the Limpopo Province 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, the fourth highest unemployment rate amongst the nine Provinces. In July 2017, the number of grant payments in the Limpopo Province stood at 2,469,970 or 14.1 % of the total number of grant payments, the fourth highest number of social grant pay-outs in the country (www.sassa.gov.za/index.php/statistical-reports).

The VDM, within which the park is situated, covers 25,596 km^2 and has a population of over 1.39 million, living in 328,357 households. In the MLM the population stood at 63,650 in 2016 (Stats SA 2016), having grown by 51 % since 2011 (Musina Local Municipality, 2018). The unemployment rate in the VDM stood at 55.8 % in 2006 while 47.7 % of people living in the MLM were unemployed 1996. Both the VDH and MLM faces critical basic services delivery challenges.

This analysis concludes that park, together with several other protected areas, presents the district with good potential to grow in the tourism sector. The analysis shows that 99% of the people of Vhembe are previously disadvantaged people. This area and population are characterised by underdevelopment, poverty and lack of skills. Subsequently, much hope is centred on recent developments in nature-based tourism (including ecotourism and hunting lodges) particularly with Mapungubwe as a hub, and on the likely regional benefits of a greater GMTFCA straddling the three countries. Sections 10.3.3 and 10.7.1 provide more information regarding job creation as a direct park mechanism for poverty alleviation.

2.16 Tourism

Tourism has become well established in the park and is in line with SANParks' approach to offer a range of products focus primarily on the self-catering range. Table 3 summarises the overnight facilities available as well as the unit / room occupancy for previous two years. There are currently 5 small camps varying from a Lodge, cottages at Leokwe rest camp, Limpopo Forest camp to the more rustic Vhembe camp and and Mazhou campsite. Various activities are offered, including heritage site tours, day walks and game drives. Additionally, bush braais, rock art tours and birding tours are offered on special request. Significant scope exists for growth and expansion of activities with the emphasis on cultural heritage related products and experiences.

In summary only 10,5 % of total formal beds are in the Premium category, while the remaining 89,5 % falls in the economy category.

During the 2018 / 2019 financial year 40,151 guests visited the park, which is 7.8 % higher than the 37,250 recorded during 2017 / 2018 financial year. 89.6 % of 2018 / 2019 guests were South African residents, while 0,3 % were nationals of Southern African Development Community (SADC). The remaining 10,1 % were from other countries. Of South African guests 62.7 % were black while 37.3 % were white. 80.6 % of total guests were Day Visitors while 19.4 % were Overnight Visitors. Of guests from other countries, the top five were as follows during 2018 / 2019: Germany 27.6 %, Netherlands 15.5 %, United Kingdom 10.9 %, United Sates 7.2% and France 5.8% of foreign guests.

Table 3. Overnight facilities and unit / room occupancy figures.

Accommodation Summary as at 31 March 2019						
Camp	Description	Number of			Category	Unit Occupancy (2018 / 2019 financial year – 2017 / 2018 in brackets)
		Units	Beds	Total Beds/ Camping person capacity		
Leokwe	Cottages	16	2	32	Economy	63.8% (67.9%)
	Family cottages	2	4	8		
Limpopo Forest	Forest tents	8	2	16	Economy	35.7% (36.8%)
Mazhou Camping	Camp sites	10	6	60	Camping	70.1% (71.8%)
Tshugulu Lodge	Guest house	1	8	8	Premium	59.2% (67.0%)
	Guest cottage	1	4	4	Economy	
Vhembe	Cabins	4	2	8	Economy	46.0% (45.4%)
Total inventory	Units accommodation	32	Beds	76		
	Camp sites	10	Persons	60		
Overall occupancy		Accommodation				54.3% (57.3%)
		Camping				70.1% (71.8%)

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 NEM: PAA 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 co-ordinated policy framework (CPF). The CPF can be downloaded from the SANParks website using the following link http://www.sanparks.org/conservation/park_man/.

The CPF provides the organisational guidance required by the DEA guideline for management plans (Cowan & 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.

The principal legal instruments through which the effective conservation of the cultural and natural heritage of the MCL will be achieved is the National Environmental Management Act [Act No. 107 of 1998 (NEMA)], NEM: PAA, National Heritage Resources Act [Act No. 25 of 1999 (NHRA)] and World Heritage Convention Act (Act No. 49 of 1999).

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.

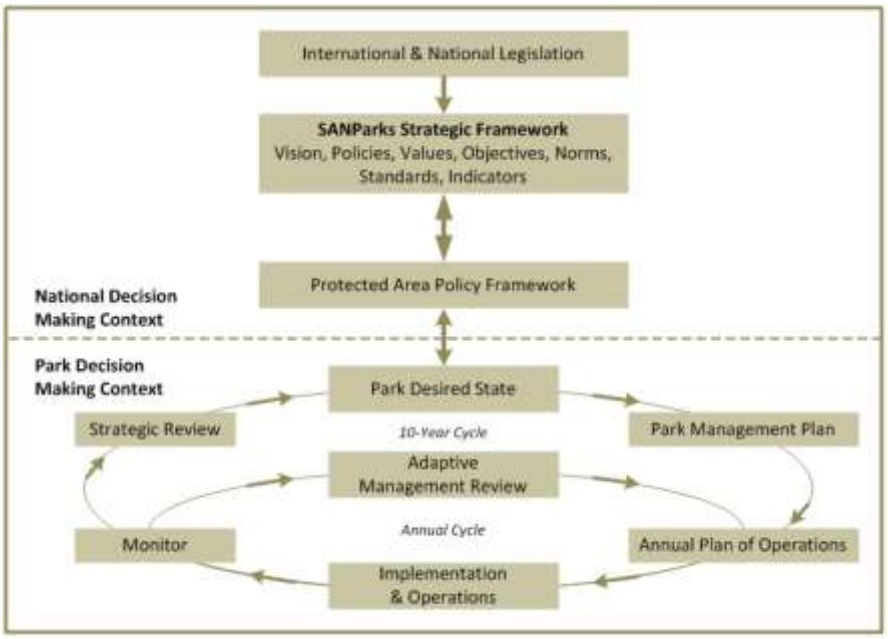

Figure 1. SANParks protected area planning framework.

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).

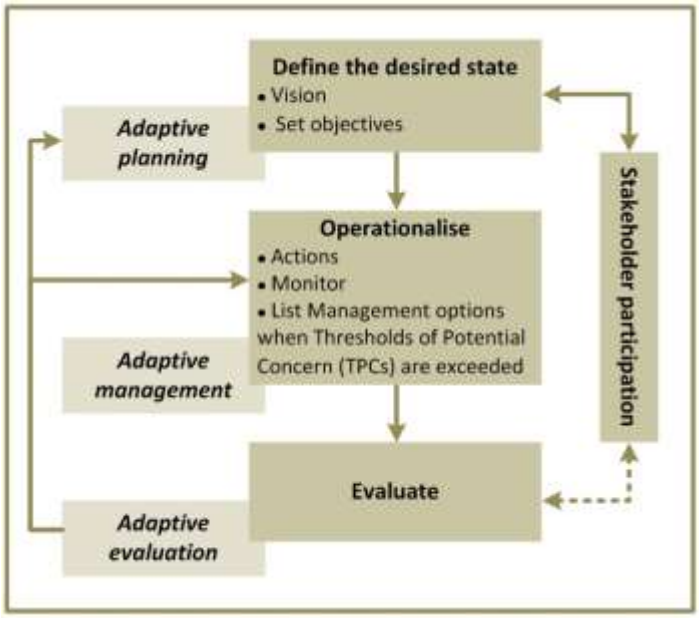

Figure 2. Steps in the adaptive management cycle as used by SANParks.

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 to a desired socio-ecological system. This desired state or vision rests on the jointly articulated distinctive and special features (called vital attributes) of the park. It is described by and within the context of associated stakeholders and their respective values, as well as social, technological, environmental, economic and political (V-STEEP) influences.

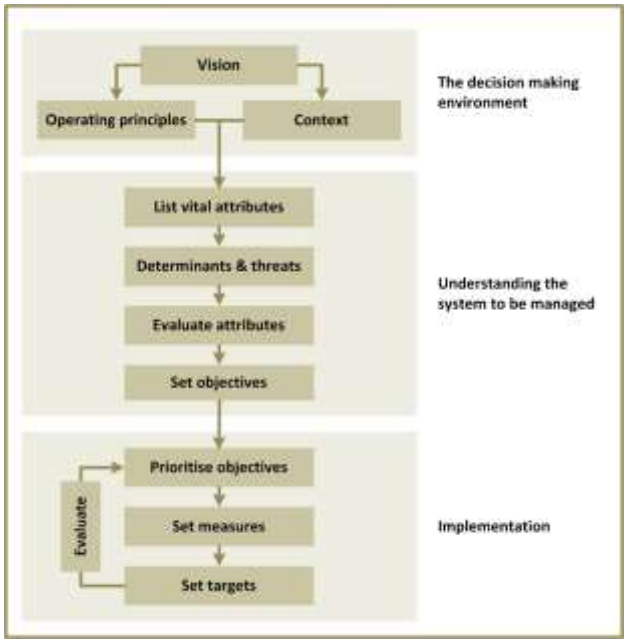

Figure 3. The adaptive planning process as used by SANParks.

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 river biotic responses and fire management and are coupled with a mechanisms approach in other instances.

3.3 Park-specific framework

All park managers (except for Kruger National Park) report to the Managing Executive: Parks through a Regional General Manager. In the case of the park, reporting is done via the Regional General Manager for the Northern Cluster. The park's future 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.*

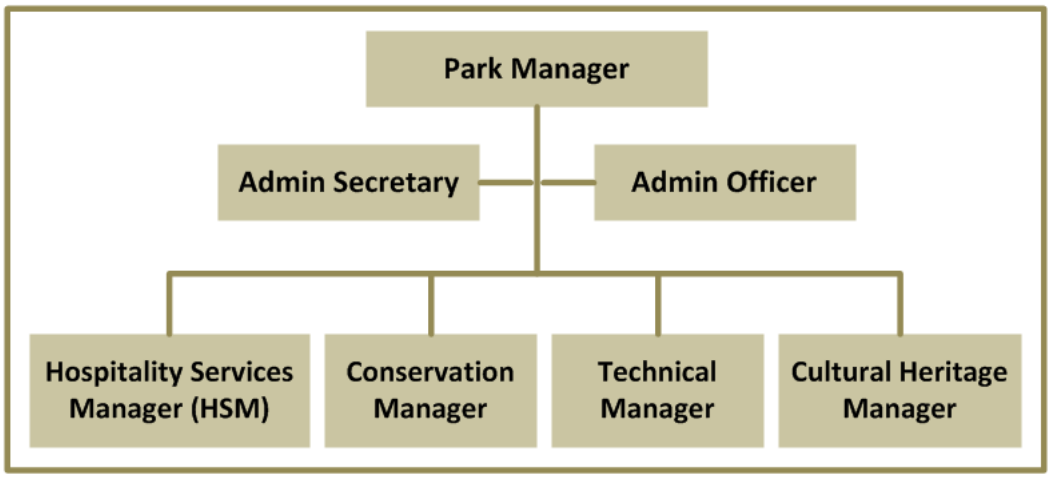

Figure 4. Mapungubwe National Park and World Heritage Site organogram.

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 Integrated 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 Integrated 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 Integrated 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 NEMA; and
- The NEM: PAA

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

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

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

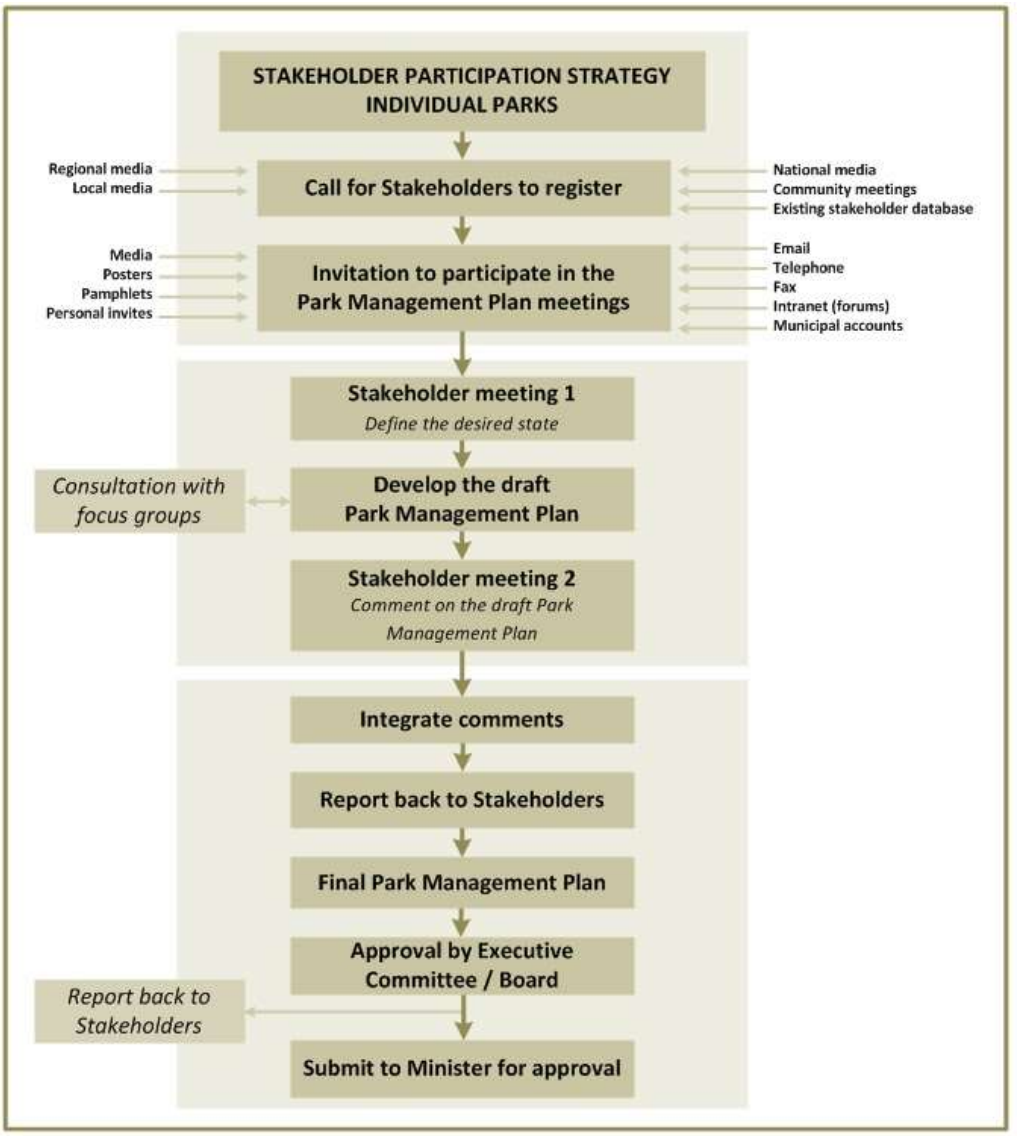

Figure 5. SANParks stakeholder participation process.

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

Section 5: Purpose and vision

5.1 Purpose of the park

The NEM: PAA requires that the park be managed in accordance with the purpose for which it was declared. The original purpose of the park was not officially specified, in neither the first gazetted declaration nor any subsequent addition. However, the initial motivation for establishing the park was to conserve and preserve the cultural heritage value and assets. 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. The purpose of protecting the cultural landscape is to safeguard its outstanding universal value as encapsulated by the various criteria for which the property has been listed as a world heritage site. In addition, the management plan provides for the promotion of the property and provision of public access for educational, spiritual and recreational purposes.

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, the focus was 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, 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 2 public workshops held on 17 and 18 April 2018:

MISSION

“To effectively conserve and promote Mapungubwe National Park and World Heritage Site as a unique cultural and natural landscape through collaborative decision making with descendants and stakeholders that improves access and benefit sharing within a biodiverse transfrontier region”.

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:

The park's main strengths are high cultural heritage and scenic values. In terms of biodiversity value, it is amongst the lowest of all national parks. It has however a higher than average diversity of tourism products. Because of its transfrontier status, it has significance in the bioregional context. High impact Corporate Social Investment Projects will strengthen Mapungubwe's status as a socio-economic catalyst. The cultural and environmental awareness effort will be considerably strengthened. There are no real prospects of Mapungubwe generating surplus income, but means are available to reduce the deficit. The consolidation of the park, through agreements with adjacent land owners, should be addressed urgently. Future infrastructure development requirements include staff houses, an extended road network and offices. The biodiversity value of the park is expected to remain stable over the next 20 years. The biggest biodiversity risk is diminished water quality and quantity.

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 corporate principles or values are:

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

At the above mentioned workshops that took place on 17 and 18 April 2018, the participants suggested adding an additional value. SANParks agreed to adopt the following:

1. Acknowledge the relevance of the direct descendents.

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 2.16.

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. In consultation with the stakeholders, five attributes were identified that are vital to the approach by which it is managed. These are:

1. Cultural heritage resources, including of history and stories, are unique and of global significance;
2. Biodiversity, with iconic species in a unique geological landscape, with prominent geomorphological features that form a complex system;
3. Uniquely integrated in the Mapungubwe Cultural Landscape, Vhembe Biosphere and Greater Mapungubwe Transfrontier Conservation Area;
4. Wilderness experience and natural sense of place; and
5. Interactive and diverse tourism experience, that allows for a unique ancient African reconnection.

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. Cultural heritage resources, including history and stories, are unique and of global significance.	
Determinants: Centre of 1st indigenous Southern African kingdom and economic hub for international trade; living descendants (link to Map hill); sharing information through books, oral history, training and research; rich long recorded history; sacred sites enabling rituals; cultural sense of place; spectrum of full timeline of history of area; famous golden rhino; rock art sites, tools and artefacts across time scales; award winning museum and interpretive centre; historic events gave rise to Mapungubwe Hill; value created through awareness and visitation; well documented history; access to cultural sites; World Heritage Site status; unique rock formation (Ancient ladies); interpretive resources such as museum, guides, trails.	
Threats	
• Animal impact • Vandalism/crime • Dispute between communities • Resistance to the different storylines • Loss of oral history and transmission (from one generation to the next) • Loss of cultural values and link to the site of the communities due to urbanisation • Undermining the ownership and rights of the descedants • Natural degradation	• Inappropriate / destructive research methods • Lack of awareness by community members about the park • Lack of awareness by community members about opportunities in the park (for rituals and visitation) • Inappropriately managed tourism and ritual access • Inappropriate and incompatible development

2. Biodiversity, with iconic species in a unique geological landscape, with prominent geomorphological features that form a complex system.	
Determinants: Gallery and riverine forest; the Limpopo River floodplain; wetlands, geohydrology and arid habitats; flood events, soils, grazing / browsing, climate; water quality & quantity; baobabs; Big 4; protection of iconic species, paleontological features *e.g.* fossils, weeping red rocks.	
Threats	
• Elephant impact • Floods and droughts events • Alien plants • Overgrazing and – browsing • Inappropriate development • Illegal plant collection and poaching of animals;	• Impoundment of river • Pollution • Mining activities • Erosion • Poor management • Inappropriate or excessive water abstraction;

3. Uniquely integrated in the Mapungubwe Cultural Landscape, Vhembe Biosphere and Greater Mapungubwe Transfrontier Conservation Area.	
Determinants: Bordering 2 countries; institutional arrangements; link with Great Zimbabwe and Thulamela; cross border integration; free movement of game species; cross border tourism; joint census operations; sense of place at the Limpopo / Shashe River confluence	
Threats	
• Inconsistent management integration • Disease regulations • Conflicting objectives between the different partners • Poor communication • Break down of institutional arrangements • Regional political instability • Erecting an international border fence • Exclusion of descendants in decision making	• Distance from political decision making centres • Human wildlife conflict regulatory authorities • Lack of understanding and delivery of added value of the Transfrontier conservation area (TFCA) • TFCA perceived as a park across boundaries • Lack of official border post in the park, which will allow ease of human movement. • Lack of tourism access across TFCA • Incompatible land use

4. Wilderness experience and natural sense of place.	
Determinants: Uninterrupted viewshed (day and night); gallery forest ambience; unique geology and landscape; spiritual connection; vegetation including baobabs, river confluence where the 3 countries meet; Big 4; sound scape; geomorphology; low human population density; limited development; compatible regional land use; rugged landscape.	
Threats	
• Livestock and other domestic animals in the park • Inappropriate tourism development • Mining and agriculture encroachment • Increased elephant impact • Non-adherence to ritual guidelines • Regional political instability • Poaching	• Management trade-offs (infrastructure); • Climate change • Fragmentation of the park • Invasive alien species • Human wildlife conflict • Becoming an unsafe destination • Water abstraction (both local and upstream)

5. Interactive and diverse tourism experience, that allows for a unique ancient African reconnection.	
Determinants: Marketing; existing well maintained infrastructure; authentic value for money experience; diversity of activities and products; unique integrated cultural biodiversity experience; good visitor management and trade-offs.	
Threats	
• Inappropriate tourism products and management • Lack of adequate capacity and training of staff • Poor road infrastructure access to the park • Poor park road network • Fragmentation of the park • Lack of diversified cultural experience, including information and access • Lack of supporting infrastructure e.g. fuel station	• Lack of active local engagement (formal structures) • Limited awareness of the park and lack of visitation by community members • Lack of integration with other private / regional tourism products and networks • Poor local knowledge of the park • Safety concerns • Poor local communication and awareness • Dilution of the Mapungubwe brand name

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:

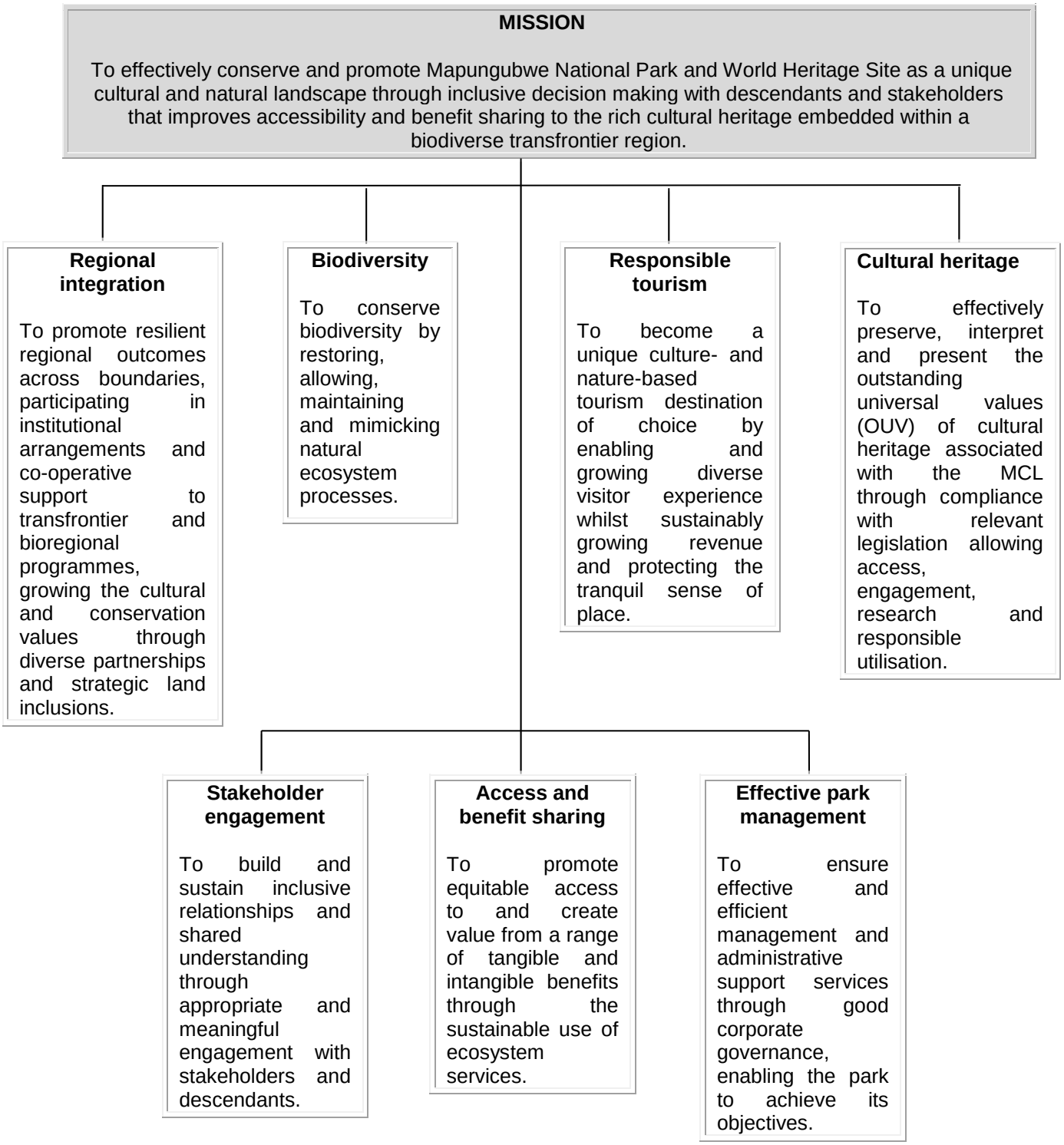

Figure 6. Park high-level objectives.

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 ensure co-operative, transparent and inclusive decision making by promoting sound governance, advocating mutual responsibility and shared benefits, and encouraging close co-operation between the multiple management authorities, role players and land owners.

- **1.1 Park consolidation objective:** To restore landscape functionality and ecosystem services by consolidating and expanding priority areas.
- **1.2 TFCA / biosphere objective:** To align, contribute and deliver on TFCA and Biosphere objectives by implementing prioritised programmes.
- **1.3 Co-operative management objective:** To contribute to regional, cultural and environmental decision-making by participating in key structures and fora that could affect the park.

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

2. Biodiversity conservation high-level objective: To conserve biodiversity by restoring, allowing, maintaining and mimicking natural ecosystem processes.

- **2.1 Herbivory objective:** To maintain herbivory as a key ecosystem process by managing for different herbivore impacts over space and time, where possible.
- **2.2 Degradation objective:** To rehabilitate the integrity of degraded systems by mitigating the drivers of degradation.
- **2.3 Invasive alien species objective:** To mitigate impacts of invasive alien species by preventing entry, containing and controlling priority listed species where possible.
- **2.4 Fresh water objective:** To enhance ecosystem functions within the landscape by advocating and managing river flow, water quality, associated groundwater and wetland attributes.
- **2.5 Species of special concern objective:** To protect prioritised species of special concern by identifying and monitoring the species and managing threats.
- **2.6 Predation objective:** To maintain predation as an ecosystem process by mitigating human wildlife conflict and managing threats (poaching, poisoning and retribution killings) to predators.
- **2.7 Disease objective:** To manage disease impacts by controlling disease transfer at the wildlife-livestock-human interface.

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

3. Responsible tourism high-level objective: To become a unique culture- and nature-based tourism destination of choice by enabling and growing diverse visitor experience whilst sustainably growing revenue and protecting the tranquil sense of place.

- **3.1 Responsible Tourism performance objective:** To establish, maintain and continuously improve the park's RT performance, by implementing SANS1162.
- **3.2 Visitor experiences objective:** To continually enhance the visitor experience within the park, by effective visitor management, interpretation and by providing quality facilities.
- **3.3 Service excellence objective:** To enable relevant customer-focused service excellence, by understanding and responding appropriately to market expectations and or preferences.
- **3.4 Grow tourism revenue objective:** To sustainably 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.
- **3.5 Operational effectiveness objective:** To enable cost savings within tourism operations, by ensuring effective management and controls.
- **3.6 Promotion objective:** To promote the unique cultural and natural landscape of the park by developing and implementing a variety of sales, marketing and communication initiatives.
- **3.7 Universal access objective:** To enable appropriate access for differently abled visitors by providing adequate infrastructure and services.

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

4. Cultural heritage management high-level objective: To effectively preserve, interpret and present the OUV of cultural heritage associated with the MCL through compliance with relevant legislation allowing access, engagement, research and responsible utilisation.

- **4.1 Site management objective:** To identify and enable effective management of all cultural heritage sites by developing, implementing and monitoring site specific management plans and compliance with relevant legislation.
- **4.2 Collection management objective:** To effectively manage heritage objects associated with Mapungubwe by identifying, documenting, preserving, conserving, protecting and presenting appropriately.
- **4.3 Interpretation, presentation, utilisation and access objective:** To create awareness through interactive presentation, improved co-ordinated access, development and sustainable utilisation of heritage resources for spiritual, educational, research and tourism purposes.
- **4.4 Research objective:** To improve and diversify the cultural heritage knowledge of the park through quality and inclusive research partnerships with Universities and other researchers.
- **4.5 Engagement of culturally associated communities objective:** To ensure increased involvement of culturally associated communities through structured processes in order to enhance co-operation and continuous intangible heritage practices.

Figure 10. Cultural heritage management high-level objective and supporting objectives.

5. Stakeholder high-level objective: To build and sustain inclusive relationships and shared understanding through appropriate and meaningful engagement with stakeholders and descendants.

- **5.1 Descendants objective:** To provide a meaningful co-operative interface between the park and the descendants by facilitating the establishment and maintenance of appropriate and effective engagement structures.
- **5.2 Stakeholder structures objective:** To provide an effective interface between the park and its stakeholders by facilitating the establishment and maintenance of appropriate engagement structures and mechanisms.
- **5.3 Human wildlife conflict objective:** To effectively manage human-wildlife conflict both inside and adjacent to the park by reducing the risk of conflict and managing the impact thereof.

Figure 11. Socio-economic development high-level objective and supporting objectives.

6. Access and benefit high-level objective: To promote equitable access to and create value from a range of tangible and intangible benefits through the sustainable use of ecosystem services.

- **6.1 Natural resource use objective:** To enhance the sustainable use of natural resources found within the park by facilitating access to a range of relevant benefits.
- **6.2 Knowledge awareness and co-learning objective:** To enhance co-learning, knowledge and awareness through implementing innovative education, facilitating relevant research and communicating effectively with a range of stakeholders.
- **6.3 Employment and business opportunities objective:** To strive for equitable employment and business development by promoting fair access to a range of opportunities.

Figure 12. Stakeholder relationships high-level objective and supporting objectives.

7. 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.

- **7.1 Environmental management objective:** To strive for best practise and ensure compliance with environmental legislation through improved governance and environmental risk management.
- **7.2 Risk management objective:** To establish and maintain effective, efficient and transparent risk management systems by creating an enabling environment for the management of risk.
- **7.3 Financial management and administration objective:** To ensure sound financial management and administration through proficient budget management, effective internal controls and compliance to corporate governance prescripts.

7. 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.

- **7.4 Human capital management objective:** To ensure sufficient and effective staff capacity to achieve management objectives by adhering to legislation, corporate human capital management policies and guidelines.
- **7.5 Information and records management objective:** To achieve best practice in the field of information and records management by complying to the Records Management Legislative Framework and policies and thereby ensuring care of all vital records in SANParks.
- **7.6 Infrastructure objective:** To maintain, upgrade and develop new park infrastructure through proper planning and efficient management.
- **7.7 Safety and security objective:** To provide a safe and secure environment for both visitors and employees and to ensure the protection and integrity of natural, cultural and physical assets and resources, by implementing a Park Safety and Security Plan.
- **7.8 Safety, health, environment and quality objective:** To continuously reduce the disabling injury frequency rate through the implementation of an efficient and effective Occupational Health and Safety management system.
- **7.9 Communication objective:** To build, maintain and constantly improve relations between the park and all its relevant stakeholders, both internally and externally using various mediums.
- **7.10 Disaster management 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.
- **7.11 Climate change objective:** To enable responsible action, adaptation and mitigation of climate change impacts on SANParks' ability to achieve its objectives by better understanding climate change and its effects in and around the park.
- **7.12 Outcomes objective:** To evaluate outcomes of management interventions related to protected area management through regularly assessment.

Figure 13. Effective park management high-level objective and supporting objectives.

Section 6: Zoning

6.1 Introduction

The primary objective of a park zonation plan is to establish a coherent spatial framework in and around a park to guide and co-ordinate conservation, tourism and visitor experience initiatives, and minimise conflict between these sometimes, differing activities. A zoning plan is also a legislated requirement of the National Environmental Management: Protected Areas Act No 57 of 2003 (NEM: PAA), which stipulates that the management plan, which is to be approved by the Minister, must contain "a zoning of the area indicating what activities may take place in different sections of the park and the conservation objectives of those sections".

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

6.2 Synopsis of updates to the 2013 zonation

Changes included the updating of place names, roads, incorporation of new infrastructure and the change in the zonation to the southern-western section of the park from a primitive zonation scheme to a low intensity leisure zonation scheme to allow more tourism access into the park through the 4x4 trails and tourist roads. The eastern section of the park just before the Nwatinugu waterhole, parallel to the heritage area, K2 site and Mapungubwe hill was rezoned from a low intensity leisure zone to a primitive zone to provide additional protection to the cultural heritage sites through the access-controlled system. Towards the south-eastern section of the park entrance and south of the tar road, the primitive zone was rezoned to a low intensity leisure zone to accommodate the staff village and future office complex. A small section in north of the park south of the Limpopo River and north of the Vhembe bush camp, was rezoned from a primitive zone to a low intensity leisure zone to accommodate the future camp site development.

6.3 Guiding principles underpinning the zonation

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

- Is the foundation of all planning and development within a park, with the aim of ensuring its long-term sustainability;
- Accommodates strategic, flexible and iterative planning procedures;
- Is a "framework for planning" not a "plan for implementation" (*i.e*. implementation is dealt with through lower level plans and programmes);
- Is risk-averse and promotes a cautious approach, which considers the limits of current knowledge about the consequences of decisions and actions;
- Recognises that the mandate of SANParks is to conserve biodiversity and heritage resources of national and international significance, in terms of both the NEM: PAA and the NHRA;
- Ensures the integrity of the park's scenic quality by limiting human intrusions into the landscape;

- Accommodates a wide range of unique opportunities for experiences of solitude and nature-based recreation which do not conflict with the desired social and environmental states;
- Confines development within the park to areas that are robust enough to tolerate transformation and without detracting from the "sense of place";
- Rationalises and channels access into the park and internal movement through it;
- Sets the limits of acceptable change; to minimise the loss of biodiversity and to reduce conflict between different park uses;
- Recognises that park boundaries are not static in time and that there are factors beyond the current or future boundaries that can positively or negatively influence the park; and
- Recognises that the park cannot exist in isolation and that planning needs to ensure that the park is integrated with the surrounding landscapes as well as the economic and social structures at local and regional scales.

6.4 Rationale for use zones

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

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

6.5 The zoning system

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

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

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

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

Table 4. Use zones and use zone characteristics for the park.

	Primitive	Low intensity leisure	High intensity leisure
General characteristics	Generally, retains wilderness qualities but with basic self-catering facilities. Access is controlled, or limited to 4x4 vehicles. Provided access to Wilderness Zones and Remote 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	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	Low	Moderate to high	High
Types of access	Controlled access. Unaccompanied motorised and guided non-motorised. Foot and 4x4 vehicles.	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	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	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 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 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	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.

The sensitivity map (Appendix 5, Map 5) shows the relationship between the use zoning and the summary of the biodiversity and landscape sensitivity-value analysis. This indicates that in general it was possible to include most of the environmentally sensitive and valuable areas into zones that are strongly orientated towards conservation rather than tourist use. Also, in numerous cases the boundaries between zones are based on changes in environmental sensitivity. Table 5 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 64.18% of the park is covered by a zone that is strongly conservation orientated in terms of its objectives (*i.e*. primitive). The table demonstrates a good correlation between the spatial distribution of environmentally sensitive areas and conservation orientated zones, with 56.89% of highly sensitive areas in the conservation orientated zones. Conversely, the tourism orientated zones cover 35,82% of the park and contains approximately 43.11% of sensitive areas.

Table 5. 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	Primitive	64.18	56.89
Tourism orientated	Low intensity leisure	35.62	43.11
	High intensity leisure	0.20	0.00

6.6 Overview of the use zones

6.6.1 Primitive zone

Objective

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

Characteristics

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

This zone serves to protect sensitive environments from high levels of development. The primitive zone may contain concession sites and other facilities where impacts are managed through strict control of the movement and numbers of tourists, for example if all tourists are in concession safari vehicles.

Visitor activities and experience

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

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

Limits of acceptable change

Biophysical environment: Deviation from a natural / pristine state must be small and limited to restricted impact footprints. Existing impacts must be reduced. Any facilities constructed in these areas, and activities undertaken here, should be done in a way that limits environmental impacts. Road and infrastructure specifications must be designed to limit impacts.

Aesthetics and recreational environment: Activities which impact on the intrinsically wild appearance and character of the area, or which impact on the wilderness characteristics of the area (solitude, remoteness, wildness, serenity, peace, *etc.)* must be restricted and impacts limited to the site of the facility. Ideally visitors must only be aware of the facility or infrastructure that they are utilising, and this infrastructure / facility must be designed to fit in with the environment within which it is located in order to avoid aesthetic impacts.

Facilities

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

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

Audible equipment and communication structures: None.

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

Location in park

In Mapungubwe National Park, primitive areas were designated to protect most of the sensitive areas (such as the riparian forest, floodplain and cultural precincts) from high levels of tourist activity. The primitive zone contains all the controlled access tourism areas of the park (*e.g*. bushcamp, and access roads to the site).

Guidelines on management infrastructure and utilisation

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

6.6.2 Low intensity leisure zone

Objective

The objective of the tourist-orientated zone is to provide infrastructure for day and overnight visitors in a natural environment. While game viewing areas may be zoned low intensity leisure (LIL) to allow for flexibility of the game viewing road network development footprints must be localised, with some areas having more of a primitive or even remote zone “feel.” Impacts must

be mitigated by using infrastructure to direct and manage the movement of park visitors away from the more sensitive areas that may occur within this zone.

Characteristics

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

Visitor activities and experience

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

Interaction with other users: Moderate to high.

Limits of acceptable change

Biophysical environment: Deviation from a natural / pristine state must be minimised and limited to restricted impact footprints as far as possible. However, it is accepted that some damage to the biophysical environment associated with tourist activities and facilities will be inevitable. Aesthetics and recreational environment: Although it is inevitable that the activities and facilities will impact on wild appearance and reduce wilderness characteristics of the area (solitude, remoteness, wildness, *etc*.), these activities and facilities must be managed and limited to ensure that the area still provides a relatively natural outdoor experience.

Facilities

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

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

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

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

Location in park

Low intensity leisure areas were designated in the current game viewing areas, around current accommodation and other associated infrastructure outside of the main administrative/staff centre, around recreational areas associated with contractual arrangements, and along existing minor provincial roads.

Guidelines on management infrastructure and utilisation

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

6.6.3 High intensity leisure zone

Objective

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

Characteristics

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

Visitor activities and experience

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

Interaction with other users: High

Limits of acceptable change

Biophysical environment: The greatest level of deviation from a natural / pristine state is allowed in this zone, and it is accepted that damage to the biophysical environment associated with tourist activities and facilities will be inevitable. However, care must be taken to ensure that the zone still retains a level of ecological integrity consistent with a protected area.

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

Facilities

Type and size: High density camps providing tourist accommodation with diverse modern amenities. Restaurants, shops, education / information centres, view sights, ablution facilities, parking areas and botanical gardens. Day visitor sites are provided outside of rest camps. Day visitor sites or picnic sites may provide catered facilities and kiosks. Where it may be necessary to provide high density recreational sites with a wide range of intensive activities, an attempt must be made to concentrate these sites close to the periphery of the park. Staff villages and administrative centres must be restricted to core staff. Non-essential staff housing, administration and industrial infrastructure must 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, which are often tarred. Care must be taken to distinguish between roads that serve as high access delivery routes to camps, link roads between camps, and game viewing roads, to minimise conflict between users.

Location in park

In Mapungubwe National Park, only the main staff/administrative centre with its associated accommodation was designated as High intensity leisure.

Guidelines on management infrastructure and utilisation

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

6.7 Overview of the special management overlays

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

Agricultural area – Vegetable and fruit growing areas, cultivation and production.

Cultural heritage - The key cultural heritage sites of Mapungubwe were included in this Special Management Overlay to ensure the protection of cultural resources in this zone, including viewshed protection.

Riparian forest and floodplain - These sensitive habitat types were identified for special protection to reduce any potential loss and to prioritize rehabilitation work in these areas.

6.8 The park buffer zone

The buffer zone shows areas outside the park within which land use changes can affect the park. In this case the park buffer zone is identical to the World Heritage Site buffer zone. The buffer zone contributes to the protection of the MCL values, OUV, landscape character, heritage aand biodiversity. The buffer zone will serve as a basis for: (i) identifying focus areas in which park management and scientists must respond to Environmental Impacts Assessment's (EIAs), (ii) helping to identify types of impacts that will be important at a particular site, and most importantly (iii) integrating long term protection of the park into the Spatial

Development Frameworks (SDFs) of municipalities and other local authorities. The park will interact with all spheres of government, whether local, provincial, or national, as required, to achieve a positive conservation outcome in the buffer zone. In terms of EIA responses, the buffer zone serves largely to raise red-flags and does not remove the need for carefully considering the exact impact of a proposed development. In particular, it does not address activities with broad regional aesthetic or biodiversity impacts *e.g.* renewable energy development projects.

Currently agriculture and game farming / eco-tourism practises takes place within the buffer zone. A MCL Environmental Management Framework was developed in 2014, includes a framework of spatially represented information connected to significant enviornmental (*i.e.* ecological, social and economic) parameters, such as ecology, hydrology, infrastructure and services. A key function of the EMF is to proactively identify areas of potential conflict between development proposals and critical/sensitive environments (DEA, 2010).

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

6.8.1 Priority natural areas

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

Priority natural areas include areas identified for future park expansion as well as reasonably natural areas of high biodiversity value, which are critical for the long-term persistence of biodiversity within the park. These include adjacent natural areas (especially high priority habitats), which function as an ecologically integrated unit with the park, as well as areas critical for maintaining ecological links and connectivity with the broader landscape.

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

6.8.2 View shed protection

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

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

6.8.3 Critical biodiversity areas and ecological support areas

Critical biodiversity area and ecological support areas (CBAs) were added as an additional support layer to strengthen the buffer zone. Critical biodiversity areas are areas required to meet biodiversity targets for ecosystems, species and ecological processes whilst ecological support areas play a key role in supporting the ecological functioning of critical biodiversity areas. Critical biodiversity areas and ecological support areas may be terrestrial or aquatic. The principal objective of critical biodiversity areas and ecological support areas is to guide decision making about where best to locate development, informing land-use planning, environmental assessment and authorisations, and natural resource management, by a range of sectors whose policies and decisions impact on biodiversity.

6.9 Future improvements

No future improvements are envisaged at this stage.

Section 7: Access and facilities

7.1 Public access and control

Visitors driving from Johannesburg can travel via the N1 through Musina or via the R521 through Alldays. The Polokwane airport is the nearest airport to the park that accommodates scheduled flights and has car-hiring facilities. Both the tar roads to the park via Musina and Vivo / Alldays are poorly maintained. Visitors from Botswana can access South Africa via the Pontdrift border post, while visitors from Zimbabwe can access South Africa via the Beitbridge border post.

7.2 Areas with restricted access

Access to the park is via the main entrance gate, Tshugulu gate and the Den Staat / Pontdrift road. The western section can be accessed in the north-west from the R521. The main entrance gate and the eastern section can be accessed from the R572. The main entrance gate is the only pay point and all visitors to the park must check-in at the main gate.

All visitors to the park must be in possession of an official entry permit. Before leaving the park, overnight guests must check out at the main entrance gate. The main entrance gate operating hours are between 06h30 - 18h00 in winter and 06h00 - 18h30 in summer.

7.3 Airfields and flight corridors

The park has a disused airstrip, currently visitors cannot use aircraft to access the park directly. No need has been identified to establish flight corridors through the park's airspace as allowed for in section 47 of NEM: PAA.

7.4 Administration and other facilities

The facilities listed in Table 6 below are utilised for operational purposes enabling the park to fulfil its legal mandate. Map 7 in Appendix 5 shows all the infrastructure in the park.

Table 6. Current administrative infrastructure in the park.

Infrastructure	Current status	Zone
Eastern section		
Boundary fence 59 km	Operational	Various
6 Boreholes		Various
Fences around staff accommodation		Various
Entrance gate and office complex		HIL
Elephant exclosures		Various
Interpretation centre offices and associated parking		HIL
Hamilton office complex and associated parking		LIL
Hamilton staff village reed bed system		
Leokwe laundry room		
Various staff accommodation sites and associated stores / workshops		Various
Water reservoirs at staff accommodation sites		Various

Infrastructure	Current status	Zone
Eastern section		
Management roads 29 km	Operational	Various
Repeater site		Private land
Tourist roads 69 km		Various
Waste holding facilities		LIL
Western section		
Boundary fence 67 km	Operational	Various
7 Boreholes		
Electric fences around staff accommodation		
Security gate at Limpopo Tented Camp		LIL
Elephant exclosure		Various
Electric fence around Mazhou Camp Site and Limpopo Tented Camp		LIL
Waste holding facilities		
Tented Camp laundry room		
Various staff accommodation sites and associated store		Various
Water reservoirs at staff accommodation sites		
Management roads 22 km		
Chikamba Honorary Rangers Camp		LIL
Tourist roads 57 km		Various

7.5 Visitor facilities

Visitor facilities including all non-commercial facilities and points of interest available to visitors are set out in Table 7 below.

Table 7. Visitor facilities and points of interest in the park.

Infrastructure / visitor sites	Current status	Zone
Eastern section		
Interpretation centre	Operational	HIL
Hamilton day visitor area		
Kanniedood lookout point		LIL
Limpopo Valley lookout point		
Confluence viewing decks		
Confluence picnic site and ablutions		
Tree top boardwalk		
Poachers corner military bunker		
Nungu water point		
Zebra pan water point		
Mopani panne		Primitive
Schroda dam view point		LIL
Western section		
Maloutswa bird hide and ablutions	Operational	LIL
Leeupan view point		
Little Muck water point		

7.6 Commercial activities

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

7.6.1 Accommodation

Accommodation facilities in the park are currently limited. Existing facilities include those listed in Table 8, below.

Table 8. Accommodation facilities available in the park.

Infrastructure	No of units	Current status	Zone
Eastern section			
Leokwe camp			
Cottage (2 bed)	16	Self-catering - serviced - premium accommodation	LIL
Family cottage (4 bed)	2	Self-catering - serviced - premium accommodation	
Vhembe bush camp			
Cabin (2 bed)	4	Self-catering - serviced - economy accommodation	Primitive
Western section			
Limpopo Forest Tented Camp			
Forest tent (2 bed)	8	Self-catering - serviced - economy accommodation	LIL
Mazhou Camping Site			
Camp sites	10	Camping - budget accommodation – power	LIL
Tshugulu Lodge			
Guest cottage (4 bed)	1	Self-catering - serviced - premium accommodation	Primitive
Guest house (8 bed)	1	Self-catering - serviced - premium accommodation	

7.6.2 Public private partnerships

There are no concessions in the park.

7.6.3 Retail and other facilities

A cafe and curio shop are located at the Interpretation Centre. A small tuck shop is available at the Confluence picnic site.

7.6.4 Activities

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

- Annual Tour de Tuli cross border-event;
- Annual Wildrun cross border-event;
- Annual heritage celebration (lecture series);

- Annual heritage festival;
- Bush braais;
- Guided morning, sunset and night drives;
- Guided visits to certain cultural sites (rock art sites, Mapungubwe Hill);
- Guided walks;
- Self-guided bird and game viewing;
- Self-guided 4x4 trails (Kanniedood, Eco-trail, Dubbel dam);
- South African National Parks Honourary Rangers (SHR) birding weekends;
- SHR photographic weekend;
- SHR 4x4 fundraising event; and
- Treetop boardwalk and viewing platform.

7.7 Cultural heritage sites

Several sites as listed in Table 9 below, are accessible to visitors.

Table 9. Cultural heritage sites in the park open to the public.

Sites	Current status	Zone
Eastern section		
Mapungubwe Hill	Operational	Primitive
Western section		
Mapungubwe rock art trail	Operational	Primitive

7.8 Community use

Community members visit the park for the following purposes:

- Cultural: To perform rituals at ancestral sites;
- Spiritual: Various sites are visited by communities to perform rituals and pay respect;
- Resource use: To harvest and collect natural resources as per the agreement (*e.g.* collection of Mopani worms);
- Education: To learn more about certain plant and animal species that are associated with their totems and improving their general knowledge; and
- Annual rainmaking ceremony / celebration.

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

Servitudes allow land owners or representatives of organisations access to the park to perform certain duties. The following servitudes have been registered on properties within the park:

- A 300 m servitude encircling the Greefswald VOR, an air traffic navigation beacon, which is located to the east of the staff village. This installation is the property of the Air Traffic and Navigation Service;
- The Limpopo border road runs from west to east all along the northern boundary of the park and is used by the South African National Defence Force (SANDF) for border control. The Department of Agriculture, Forestry and Fisheries also use this road for veterinary control purposes;
- Roads that lead to Telkom and Eskom infrastructure in the western and eastern section of the park at various points for maintenance purposes;
- SANDF radio tower and associated infrastructure on Greefswald; and
- De Beers power lines, water pipelines and associated pumping infrastructure on Schroda and Greefswald along the Limpopo riverbed supplying water to the Venetia Mine.

The above organisations perform maintenance on their respective infrastructure and associated roads periodically.

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Section 8: Expansion / Consolidation

The consolidation of the park remains a national priority for SANParks given its recognised biodiversity, cultural heritage importance, landscape interface and transfrontier connectivity. In addition, it contributes to securing and maintaining of important ecosystem services. The consolidation also addresses several objectives of 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) and the National Biodiversity Assessment (Driver *et al.,* 2012). The consolidation programme aims to contribute to the NPAES recommendation of expanding the national protected area system from its current 6.5 % of the terrestrial area to ~8.8 % (10.8 million hectares) by 2028 (DEA, 2016). This is in line with the delivery agreement of national government, especially Outcome 10 (http://www.gov.za/sites/www.gov.za/files/outcome-10.pdf).

Although the park is not situated within the initial broad biodiversity priority habitat as identified by the South African national conservation assessment (Driver *et al.*, 2005), its consolidation remains important for SANParks in its attempt to establish a large protected area as part of the GMTFCA initiative (Hanks, 2002; Yawitch *et al*., 2003), the MCL (www.whc.unesco.org/en/list/1099) and the VBR. Moreover, the park and its surrounds have been identified to be of provincial conservation importance (Desmet *et al.*, 2013).

It is proposed that the footprint of the park be expanded to cover an area of about 28,559 ha (Appendix 5, Map 3), centred on the Limpopo-Shashe River confluence and bordered by the Pontdrift - Musina regional road in the west and south, and reaching the extensive agriculture lands in the Weipe area in the east. This would increase the area in the park containing Subtropical Alluvial Vegetation by 50 % to 8,600 ha making a vital contribution to this ecologically important riverine vegetation type. The addition of a further 2,426 ha would add 21 % to the park and significantly contributes to the national target of this poorly protected Musina Mopane Bushveld vegetation type. The planned expansion will also treble the area of the Limpopo Ridge Bushveld vegetation type protected nationally. This would emphasise the importance of the park in contributing to national conservation targets.

The approach that the park will follow can be found in section 10.2.1 on page 67.

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Section 9: Concept development plan

9.1 Long term development

Development is not considered lightly and is only embarked on in order to fulfil a real operational need or tourism opportunity. Altough the park is not financially sustainable, it has the potential to improve its occupancy and to offer additional products to visitors. The current development plan focuses on ways to attract additional visitors to the park. The focus will be to develop and implement cultural heritage-based activities and orientation around different cultural sites including rock art trails. Entrance gates, tourism facilities and roads will be expanded to improve the flow of visitors and address visitor needs in and around the park. Transfrontier events including the annual Tour de Tuli and Wildrun will be expanded on, as well as other events such as cross-border camping opportunities will have a definite impact on the range of local products that SANParks can offer.

Caution will be exercised when considering any development. All development and activities in the park will be guided by the the World Heritage Operational Guidelines and SANParks Guideline for development and maintenance of heritage sites in national parks. The zonation of the park will dictate the location of any development and the implementation of identified projects is dependent on the availability of funds.

9.2 Development nodes

The primary development nodes will be at the entrance gate, interpretive centre / day visitor area and office complex, with limited expansion in the other areas.

9.3 Communication routes

Communication infrastructure needs to be improved in the park, including radio, telephone, data network, free and metered Wi-Fi and cellular access.

9.4 Service supply routes

The main service route to the park is provincial tar roads from Alldays and Musina. The poor condition of these roads affects access to the park. Provincial government will have to be engaged to address the need for regular maintenance of the roads to the park.

9.5 Infrastructure development proposals

All infrastructure development proposals, including activity development, are presented in Tables 10 - 14 below.

9.5.1 Administration and other facilities

The facilities set out in Table 10 below will be utilised for operational purposes.

Table 10. Proposed administrative infrastructure development in the park.

Infrastructure	Status	Zone	Priority	Probability
Eastern section				
Boundary fence upgrade	In existence	Various	Medium	Low
Communication network at various sites	New		High	Medium
Hamilton office complex	In existence	LIL	High	High
Realignment of elephant exclosures		Various	High	Medium
Reception area / entrance gate infrastructure upgrade		HIL	High	Medium

Infrastructure	Status	Zone	Priority	Probability
Eastern section				
New staff housing and upgrades at various sites	New	Various	High	Medium
Technical workshop at Hamilton		LIL	High	Low
Youth Centre dormitories / budget accommodation		HIL	High	High
Western section				
Boundary fence upgrade	In existence	Various	Medium	Low
Communication network at various sites	New		High	Medium
Realignment of elephant exclosure	In existence		High	Medium
Rhodesdrift office and reception area upgrade		LIL	High	Low
New staff housing and upgrades at various sites	New and in existence	Various	High	Medium
Little Muck and Tshugulu Lodge entrance gates upgrade	In existence	LIL	High	Medium

9.5.2 Visitor facilities

Visitor facilities include all non-commercial and semi-commercial facilities and points of interest available to visitors are set out in Table 11 below.

Table 11. Proposed visitor facility development in the park

Infrastructure	Status	Zone	Priority	Probability
Eastern section				
Hamilton day visitor site upgrade	In existence	HIL	High	High
Pavement of road from entrance gate to Leokwe Camp and Confluence picnic area		LIL	High	Low
Poachers corner picnic site	New		High	Medium
Schroda dam view point upgrade	In existence	Private land	High	High
Western section				
Expansion of tourist road network (based on consolidation of park)	New	Various	High	Low
Existing tourist road network upgrade	In existence		Medium	Low
Little Muck game hide upgrade		Primitive	Medium	Medium
Chikamba SHR camp site upgrade		LIL	Low	Medium

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, to improve the tourism experience. All proposed opportunities will be individually considered and prioritised 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 12 below.

Table 12. Proposed accommodation development in the park.

Infrastructure	Status	Zone	Priority	Probability
Eastern section				
Cross-border mobile camping	New	LIL	High	High
Poachers Corner luxury camp site			High	High
Schroda community lodge		Private land	Low	Low
Western section				
Maloutswa bird hide accommodation	In existence	LIL	High	High
Limpopo Forest Tented Camp upgrade			Medium	Low
Little Muck Lodge upgrade			High	High
Little Muck Lodge expansion	New		High	Low
Expansion of Mazhou camp site	In existence		High	High

9.5.3.2 Public private partnerships

No concession development is currently envisaged, however, should viable opportunities be presented, SANParks will consider the proposals. The park will investigate the possibility to establish a fuel station / car wash facility.

9.5.3.3 Retail and other facilities

Part of the main gate upgrade will include a dedicated retail outlet.

9.5.3.4 Activities

Leisure activities provide a mechanism for income generation, with the potential for community development and without the high capital investment required for accommodation. Key challenges regarding provision of leisure activities in future will be diversity of offering, customer demand and increasing the 'adventure' element of activities 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 that the unique selling proposition of remoteness of the park is maintained. Certain activities will also need to cater for different product grades and visitor experience levels. Additional activities have been identified in Table 13 below for possible development.

Table 13. Proposed activity development in the park.

Infrastructure	Status	Zone	Priority	Probability
Eastern section				
Guided quad bike adventure	New	Various	Medium	Low
Mountain bike event			Medium	Medium
Investigate possible cross-border activities / events			High	Low
Investigate possible activities at Schroda dam		Private land	Medium	Low
Western section				
Investigate possible cross-border activities / events	New	Various	High	Low

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 and orientation in Table 14 below.

Table 14. Proposed cultural heritage product development in the park.

Infrastructure	Status	Zone	Priority	Probability
Eastern section				
Guided trail linking major cultural sites	New	Primitive	High	High
K8 excavation pit profile upgrade			High	High
Orientation centre at Mapungubwe Hill			High	High
Orientation centre and pathways at Schroda / Zhizo		LIL	High	High
Possible guided tour to rock art sites		Various	High	High
Western section				
Guided tour to rock art sites	New	Various	High	High
Possible activities / interpretation at Leokwe Hill		Primitive	High	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;
- Responsible Tourism;
- Cultural heritage;
- Access and benefits;
- 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 integration

Regional integration promotes resilient regional outcomes across boundaries, 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. This approach requires a systemic methodes 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, allows for sustainable natural resource use, whilst unlocking direct commercial benefits to communities, and developing the necessary skills and capacity.

10.2.1 Park expansion programme

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

The immediate expansion priority focuses on rectifying the park's rather impractical shape. In line with the accepted expansion plans over the next 10 years, SANParks does not plan to purchase land because of the high costs, competing land acquisition priorities, unresolved land claims over the entire area, and a shrinking land acquisition budget. However, SANParks needs to remain flexible to opportunities and as such, remain open to approaches from neighbouring land owners. Instead negotiations will aim to include land by contractual agreement with the land owners. The proposed extensions of the footprint include:

- The state / communal land known as Den Staat (farm 27/1), with the aim to include at least the southern section as this is less important for agricultural purposes. If this can be achieved by agreement with the land claimants, it would enhance the link between the east and west sections of the park;
- A 5,700 ha large central part separating the eastern and western sections of the park (Samaria 1 and 2, Hackthorn, Machete - Appendix 5); and
- Relatively small, isolated land parcels surrounded by SANParks land - amounting to 1,416 ha – that should also be acquired for managerial efficiency.

Possible contractual extensions to the buffer zone include the 34,200 ha large Venetia Limpopo private reserve, further protecting the Kolope drainage system, and the inclusion of properties to the west (Mapungubwe private nature reserve) and east (the property known as Bismarck) of the park.

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

PARK EXPANSION PROGRAMME					
High-level objective: To promote resilient regional outcomes across boundaries, participating in institutional arrangements and co-operative support to transfrontier and bioregional programmes, growing the cultural and conservation values through diverse partnerships and strategic land inclusions.					
Objective: To restore landscape functionality and ecosystem services by consolidating and expanding priority areas.					
Sub-objective	**Actions**	**Responsibility**	**POE**	**Timeframe**	**Reference**
To acquire strategically identified properties that are conservational important to consolidate the park.	Update the conservation expansion plan as per section 8 of this document.	CSD, PM	Plan	Ongoing	
	Participate in the land restitution process.	PM, SED	Documentation	As required	
	Motivate and prioritise contractual inclusions / acquisitions.	CSD, PM	Priority list	Year 1	
	Target the incorporation of ~10, 000 ha over 10 years.	CSD, PM	Contractual inclusions / purchase agreements	Year 10	
	Review conservation expansion plan.	CSD, PM	Document	Year 3, ongoing	

10.2.2 GMTFCA and Vhembe Biosphere Reserve programme

The purpose of this programme is to enhance collective regional involvement, and to ensure harmonisation between the park, GMTFCA and VBR, through providing an integrated implementation and collaboration framework for joint strategic and operational conservation, cultural heritage, tourism, socio-economic, and safety and security priorities.

TFCAs form part of broader transboundary ecosystem management (land and catchment areas), integration of conservation with development, promoting regional co-operation and socio-economic development in the Southern African sub-continent. The establishment of TFCAs therefore serves as a vehicle for conservation and the sustainable use of biological and cultural resources, whilst facilitating and promoting regional peace. Community involvement is key to the success of TFCA programmes. It is envisaged that transfrontier parks and transfrontier conservation areas will promote transboundary tourism opportunities, allowing tourists to visit adjoining conservation areas of participating countries with minimal access constraints.

The integration of the park through the GMTFCA and VBR, promotes resilient regional outcomes across boundaries, through enabling institutional arrangements and co-operative support to transfrontier and bioregional programmes. Such an integrated approach requires a systematic approach for the integration of the park into the broader economic and social landscape through appropriate strategies, mechanisms and incentives and through encouraging complementary economic activity. It promotes and improves conservation and ecosystem services and transboundary catchment management, allows for sustainable natural resource use, addressing human wildlife conflict and broader safety and security concerns, whilst unlocking direct commercial benefits to communities, and developing the necessary skills and capacity.

However, such integrated regional approaches need to be guided by consistent and transparent guidelines, enabled by the legal framework, operationalised through appropriate implementation plans, protocols and standard operating procedures, and supported through appropriate institutional arrangements with the GMTFCA and Vhembe UNESCO-Man and Biosphere (MaB). This requires strong stakeholder processes and partnerships with relevant international, national, provincial and local government structures; NGOs; and a range of sectors and different land user / owner groups. Ultimately, the park management needs to ensure that engagement with external stakeholders is responsive to deal with issues of joint interest, including integrating the MPN and WHS within the regional economy and land use mosaic.

A Memorandum of Understanding (MoU) was signed in 2006 between the governments of South Africa, Botswana and Zimbabwe for the establishment of the Limpopo-Shashe TFCA, which was renamed as the GMTFCA in 2009. The aim was to promote ecosystem integrity, biodiversity conservation as well as sustainable socio-economic development across international boundaries. Article 2 of the MoU provides for the establishment of the initial GMTFCA area, as well as for further areas that might be included in consultation with the country representatives. Co-operation is facilitated through joint decision-making processes, as guided by international treaties, regional protocols and the implementation structures that was provided through the MoU.

The South African component of the GMTFCA comprises a complex mosaic of the park and private land. The Botswana component encompasses the Northern Tuli Game Reserve (Notugre), an association of private landowners who have agreed to remove the fences that separate their properties and to jointly manage wildlife resources. The Zimbabwe component comprises the Tuli Circle Safari Area and is contiguous with the northern end of Notugre and has no physical barriers to impede the movement of wildlife. Sentinel Ranch, Nottingham Estate, Maramani Communal Land and the Machachuta, Masera and River Ranch Resettlement Areas, also form part of the TFCA. Additional areas for inclusion may be identified, as provided for by the MoU.

The VBR was established in 2009 within the framework of UNESCO's interdisciplinary programme on the MaB. According to the UNESCO-MaB Biosphere Reserves Directory, a "*Biosphere reserve will promote an integrated approach to sustainable development, ensuring that essential ecosystem services are maintained, education is improved, human development and wealth creation are stimulated through better communication and training while conserving the unique ecosystems, species and cultural resources of the region".*

The aims of the VBR are to fulfil: (i) a conservation role by conserving the natural biodiversity, including the diversity of ecosystems, ecosystem processes, genetic diversity, species diversity and ecosystem services (benefits for humans) as well as the conservation of cultural and historical resources and scenic beauty; (ii) a development role, by combining conservation objectives with the sustainable use of ecosystem resources as well as indigenous knowledge systems to benefit local communities and to foster economic and human development, which is socio-culturally and ecologically sustainable; and (iii) a logistic role, by providing research, monitoring, education and training opportunities and facilities for local, regional and global purposes.

The Vhembe region embraces unique and extraordinary biological and cultural diversity in the Soutpansberg and Blouberg Mountains together with the park and northern Kruger National Park. The region also supports a rural population characterised by high levels of unemployment, a youth bulge (35% under 15), with relatively few skills and access to economic opportunities. Local communities have a high, direct reliance on natural resources. There is a high number of unresolved land restitution cases, whilst the existence of several proposed mining projects makes the VBR suitable for a sustainable development model integrating conservation, development and logistical support as stipulated in the MaB programme.

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

GMTFCA AND VHEMBE BIOSPHERE PROGRAMME					
High level objective: To promote resilient regional outcomes across boundaries, participating in institutional arrangements and co-operative support to transfrontier and bioregional programmes, growing the cultural and conservation values through diverse partnerships and strategic land inclusions.					
Objective: To align, contribute and deliver on TFCA and Biosphere objectives by implementing prioritised programmes.					
Sub-objective	**Actions**	**Responsibility**	**Indicators**	**Timeframe**	**Reference**
To review, develop and implement enabling GMTFCA / VBR Reserve institutional arrangements.	Guide sensible alignment with the WHS and Vhembe Biosphere institutional structures and processes.	PM, SED, HODs	Documentation	Year 2, as required	GMTFCA MoU; VBR Constitution
	Support and participate in the institutional arrangements at all levels.			Ongoing	
	Co-develop and/or review operational and strategic implementation plans, and continuously assess progress and impact.			Ongoing, as required	
To enhance and facilitate sustainable socio-economic development opportunities within the GMTFCA.	Support and participate in the development of a joint activity plan to roll out identified- and existing products.	SED, PM, HODs	Documentation	Ongoing	SED Strategy
	Identify and prioritize the benefits as well as beneficiaries (*e.g.* access, economic benefits, community-based resource use management; educational opportunities, employment opportunities)	SED			
	Initiate the development of benefit sharing programmes within acceptable environmental and social parameters.	SED			
To support and enhance the implementation of the GMTFCA conservation management programme.	Implement management plans for identified species of special concern such as elephants, large carnivores and other large herbivores.	CSD, PM, CM	Documentation	Year 1, ongoing	
	Identify the need to develop additional management plans for identified species of special concern *e.g.* Boababs.	PM, CSD	Documentation	Ongoing	
	Support the fence removal plan as per DPW Strategy.	PM, CM	Documentation	Year 1, ongoing	

GMTFCA AND VHEMBE BIOSPHERE PROGRAMME					
High level objective: To promote resilient regional outcomes across boundaries, participating in institutional arrangements and co-operative support to transfrontier and bioregional programmes, growing the cultural and conservation values through diverse partnerships and strategic land inclusions.					
Objective: To align, contribute and deliver on TFCA and Biosphere objectives by implementing prioritised programmes.					
Sub-objective	**Actions**	**Responsibility**	**Indicators**	**Timeframe**	**Reference**
To support and enhance the implementation of the GMTFCA cultural heritage management programme.	Review, harmonise and prioritise key implementation aspects, develop a work plan and review periodically.	CSD	Documentation	Year 2, ongoing	
	Collaborate on cultural research and monitoring programmes between the three countries.			Ongoing	
	Support the development of an integrated cultural heritage plan, and review periodically.			Year 3, ongoing	
To support the implementation of joint responsible tourism, marketing and branding programmes and activities within the GMTFCA.	Support and participate in potential future cross-border tourism opportunities, and review periodically.	HSM, PM, CM, SED	Documentation	Year 1, as required	
	Participate in the implementation of joint activities, and review periodically.				
To support the implementation of a joint safety and security programme within the GMTFCA.	Facilitate reconciliation of law enforcement approach between the countries.	PM, CM	Documentation	Year 1, as required	
	Review, align, standardise where possible, and implement priority safety and security management plans, Protocols or SOPs.	PM, CM		Year 1, as required	
	Ensure and monitor integrated access and movement control through effective law enforcement measures.	CM		Ongoing	
To develop and support the implementation of joint GMTFCA capacity development, awareness, training and research programmes.	Where possible, facilitate skills development, awareness, mentorship and learning exchange programmes linked to key management objectives.	SED	Documentation	Year 2	
	Identify, prioritise and implement applied research projects and monitoring programmes.	SED	Documentation	As required	
To promote bioregional planning and integration through a co-operative partnership with the VBR.	Develop and periodically review guidelines to inform co-operation within the VBR.		Document Agreement	Year 1, 4, 7, 10	UNESCO MaB
	Align and incorporate relevant park priorities into the strategic and operational work plans of the VBR and vice versa.	CM	Documents	As required	National Buffer Zone Strategy, SED LLP
To promote bioregional planning and integration through a co-operative partnership with the VBR.	Participate in collaborative programmes, including conservation / ecosystem, Biodiversity Social Projects (BSP), cultural, socio-economic, tourism, research, capacity develop programmes; learning networks.	CM	Programmes, documents	As identified	

GMTFCA AND VHEMBE BIOSPHERE PROGRAMME					
High level objective: To promote resilient regional outcomes across boundaries, participating in institutional arrangements and co-operative support to transfrontier and bioregional programmes, growing the cultural and conservation values through diverse partnerships and strategic land inclusions.					
Objective: To align, contribute and deliver on TFCA and Biosphere objectives by implementing prioritised programmes.					
Sub-objective	**Actions**	**Responsibility**	**Indicators**	**Timeframe**	**Reference**
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.	PM, CM	Documentation	Annually	

10.2.3 Co-operative management programme

The purpose of the co-operative management programme is to conserve systems and processes within and around the park to ensure a positive conservation outcome in the park and its buffer zone. This will be achieved by influencing developmental processes in the buffer zone and by adding enough land to the protected area estate. The park recognises that partnerships could be developed with other likeminded organisations and land claimant communities, to maintain the faunal and floral assemblages and ecological processes representative of the area for the long-term beneficiation of the region and country. It aims to engage and collaborate with relevant international, national, provincial, district and local government structures, NGOs and land owner groups, to ensure that biodiversity considerations are taken into account, as far as possible and as appropriate, into developmental decisions.

The park falls within the VDM and the MLM and is also represented in a ward of the VDM and has close ties with the adjacent Blouberg Local Municipality. As a result, SANParks staff members continuously strive to integrate the park in the local government planning through targeted briefings to ensure effective regional management and inter-governmental support. The park is reflected in both the district and local municipalities' IDPs and SDFs, and both the district and local municipality have included the SANParks Expanded Public Works Programmes (EPWP) into their IDPs. The projects include roads, infrastructure development, rehabilitation work and management of archaeological sites. Co-operation with provincial departments such as Environmental Affairs, Tourism, Heritage Resources and Land Claims is essential and ongoing. The park, its cultural importance and other associated features and benefits is fully recognised in the SDF of the MLM. The role of ecosystem services is also acknowledged.

Agriculture and mining form the backbone (65 %) of the economy of the Musina municipality and these sectors provide the most employment opportunities. Other activities include private game farms, guest houses and tourism; all of which are increasingly becoming economic drivers in the region. In addition, the park is an important driver of the regional economy, through tourism, and by direct and indirect employment opportunities.

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

The achievement of the park's objectives depends on understanding the relationships and inter-dependencies between various strategic planning processes and partnerships in the region. The park management will co-operate with the relevant national, provincial and local government structures insofar as these affect the park and keep track of issues affecting the park and region to ensure that functional ecosystems are protected. Through education about the importance of biodiversity and that of the rich cultural heritage assets, park management intends to raise awareness of people and communities in the park's buffer zone.

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

CO-OPERATIVE MANAGEMENT PROGRAMME					
High level objective: To ensure co-operative management within the buffer zones of the park by effectively engaging with relevant stakeholders through collaborative interventions.					
Objective: To minimise the potential conflicts that arise from different land uses in the park buffer zone through responsible engagements with land owners and local authorities and promoting mitigating options.					
Sub-objective	**Actions**	**Responsibility**	**POE**	**Timeframe**	**Reference**
To minimise potential conflicts that arise from the differing objectives of non-aligned land-uses in the park buffer zone through responsible engagement with land owners and local authorities and development of conservation options.	Identify land use and transformation trends in park buffer zone, and how these may affect the park.	CSD, PM, Park planning and development (PPD)	Report	Year 2, as required	
	Identify possible external threats from development.	CSD, PM, PPD	List of threats	Year 1	
	Participate in IDP and SDF processes to influence decisions.	PM	Documents	As per Municipal Schedule	
	Respond to EIAs, scoping reports *etc.*	CSD, PM, PPD	Documents	As required	
	Engage with identified and prioritised land owners to achieve common conservation goals.	PM, CSD, PPD	Attendance register	As required	

10.3 Biodiversity conservation

South Africa is a signatory to the United Nations Convention on Biological Diversity (CBD) and therefore subscribes to the strategic plan for biodiversity (2011-2020) which includes the development and implementation of a NBSAP. Many of the SANParks and park's biodiversity conservation actions are therefore nested within South Africa's NBSAP. SANParks subscribe to the broad definition of biodiversity sensu 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 park management 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. 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 herbivory.

Herbivores are organisms that principally eat autotrophs like plants, algae and photosynthesising bacteria. Colloquially, however, herbivory refers to plant-eating vertebrates and invertebrates. Organisms like fungi, bacteria and protists are pathogens feeding on living plants. Saprotrophs *e.g.* microbes, feed on dead plants. Plants obtaining nutrition from other living plants to the detriment of those are parasitic. For the purpose of this plan, herbivory focuses on plant-eating vertebrates and invertebrates.

Herbivory is in effect a natural disturbance impact on plants, but it also facilitates aspects such as seed dispersal, pollination and compensatory growth. Although the concept has been criticised (Fox, 2013), the intermediate disturbance hypothesis predicts maximised biodiversity at intermediate levels of disturbance (Connell, 1978). Importantly within this context is that the gradient of disturbance-intensity is spatially heterogeneous – some places should have intense levels while others have low levels of herbivory as disturbance agents. Such gradients allow different combinations of all kinds of species to exist in response to herbivory disturbance.

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.* hippopotamus, buffalo, giraffe, rhinoceros and elephant) can serve as ecosystem engineers through mechanical structural changes they can induce. Ecosystems recover from disturbances such as herbivory, through successional processes which help create diversity. Disturbances with low herbivore-intensity may not result in change at all. Herbivore disturbances with quick return times have short periods for pioneer species to be replaced by later successional species. Those with longer return times have longer times for secondary species to replace pioneers (Cook *et al*., 2005).

Due to its variability in geology, topography and vegetation, the park represents a spectrum of habitat types that may carry diverse faunal assemblages. Abundant medium-sized herbivores include eland, impala, kudu, waterbuck, wildebeest and zebra while mega-herbivores such as elephants and white rhinoceroses are also present. At times, domestic animals such as donkeys and cattle enter the park from Botswana and Zimbabwe. Although all the current animal species historically occurred in the area, most had to be reintroduced either to establish new breeding populations or to augment existing ones. Most notable is the absence of buffalo due to restricting disease regulations.

While the park forms part of a larger region over which species can roam, most of the animal populations have variable growth rates within the park, and resultantly, no immediate threats to the environment are foreseen with the exception of localised elephant effects. Elephant use of landscapes is constrained by water distributions and fences in the park, as well as human activities in the region. Constrained landscape-use may have consequences for their favoured dry season habitats and as well as for associated species. These include the gallery (riverine) and palm forests, described as closed woodlands. The *Faidherbia albida - Panicum maximum* communities are of special concern due to changes in structure and species composition. However, the role of herbivory (notably that of elephants) as a driver of riparian vegetation degradation is not clearly defined, as other factors such as water abstraction and flooding patterns may be the over-riding drivers of change for species such as *Faidherbia albida* and *Vachellia xanthophloea* (SAEON, Unpublished data).

The availability of resources determines roaming patters of individual animals. Essential resources, like water for many large vertebrates, are primary determinants. The secondary determinant is where individuals perceive safety from predators including man. Thereafter individuals 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 reduces or homogenises if factors in the landscape make the distribution of resources more evenly throughout the landscape (*e.g.* widespread water provisioning, broad-scale fires, fences excluding access to some resources *etc.*). In addition, using herbivores for socio-economic development purposes may result in reduced herbivore effects if management implement excessive removals.

Monitoring of effects of herbivory on vegetation dynamics occurred frequently (annually) during the duration of the previous plan. The supporting LLP provides guidelines for vegetation monitoring in the riparian forest (and beyond) to support and inform elephant management. It also focuses on finding the links between animal distribution and resource availability. Vegetation monitoring thus focuses on this aspect of evaluating expectations of creating gradients of herbivory (use by herbivores) of essential and replaceable resources. The LLP assumes that if disturbance intensity is spatially heterogeneous, biodiversity will be maximised. To create gradients of resource use by keystone species, the plan aims to actively deter species from certain areas over the longer term, where animals numbers have been kept at low levels by anthropogenic activities.

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

HERBIVORY PROGRAMME					
High-level objective: To conserve biodiversity by restoring, allowing, maintaining and mimicking natural ecosystem processes.					
Objective: To maintain herbivory as a key ecosystem process by managing for different herbivore impacts over space and time, where possible.					
Sub-objective	**Actions**	**Responsibility**	**PoE**	**Timeframe**	**Reference**
To manage herbivores through creating gradients of resource use.	Map water sources and identify human-induced threats to natural water resources.	PM	Report	Year 5	Habitat Rehabilitation Programme
	Develop an implementation plan to manage threats to natural water and initiate management of threats, where possible.	PM	Document	Year 5	
To establish a gradient of replaceable resources across landscapes and habitats.	Identify drivers of habitats and resources with a focus on river ecosystems, and identify associated threats.	SS	Report	Year 2	Freshwater Ecosystems Programme
	Develop an implementation plan to manage threats to habitats and resources with a focus on river ecosystems.	PM	Document	Year 4	
	Establishing resource gradients.	PM	Report	Annually	
To establish zones of increased vigilance.	Identify areas of local concern re herbivores (elephants and other).	SS, PM	Map	Year 3	Elephant Management Plan, Elephant Norms and Standards
	Identify drivers and mechanisms that create areas of local concern and link the areas of local concern to historic human activities.	SS, PM	Report	Year 5	
	Maintain existing management responses while identifying additional management responses to address above mechanisms.	SS, PM	Report	Year 5	
To monitor and evaluate the impact of the implementation programmes and adapt as required.	Survey (census) medium, large and mega-herbivores to define spatial distribution and estimate populations.	SS	Report	Annually	Biodiversity Monitoring System
	Evaluate the distributions and intensity of use of all herbivores and associate distributions and intensity of use with key resources.	SS	Progress Report	Year 5	Biodiversity Monitoring System
	Evaluate changes in vegetation features within different landscape types and habitats and associate with drivers of change.	SS, SAEON	Report	Year 3, 5, 10	
	Where possible provide recommendations to adapt herbivore management.	SS	Reports	Year 5, 10	
	Monitor and evaluate progress and impact against annual work plan targets and programme objectives.	SS, PM	Reports	Annually	
	Adapt programme approach and feedback, and inform risk response strategy.	SS, PM	Document	Annually	

10.3.2 Degradation 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 CBD lists rehabilitation as an important tool for promoting the conservation of biodiversity. Human threats are still actively affecting biodiversity due to past disturbances such as 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 the 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 the undesirable impact on the biological integrity of ecosystems.

Large tracts of land within the current core area of the park were cleared of their natural vegetation for agricultural purposes during the 1980s. These tracts were intensively farmed with various crop types, involving artificial fertilisation and irrigation. Years after the abandonment of these fields, the most visible impacts of the past practices are still the absence of most of the original vegetation which characterised the different zones as inferred from historical aerial photographs. The hydrological system was also transformed due to past agricultural practices. The park's aquatic and / or wetland systems consist of the Limpopo and Shashe rivers, floodplains with riparian woodland and canopy forest, the Maloutswa Pan system which forms an integral part of the Limpopo Riverine Forest, and the Golope / Maloutswa wetland and pans.

It is thus important to undertake a degradation assessment and prioritise restoration measures, in the next 5 years guided by SANParks' Land Degradation and Restoration Framework.

Invasive alien clearing will be addressed in programme 10.3.3 below. This programme links with high-level objective 2 and objective 2.2 on page 40. To achieve the purpose of this programme, the actions listed in the table below will be implemented.

DEGRADATION PROGRAMME					
High level objective: To conserve biodiversity by restoring, allowing, maintaining and mimicking natural ecosystem processes.					
Objective: To rehabilitate the integrity of degraded systems by mitigating the drivers of degradation.					
Sub-objective	**Actions**	**Responsibility**	**POE**	**Timeframe**	**Reference**
To restore and rehabilitate processes, patterns and viewsheds to a state of naturalness.	Assessment of old lands and restoration measures taking into consideration the significance of cultural heritage in the affected sites.	CSD, BSP	Documentation	Year 2	
	Map wetland and pan ecosystems and where applicable implement restoration activities as a basis to understand the dynamics of the riparian and wetland ecosystems.	BSP, CSD,	Documentation	Ongoing	
	Assessment and rehabilitation of barriers or man-made structures that prevents water from flowing in its natural patterns, including at the K2 cultural site.	CSD, BSP	Documentation	Year 2	
To monitor and evaluate the impact of the implementation programmes and adapt as required.	Monitor and evaluate progress and impact against the annual work plan targets and programme objectives.	CSD, BSP, PM	Reports	Annually	
	Adapt programme approach and feedback, and inform risk response strategy.	BSP, PM	Document	Annually	

10.3.3 Invasive and alien species programme

The purpose of the alien and invasive species (IAS) programme is to protect biodiversity, ecosystem function and infrastructural integrity within the park. This will be achieved through, where possible, eradication or the suppression of IAS occurring within the park, and through preventing potential new and emerging species entering from beyond the park's borders.

Climate change, current and past land use practices adjacent to protected areas, mining, pollution and IAS are considered key threats to protected areas (Foxcroft *et al*., 2017), and one of the greatest threats to conservation of biodiversity and ecosystem service, is invasive alien plants (IAP). It affects the primary mandate of SANParks, tourism experiences and pose risks to both physical, ecological and cultural assets within and adjacent to the park.

South Africa, as a signatory to the Convention on Biodiversity as well as other international conventions, is required to manage IAS within its borders. Under South African legislation, specifically the NEM: PAA and NEM:BA, SANParks is obligated to manage IAS in all national parks. There is a range of national acts, provincial ordinances and municipal by-laws that further govern the management of IAS. The NEM: BA Alien and Invasive Species Regulations (2016) are of direct relevance. Further, the NEM: PAA requires that all protected areas have plans for the management of IAS. Within SANParks the context for the management of IAS is set out in the Alien and Invasive Species Regulations (2018) and a framework for the management of IAP provided in the Standard Operating Procedure for the Implementation of Invasive Alien Plant Management Projects (2017). The SANParks Alien and Invasive Species Regulations (2018) provides an integrated approach to alien and invasive species management. The framework includes five components, which have been incorporated into this plan, namely (i) assessment and risk analysis, (ii) priority setting, (iii) early detection and rapid response, (iv) control, and (v) restoration.

Effective management of IAP requires sound planning and implementation, which is dependent on well-grounded ecological knowledge, an understanding of risks and effective collaboration between interconnected and effected parties (Tu and Robison, 2013). The effectiveness of implementing management plans and their successful outcome is dependent on sound management structures, adequate resources, structured monitoring, and reporting, with strategic adaptive management through feedback and communication loops (Foxcroft and McGeoch, 2011). The implementation of an effective rapid response mechanism is also important to mitigate the introduction of new species and thus their potential threats and impacts adjacent to and within the broader buffer of the park (Tu and Robison, 2013). Effective planning and the management of threats from IAS, especially plants, are compounded by the park sharing two international borders. Effective collaboration and constituency building between park management and local communities as well as international role players are important for effective long-term management of the IAS threats.

The VBR, of which the park is a core conservation area, has recognised that there is a paucity of knowledge of IAP in the region. This is particular to data on species lists, distribution data and abundance, which is required in order to implement comprehensive management actions. Within the park, however, basic data is available to inform management actions. Future mapping and monitoring will continue to augment this, and contribute to improved insights into alien species and distribution surrounding the park.

List of invasive species occurring in the park

A total of 50 IAS has been recorded in the park, with nine animal and 41 plant species. Of the 50 species, 34 are NEM: BA regulated species, including 29 category 1b species, two category 2 and three category 3 species.

Description of land infested and the extent of invasion of IAP

The Limpopo River and the lower lying areas along and associated with the Limpopo River, as well as the main tributaries and associated drainage lines together with their associated wetland systems, are the areas of greatest risk from invasion by IAP. Other areas of concern include areas previously used for agriculture that are now included within and adjacent to the park. Areas with previously elevated grazing pressure and undesirable land-use are also of concern and require monitoring for resurgence or incursions of IAP.

Seasonal rainfall across the park and the availability of ground and surface water also play a role in the distribution and seasonality of IAP species. The distribution of annual IAP, especially in wetter seasons, along tourist roads, borrow pits and other disturbed areas as well as drainage lines has been recorded. However, a strategic decision to not clear these annual plants has been taken at a SANParks level. Where annuals plants threaten natural or physical assets, control may be implemented after an assessment. These species must however be monitored on an annual basis to assess potential changes in abundance and dispersal.

In prolonged wet cycles the establishment of non-annual IAP such as *Lantana camara* needs to be monitored, especially within the 'gallery forests' along the Limpopo River. The recent recording of *Parthenium hysterophorus* is of major concern. Control of areas currently invaded and rapid response to new areas must be implemented urgently, with ongoing monitoring.

Historically agricultural operations occurred in blocks following the original farm boundaries instead of using natural boundaries such as vegetation types, riparian areas and disturbed lands, and this still impacts on the park. Invasive plant species treated included *Opuntia* species associated mainly with old farm houses, annuals and other species associated with disturbed areas and limited sections along the Limpopo River. A total initial foot print of 8,400 hectares has been recorded within the park. This area is not representative of the actual footprint of IAP within the park.

Status report on efficacy of past control measures

Historical land-use in the park has and continues to influence the presence of IAS, specifically plant species. Pressure from IAP species has to date been low and has required minimal resources to maintain levels at acceptable thresholds. The low prioritisation of IAP management in the park has, until now, been funded and implemented through the SANParks Working for Water (WfW) programme, which is part of the EPWP. Funding has been received through DEA's Natural Resource Management Programme. Between 2003 / 2004 and 2017 / 2018, a total of R3.3 million was expended in the control of IAP within the park. The WfW programme has provided 15,220 person days employment. An accumulated total of approximately 44,000 hectares (initial and follow-up) have been worked.

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

There is a high risk of IAS spreading into the park from the broader alien plant footprint and cadastral areas. The area will be monitored and assessed for risk of pathway movement, 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 funding. The APO will set out clearing schedules, personnel requirements and costing for each site. A long-term strategy will be developed for the areas within and adjacent buffer to the park, which will assist in compiling an inventory, priority listing and in the 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 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 initiated to eradicate or contain infestation. Even though a new invasion may seem insignificant, it must be evaluated for potential risk and prioritised for treatment to ensure that 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.

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
    - Biocontrol release - collection of clean cladodes, propagation of biocontrol and deployment of agent.

2. Follow up treatment (manual, chemical and biological).

    - Loppers and hand saws;
    - Foliar spray – application of herbicide; and
    - Biocontrol release - collection of clean cladodes, propagation of biocontrol and deployment of agent.

3. Integrated combination of methods.

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

The recent record of *Parthenium* within the agricultural areas embedded in the park is a cause for serious concern. *Parthenium hysterophorus* is a weed of national significance and the management of this species is required by legislation. Ongoing monitoring of the spread and abundance of *P. hysterophorus* is critical as is the implementation of control measures and monitoring thereof.

Continual management of IAS, specifically plants, is important to avert the risk of invasion of emergent species (such as *P. hysterophorus*) and the continued suppression of other species in the park at, or below acceptable thresholds. Effective monitoring and management of IAS are required to mitigate the risk of IAS impacts and as such this plan requires adequate long-term resourcing. It is envisaged that the funding of IAP management through the BSP will be required during the wet season for the duration of this cycle. An estimated operational budget of R 360,000 per annum, with a 6 % annual increase for ten years, is projected to be required to manage the existing threats of IAP within the park.

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 40. To achieve the purpose of this programme, the actions listed in the table below.

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.	CM	Reports	Year 1	
	Implement *Parthenium hysterophorus* and *Opuntia stricta* 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 biocontrol agents.		Report	Ongoing	
	Implement biological control programme.	CM, BSP, SS	Report	Ongoing	
	Manage alien animal invasions and stray animals.	CM, SS	Report	Ongoing	SANParks IAS Management Policy
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 and enhance the role of water in the landscape by promoting its influence on ecosystem functions. This programme deals with surface water (*i.e.* rivers), groundwater and wetlands due to the sensitive linkages and interconnectivity between these various entities.

South Africa is a signatory to a number of international conventions, agreements and protocols governing water resources. Therefore, SANParks' strategic plan, management plans and conservation policies are informed by the CBD Programme of Action on Protected Areas. In 2010, CBD member nations agreed to 20 Aichi Targets to stop the 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".

In 2003, representatives from Botswana, South Africa, Zimbabwe and Mozambique signed the Agreement on the establishment of the Limpopo Watercourse Commission (LIMCOM). The LIMCOM Council is intended to act as a technical advisor to the contracting parties on matters related to the development, utilisation and conservation of the water resources of the Limpopo. The Department of Water and Sanitation (DWS) has an international obligation to establish a groundwater / surface water monitoring network to provide a reliable assessment of the quantitative status of all groundwater / surface water bodies of basin-wide importance. In conjunction with the legislation of South Africa, the DWS is responsible for maintaining relationships with mediatory and advisory bodies such as the LIMCOM.

The Revised SADC Protocol on Shared Water Resources was signed in 2000. In accordance with the United Nations Water Courses Convention, the Protocol defines watercourses as systems in which surface and ground waters flow into a common terminus. The Protocol stipulates principles for the co-ordinated, co-operative and equitable use of water by the riparian countries. It takes issues of social development and environmental protection into account and mandates an exchange of information among the riparian states about plans and projects pertaining to shared water resources. The Protocol also provides for the development of joint management mechanisms (*e.g.* at the river basin level) and supports the Integrated Water Resources Management (IWRM) concept, which implicitly includes groundwater.

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, the Council for Scientific and Industrial Research (CSIR) and the 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 proportion of the Limpopo River bordering the park (27 %) is identified as a Phase 2 FEPAs (C ecological category), therefore the river condition should not be allowed to degrade further, as rehabilitation may be considered in the future. The Limpopo floodplain wetland system is considered a FEPA (52 %). The confluence of the seasonally-flowing Shashe and Limpopo Rivers are the dominant hydrological feature. Various other smaller seasonal tributaries, with steeper gradients, flowing north onto the Limpopo floodplain, occur in the park. There are four river ecosystem types in the park of which 34 % are in an A / B category, 39 % in a C category and 27 % in a D category (Nel *et al*., 2011A). The Limpopo and the Kolopi floodplain wetlands are the dominant wetland type. These two floodplains ultimately form one system towards the confluence (the Samaria section of the park). There are eight wetland ecosystem system types in the MPNP and WHS, of

which 42% are in a “Good” condition, 9% “Moderately Modified” and 49 % “heavily Modified” (Nel *et al*., 2011A).

Groundwater forms a critical component of the hydrological cycle and plays an important role in the environment. Groundwater sustains river flows (“base flows”) and supports refuge pools in the dry season. Refuge pools are critical in seasonal rivers, as they support water-dependent ecosystems that would otherwise not survive when the rivers dry up. Groundwater further supports a wide variety of groundwater dependent water bodies such as wetlands and springs. According to Wu *et al*. (2004), it is critical to establish the flow paths, patterns, water quantity and quality of the water flowing between surface water and groundwater for water resources to be developed efficiently. Groundwater resources are under increasing pressure caused by the intensification of human activities and other factors such as climate change. Reductions in groundwater storage as a result of over-abstraction particularly from river beds, close to streams, and from shallow alluvial aquifers, will have a direct influence on river flow due to baseflow reduction.

The park is typically an arid environment where ecosystem functioning is largely driven by water in the landscape, especially aquifer dependent ecosystems (*i.e.* Kolopi wetland and the Greefswald / gallery forest). The key groundwater issues in the park are related to the abstraction of water from the underlying aquifers, particularly the Greefswald and Shroda alluvial aquifers along the Limpopo River. Groundwater is abstracted from these aquifers for mining and agricultural purposes. SANParks also abstract water for tourism and staff purposes from the same aquifers. Abstraction from these aquifers may not only affect the base flow contribution to the Limpopo River during the dry season, but may also apply stress on aquifer dependent ecosystems. Venetia, South Africa's largest diamond mine is situated in the central zone of the Limpopo Belt. In order to extend the life of the mine, De Beers is currently investing over $2 billion (US) in converting the Venetia open pit mine in South Africa into an underground operation. This will extend production at the site to 2043 (Kahinda *et al.,* 2016). To sustain its current mining operations, the mine abstracts water from two independent local aquifers (Greefswald and Schroda), that lie close to the confluence of the Limpopo and Shashe rivers, within the park.

In 2009 SANParks in collaboration with the Department of Water Affairs office in Polokwane initiated a long-term groundwater monitoring project in the park. There are currently seven groundwater level-loggers installed in selected boreholes across the park. To establish long-term trends within different aquifer systems, additional loggers were placed in the hard rock aquifer (secondary aquifers) further inland / away from the Limpopo River. Analysis of the data indicates that groundwater / surface-water interactions play a vital role in groundwater recharge processes. The primary aquifer is recharged almost immediately during surplus flow conditions, and then gradually declines over the dry winter periods maintaining base flow conditions in the Limpopo River. The general trend in the water levels indicates that groundwater abstraction particularly along the Greefswald section appears to be well managed as the water levels have not declined below the static water level since installing the loggers. The construction of dams or impoundments on the Limpopo and Shashe Rivers poses the greatest threat to the sustainability of the primary aquifer which will disrupt the recharge / flow processes of the system.

The long-term groundwater level monitoring programme needs to be maintained and funded into the future. Water level data collected over significant periods of time, from years to decades, are typically required to assess the effects of climate variability, to monitor the effects of regional aquifer development, or to obtain data sufficient for analysis of water-level trends, project future conditions of supply and provide the information necessary to effectively manage the resource (Taylor *et al*., 2001). Wetlands are widely recognised for their significant contribution to biodiversity and natural goods and services related to maintaining water resources. It is thus important to have a grasp of the hydro-geomorphic and biological drivers of these wetlands, the type of wetlands and their status (ecological condition) in order to make sound management decisions.

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

FRESHWATER ECOSYSTEM PROGRAMME					
High-level objective: To conserve biodiversity by restoring, allowing, maintaining and mimicking natural ecosystem processes.					
Objective: To enhance ecosystem functions within the landscape by advocating and managing river flow, water quality, associated groundwater and wetland attributes.					
Actions		**Responsibility**	**POE**	**Timeframe**	**Reference**
To ensure the functionality of the fresh water systems (river, drainage lines, wetlands) by monitoring hydrological activity and variety of aquatic habitats.	Gauging water-use (consumption) at the main water supply boreholes (rest camps). This will require the installation of water flow meters.	RS	Documentation	Year 2, ongoing	
	Monitor groundwater levels on a bi-annual basis re: monitoring network on Greefswald and Denstaat sections.	SS	Updated database	Ongoing	
	Monitor groundwater quality *(i.e.* saline intrusion) at monitoring boreholes.	SS	Documentation	Year 3, ongoing	
	Monitor the flow and water quality in the Limpopo River.	SS	Online DWS hydrology information	Ongoing	
To ensure the functionality of the fresh water systems (river, drainage lines, wetlands) by monitoring hydrological activity and variety of aquatic habitats.	Inventorise all wetlands in terms of distribution, type, origin and permanence of water and current ecological condition and degree of disturbance. This should be reference against the NFPA maps.	SS	Documentation	Year 3	Research, Evaluation and Co-learning LLP
	Monitor groundwater levels on a Bi-annual basis re: monitoring network on Greefswald and Denstaat sections.	SS	Documentation	Ongoing	Research, Evaluation and Co-learning LLP
	Support DWS to ensure regional monitoring of groundwater levels and water quality.	RS	Documentation	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.	SS, PM	Documentation	Annually	
	Adapt programme approach and feedback, and inform risk response strategy.	SS, PM	Documention	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 by 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, within national parks SANParks will strive to prevent extinction of species on the International Union for the Conservation of Nature

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.

SSC 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) species 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 have >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. Mammal species of special concern include the endangered wild dog *Lycaon pictus* and several mammals listed as vulnerable; cheetah *Acinonyx jubatus*, pangolin *Manis temminckii* and lion *Panthera leo*. Special bird species include endangered birds such as the grey crowned crane *Balearica regulorum*, saddle-billed stork *Ephippiorhynchus senegalensis*, African white-backed vulture *Gyps africanus*, lappet-faced vulture *Torgos tracheliotos,* Cape vulture *Gyps coprotheres*, and Pel's fishing owl *Scotopelia peli* as well as several birds listed as vulnerable. Little data is available on reptiles and smaller mammals. No plants are listed as endangered but three species are listed as globally vulnerable (*Hibiscus waterbergensis*, *Huernia nouhuysii* and *Orbea woodii*). 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 has improved; (ii) taxa are functionally important or key species; (iii) taxa are selected; (iv) species with social or cultural value; (v) taxa that are subject to resource use and legitimate sustainable harvesting; and (vi) species listed under relevant international conventions other than the CITES fauna and flora. 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.

Global environmental change drivers such as habitat change or encroachment, excessive resource use, climate change, pollution, disease and invasive species, play key roles impacting on species becoming threatened and then listed as a species of special concern (Janssen *et al*., 2006). Recently the emergence of illegal resource use became a key element. Emerging diseases may also pose new challenges. Invasive species, alien plants and pollution are perhaps lower level threats, while climate change impacts result mostly from unpredictable weather patterns. Inside protected areas, habitat change is primarily driven by tourist development and ecological management that could impact on how resources that species use are distributed. Several species that are not rare, play key roles in maintaining ecological resilience (keystone species) (Winfree *et al.*, 2015). Ensuring the role of these species is thus a key requirement. In addition, humans derive spiritual, cultural and economic values from several species (Loomis & White, 1996). Extracting those values requires responsiveness to ensure that the role of the specific species is maintained. Values associated with the history of studying or monitoring, are less challenging to maintain and not critical or of high priority.

Given the above rationale and identification of key challenges, the focus will be on two key components namely, managing compromised species (*i.e.* typically the threatened species) and managing keystone species (*i.e.* species that are not necessarily threatened but impact on important ecosystem processes). Both approaches require monitoring and evaluation support to inform effective decision-making.

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

SPECIES OF SPECIAL CONCERN PROGRAMME					
High-level objective: To conserve biodiversity by restoring, allowing, maintaining and mimicking natural ecosystem processes.					
Objective: To protect prioritised species of special concern by identifying and monitoring the species and managing threats.					
Sub-objective	**Actions**	**Responsibility**	**PoE**	**Timeframe**	**Reference**
To restore and maintain compromised species by managing threats and assisting recovery.	Establish a SSC list (of compromised species) across landscapes and habitats with special attention to red data plants and other groups.	SS	Document	Year 2	CITES listings (SANBI)
	Establish distribution maps across landscapes and habitats with special attention to red data plants and other groups.	SS	Document	Year 2, ongoing	
	Solicit research on groups that have not received much attention in the past.	SS	Registered research projects	Ongoing	

SPECIES OF SPECIAL CONCERN PROGRAMME					
High-level objective: To conserve biodiversity by restoring, allowing, maintaining and mimicking natural ecosystem processes.					
Objective: To protect prioritised species of special concern by identifying and monitoring the species and managing threats.					
Sub-objective	**Actions**	**Responsibility**	**PoE**	**Timeframe**	**Reference**
To restore and maintain compromised species by managing threats and assisting recovery.	Identify threats and prioritise threats (which will be partly based on life histories) to the listed SSC.	SS	Report	Year 1	CITES listings (SANBI)
	Identify populations that require active restoration based on threats, define species specific restoration requirements and whether these requirements are locally achievable.	SS, RS	Document	Year 1	Wild dog & Cheetah meta-population Management Plan
To manage keystone species by ensuring associated ecological roles.	Identify and prioritise keystone species important for processes (e.g. pollination).	SS	Report	Year 3	
To manage keystone species by ensuring associated ecological roles.	Identify the threats to these species and evaluate role.	SS, RS	Report	Year 5	Herbivory Programme Predation Programme Elephant Management Implementation Plan
	Develop management plan/s and implement where possible.	SS, RS	Document	Year 5, 10	
To monitor and evaluate the impact of the implementation programmes, and adapt as required.	Continue monitoring of riparian vegetation.	SS, SAEON	Report	Year 1, 5 and 10	Herbivory programme
	Develop a monitoring plan for priority SSC which will include the evaluation of persistence of compromised species using predictive sampling and censuses.	SS	Document	Year 5, 10	Wild dog & Cheetah meta-population management plan
	Monitor and evaluate progress and impact against annual work plan targets and programme objectives.	SS, PM	Reports	Annually	
	Adapt programme approach and feedback and inform risk response strategy.	SS, PM	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; 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 refers to the biological interaction between an organism that is hunting and feeds on its prey. Such organisms may or may not kill their prey prior to feeding on it. Predation may imply carnivory, but other categories of consumption also exist. 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 competition for survival 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 factor in the limitation of the concerned insect populations (*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 results in different combinations of all kinds of species. Man historically played a similar apex predator role in African savannas. 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 homogenise if factors in the landscape make the distribution of resources that their prey use more even throughout the landscape (*e.g.* widespread water provisioning, broad-scale fires, fences excluding access to some resources *etc.*). These human-induced influences are likely to be more pronounced for the large predators including lions, spotted hyaenas, leopards, wild dogs, cheetahs and crocodiles. A consequence is that species, like roan and sable antelope, experience increased predation that challenges their existence.

Furthermore, members of different guilds of predators interact with each other through competitive interactions that reduce niche overlaps in the manner in which predators feed on species. 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 availability, it has consequences for the persistence of wild dogs.

Another challenge for large predators is the potential impact 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. This in turn has consequences for predation pressure and the benefits that predation related disturbances provide for the park.

Predation, specifically the observation thereof, remains a key attraction for visitors to the park. A key challenge is dealing with damage causing predators such as lion and spotted hyenas that escape from the park, as they can cause damage to property and threaten lives of people. There are no extensive history of introducing and / or relocating carnivores from the park, although a wild dog introduction recently commenced in the north of the park. Carnivore research in the park 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 safe resources for prey as well as predator species alike.

This programme has links with the disease, herbivory, degradation, invasive alien species and regional 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 40.

PREDATION PROGRAMME					
High-level objective: To conserve biodiversity by restoring, allowing, maintaining and mimicking natural ecosystem processes.					
Objective: To maintain predation as an ecosystem process by mitigating human wildlife conflict and managing threats (poaching, poisoning and retribution killings) to predators.					
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, prioritise 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
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, PM	Documentation	Annually	

10.3.7 Disease management programme

The purpose of this programme is 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.

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 (Act No. 35 of 1984). SANParks' corporate policy on animal disease management (Hendricks and Symonds, 2010) provides guiding principles to maintain the natural fluxes of indigenous diseases as a component of biodiversity, to avoid, where possible, the introduction of and / or limit the impact of alien diseases, and to minimise the spread of disease from national parks to neighbouring communities and commercial agriculture. 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.

Savanna parks, such as the park, support a variety of different pathogens and vectors and thus has disease dynamics that differ from other parts of the country. This is due to their diverse animal complement (including many large mammal species, which carry and are susceptible to several diseases) and their semi-tropical climate. The risk of Foot and Mouth Disease (FMD) in this area is currently a major threat to both Botswana and South Africa's domestic livestock industry and their international trade status (due to their current red-meat exports). Inadequate disease surveillance and animal movement control in bordering Zimbabwe, increases the potential for FMD infection in cattle. Cattle from Zimbabwe are also known to regularly wander into the park. For this reason, the GMTFCA veterinary working group suggested that the outer fence of the park (southern fence bordering the tar road) should be declared as the disease boundary (red) line and has encouraged routine and continued passive surveillance for FMD in the park. Therefore, the introduction of buffalo (including disease free buffalo) into the GMTFCA in the medium term is also discouraged.

While wildlife is often perceived to be reservoirs of diseases to humans and their domestic stock, there is a number of other reasons why disease monitoring and management 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, whilst wild animals can be threatened by newly introduced or alien diseases, and these wildlife diseases can be important indicators 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 2.7 on page 40. To achieve the purpose of this programme, the actions listed in the table below will be implemented.

DISEASE MANAGEMENT PROGRAMME					
High-level objective: To conserve biodiversity by restoring, allowing, maintaining and mimicking natural ecosystem processes.					
Objective: To manage disease impacts by controlling 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 to inform and proactively respond to protect species of special concern, livestock and humans (anthrax, rabies, vector monitoring).	Conduct disease surveillance courses to enable conservation staff to identify basic disease syndromes.	VWS, local state vets.	Training register	Annually	
	Develop a system for reporting sick and dying animals that allows for close interaction between local state vets, Park Management, VWS and Scientific Services.	RS, local state vets, VWS	Records	As required	
To evaluate and respond to disease threats to wildlife posed by humans and domestic livestock and vice versa, especially considering the formation of the GMTFCA with "multi-species land use zones".	Develop effective disease information networks with the Department of Agriculture, Forestry and Fisheries (DAFF), Provincial State Vet Services and GMTFCA vet working group to determine regional occurrences of disease and appropriate and integrated disease control responses.	VWS, DAFF, Limpopo State Vet Services	Minutes of meetings	Annually	
	Conduct a quantitative risk assessment and associated disease mitigation actions for all introductions.	VWS, CSD, RS, local state vets, WMC.	Documentation	As required	
To maintain a biological resource bank for animal and plant tissue in order to conduct epidemiological and trace-back studies.	Collect and store appropriate samples.	VWS	Biological samples	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.	SS, PM	Documentation	Annually	

10.4 Responsible tourism programme

The purpose of the responsible tourism programme is to grow diverse tourism experiences towards culture- and nature-based responsible tourism in the park for the promotion of 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 responsible tourism in the development and operation of businesses in the field of tourism. The TSS further identified specific areas with the following15 areas relating to SANParks and influencing its tourism business operations:

- Strengthening collaboration and partnerships within the tourism industry;
- Developing domestic tourism;
- Enhancing quality assurance and universal accessibility;
- Ensuring a co-ordinated approach to product development;
- Facilitating investment, including enterprise development and development finance;
- Ensuring sound environmental management and triple bottom line reporting;
- Growing business and events tourism;
- Developing African Tourism;
- Improving general awareness of tourism among South Africans;
- Enhancing domestic airlift;
- Transforming the industry;
- Developing people;
- Ensuring 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 improved tourism products, 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 responsible tourism 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, South African National Standard (SANS) 1162:2011. The responsible tourism 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 responsible tourism baseline.

The establishment of this baseline serves to identify a clear point of departure from which to work. Customer service excellence is measured through criteria such as customer feedback, tourism quality standards, and universal access (UA) standards, as well as evaluating the visitor management aspects relating to the park, for example gate efficiency. The implementation of responsible tourism promotes operational efficiency and thus creates the environment for new product development, packaging and dynamic pricing in order to maximise yield, though challenges such as the availability of advanced technologies do exist. In order to align the SANParks tourism operations to 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
- Use appropriate nature-based responsible tourism 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.

As stated above, park management has to establish a responsible tourism baseline to measure progress of the effective implementation of the responsible tourism standard. Environmental damage must be minimised to counteract the potentially negative perceptions of 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 sound tourism practices amongst them.

Apart from the limitations of the biophysical environment and the park's desired state, park management recognises 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 environment. Furthermore, in partnership with its 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.

As a national park, a national heritage site and a world heritage site that is based on vulnerable and fragile cultural heritage assets of outstanding universal value, any new development must be aligned with the product development strategy and conform to the zoning criteria. This will ensure responsible tourism practises that balance conservation and cultural values with the need to generate income to sustain their integrity and significance. The potential for new responsible tourism products whereby the significance of this cultural landscape can be showcased, is evident in the constant growth of visitor numbers. However, of the impact of tourism must be monitored to identify potential threats that can be addressed in the management plan to avoid degradation of the sites at risk, loss of irreplaceable assets and de-listing from the world heritage site list.

The park currently hosts 37, 250 visitors per year (2017), and is one of the flagship cultural destinations in South Africa, with remarkable biodiversity and a sense of place. Products identified and incorporated into the Integrated Management Plan will 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 within the approved zonation to maintain the sense of place in the park.

The GMTFCA presents a unique opportunity to use tourism development to facilitate socio-economic development through regional ecosystem conservation. The GMTFCA 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, mountain bike trails, 4x4 trails, birding initiatives and the development of cross-border tourism products in the eastern section with the Marimane community in Zimbabwe**.**

Fragmentation of the park hampers the effective development of a complete tourism product within the park. Connecting roads are impossible to establish and the park relies on the provincial department to keep connecting roads in a good condition. The latter poses a challenge with entrance roads from Musina and Polokwane deteriorating at a rapid rate. The Den Staat road connecting the two sections is also in a bad condition and SANParks will continue investigating different solutions, interacting with provincial government structures to find a way to address the deteriorating roads network around the park. The development and improvement of tourism infrastructure is critical for sustainable growth. This requires partnerships to mobilise the necessary resources and attract investment to grow tourism. Various future new developments have been identified as can be seen in section 9.5. Cultural heritage sites are particularly vulnerable to damage through unregulated visitor access and therefore only guided visits to the sites will be allowed.

This programme links with high-level objective 3 and objectives 3.1 – 3.7 on page 41. To achieve the purpose of this programme, the actions listed in the table below will be implemented.

RESPONSIBLE TOURISM PROGRAMME					
High-level objective: To become a unique culture- and nature-based tourism destination of choice by enabling and growing diverse visitor experience whilst sustainably growing revenue and protecting the tranquil sense of place.					
Responsible Tourism performance objective: To establish, maintain and continuously improve the park's responsible tourism performance, by implementing SANS1162.					
Sub-objectives	**Actions**	**Responsibility**	**POE**	**Timeframe**	**Reference**
To develop a responsible tourism programme for the park that aligns with the SANParks Responsible Tourism Strategy.	Develop a responsible tourism programme in line with the SANParks responsible tourism strategy to measure responsible tourism norms and standards.	RMM, PM, HSM	Programme	Year 1	SANParks Responsible Tourism Framework, SANParks Responsible Tourism Strategy
	Communicate the responsible tourism programme to all park stakeholders.	RMM, HSM	Reports	Year 2	
	Educate and motivate staff in responsible tourism principles and enhance tourism capacity and skills base within staff complement.	HSM	Registers	Year 2	
To manage and assess responsible tourism performance.	Implement and monitor responsible tourism actions.	RMM, HSM, PM	Report	Year 3, ongoing	
	Identify, review and mitigate the visitor impact on biodiversity, heritage and tourism resources.	RMM, CM, HSM, PM	Report	Year 2, ongoing	
	Undertake Tourism Quality Assurance assessments, grading, and UA assessments.	HO, HSM	Reports	Year 1, ongoing	
To promote responsible tourism practise.	Identify tourism programmes and projects benefiting communities.	PM, HSM, SED	Documentation	Year 3	NTTS Strategy
	Implement projects as required.	HO, HSM, SED	Documentation	As required	
Use local resources sustainably, avoid waste and over-consumption.	Measure, manage and monitor performance of water and electricity consumption by adhering to targets.	TM, HSM	Documentation	Annually	
	Set appropriate targets for reduction or recycling of waste produced.	HSM, SED	Documentation	Annually	
Visitor experiences objective: To continually enhance the visitor experience within the park, by effective visitor management, interpretation and providing quality facilities.					
To ensure effective visitor management in the park.	Develop and implement a visitor management plan.	GM: Visitor Management	Document	Year 1	Visitor management protocol
	Maintain the visitor management plan taking changes in the environment into account.	GM: Visitor Management, HSM	Updated document	Year 3, 6, 9	Visitor management protocol
Align new and existing tourism infrastructure and tourism products with market demands and industry standards to enable revenue optimisation.	Maintain tourism facilities and infrastructure according to tourism standards.	TM, HSM	Documentation	Annually	
	Identify events, activities and facilities that may be considered for development within the park.	HSM, PM	List of products	Annually	Product development framework

RESPONSIBLE TOURISM PROGRAMME					
High-level objective: To become a unique culture- and nature-based tourism destination of choice by enabling and growing diverse visitor experience whilst sustainably growing revenue and protecting the tranquil sense of place.					
Visitor experiences objective: To continually enhance the visitor experience within the park, by effective visitor management, interpretation and providing quality facilities.					
Sub-objectives	**Actions**	**Responsibility**	**POE**	**Timeframe**	**Reference**
Align new and existing tourism infrastructure and tourism products with market demands and industry standards to enable revenue optimisation.	Identify opportunities to link up existing and new products with adjacent communities that are open to the park including the GMTFCA.	HSM, PM	List of products	Year 2, ongoing	
	Investigate ways to provide affordable tourism products and packages for low to medium-income earners.	RMM, HSM, PM, HO	Documentation	Ongoing	Sales and marketing strategy
Identify areas where communities could become beneficiaries of tourism projects.	Identify and support appropriate product development by developing and implementing possible community beneficiation products.	PM, HSM, SED	Documentation	Year 2	
Ensure optimal returns from commercial operations.	Support retail outlet and restaurant in order to optimise revenue generation.	HSM	Documentation	Ongoing	
Analyse and review pricing to optimise financial returns.	Provide input into tariffs during annual review process.	HSM	Document	Annually	
Service excellence objective: To enable relevant customer-focused service excellence, by understanding and responding appropriately to market expectations and or preferences.					
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.	GM: Visitor Management, HSM, PM	Document	Year 2	
	Monitor and evaluate the park visitor interpretation plan.	HSM	Documentation	Year 2	
	Adhere to the corporate signage manual.	HSM, PM, TM	Updated document	Annually	Branding guideline
	Develop a tourist map / guide document.	HSM, RMM	Document	Year 2	Interpretation plan, sales and marketing strategy
	Ensure clear and accurate communication of park rules, rates and facilities on all platforms, including within the park, on correspondence, and on the website.	HSM, CM, PM	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, cultural heritage and biodiversity information to visitors, and where appropriate to access information, if unknown.	HSM, CM	Documentation	Ongoing	Park rules, visitor information
Grow tourism revenue objective: To sustainably grow income through tourism by providing visitors with an appropriate and a diverse range of products and services, whilst protecting the tranquillity and sense of place.					
To ensure optimal development and maintenance priorities to enable revenue optimisation.	Identify events, activities and facilities that may be considered for development within the park.	PM, HSM	Documentation	Year 1	
	Review development plan in order to ensure optimal tourism development priorities without eroding conservation values.	PM, HSM	Document	Year 3, 6, 9	
	Develop and implement annual work plans to cover maintenance priorities.	HSM, TM	Document	Annually	

RESPONSIBLE TOURISM PROGRAMME					
High-level objective: To become a unique culture- and nature-based tourism destination of choice by enabling and growing diverse visitor experience whilst sustainably growing revenue and protecting the tranquil sense of place.					
Operational effectiveness objective: To enable cost savings within tourism operations, by ensuring effective management and controls.					
Sub-objectives	**Actions**	**Responsibility**	**POE**	**Timeframe**	**Reference**
To enhance existing tourism attractions and develop new products within the park in line with the recommendations of the responsible tourism programme.	Enhance Customer Service Standards, manage and resolve feedback from the public.	HSM	Questionnaire responses	Ongoing	Tourism grading standards, SANParks Housekeeping Standards,
	Review and analyse guest feedback to provide targets and improvement.	HSM	Documentation	Annually	Housekeeping Standards
	Conduct customer surveys to understand visitor numbers, expectations, preferences, park use and trends.	HO, RMM	Reports	As required	
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.		Registers	Ongoing	
Ensure compliance and achievement of set Customer Care Standards.	Continue monitoring and review of, as well as training programmes on processes in ensuring effective service delivery and customer satisfaction.	HSM	Survey results	Ongoing	
Promotion objective: To promote the unique cultural and natural landscape of the park by developing and implementing a variety of sales, marketing and communication initiatives.					
To market the park tourism products, facilities and activities.	Contribute to the comprehensive tourism marketing strategy that covers all markets and matches up markets and products / experiences with a focus on responsible tourism issues.	RMM, HSM, PM	Document	Annually	
	Find opportunities for media coverage and enhance coverage in existing editorials, magazines and social media, and maintain high media visibility.	RMM, CS	Documentation	As required	Sales and marketing strategy
	Explore opportunities for promoting park attractions in conjunction with tourism partners.	RMM, CS	Minutes of meetings	As required	

RESPONSIBLE TOURISM PROGRAMME					
High-level objective: To become a unique culture- and nature-based tourism destination of choice by enabling and growing diverse visitor experience whilst sustainably growing revenue and protecting the tranquil sense of place.					
Universal access standards objective: To 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.	Comply with the Corporate UA standards.	HSM, TS	Document	Year 2	SANParks UA Guidelines
	Engage in UA assessments.	HSM, TS	Documentation	Year 3, 6, 9	UA strategy, UA protocol
	Sensitise staff to UA client expectations / requirements.	HSM	Documentation	Year 2	
To monitor and evaluate the impact of the implementation programmes, and adapt 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.	SS, PM	Documentation	Annually	

10.5 Cultural heritage management programme

The purpose of this programme is to consolidate, sustain, manage and present the outstanding universal value of the cultural landscape whilst maintaining the authenticity and integrity of the tangible and intangible cultural heritage resources.

The management of cultural heritage resources is guided by national legislation, policies and procedures within SANParks. The NHRA provides the framework for the maintenance and conservation of heritage resources in accordance with the standards and procedures set out by the 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.

A broader-based cultural heritage resources programme (that will include oral history and the documentation of indigenous knowledge as well as tangible heritage in the form of sites and objects) is therefore required to investigate areas that have not yet been surveyed and assess the condition of, and threats to, all sites in the park. The MCL is also valued by communities with cultural ties to the ancient Kingdom. This is attested by the oral histories that are still held by associated communities, including the significant recordings by the late Professor Victor Ralushai (Ralushai, 2003). The Ralushai oral history recordings show that communities associated with the cultural landscape still holds cultural (and religious) ties to the sites, including beliefs that the ancestors continue to be spiritually present at the sites. Communities continue to carry out religious rituals in Mapungubwe with support from park management. The results of this work should be entered into a geographic information system (GIS) database to facilitate monitoring and management.

For the park to achieve and maintain international best practice in management and conservation, a number of intervention areas have been identified and prioritised for implementation in the next 10-year planning cycle. The areas of intervention include improved management and utilisation of sites and access to sites for collections, enhanced research, interpretation, presentation and the development of infrastructure and activities. Engagement of culturally associated communities is another area that has been prioritised for improvement.

In the last few years, SANParks and Coal of Africa Limited (now MC Mining) entered into a biodiversity offset agreement (BOA) which provides for co-operation and funding of among others, cultural heritage conservation projects in the park. The implementation of the BOA is monitored by a steering committee with representation from the SANParks, MC Mining and DEA. Through the BOA programme, several activities have been implemented with more activities still to be implemented throughout the terms of the BOA.

The world heritage property also took part in the second cycle of periodic reporting. The periodic report at that stage identified several factors affecting the property which the management authority has worked to address over the period following the report. The factors identified through the second cycle of periodic reporting are detailed in Table 15 below alongside steps taken to address them.

Table 15. Factors affecting the MCL and steps taken to address it.

Factors affecting the property	Nature of impact / impacted attributes	How it is being addressed
Water infrastructure	Visual	The infrastructure has since been largely camouflaged by vegetation resulting in minimal visual impact. No water infrastructure has been added.
Major linear facilities	Visual	The electrical linear facilities have also remained unchanged since the periodic reporting and therefore no additional visual impact has been created.
Livestock grazing domestic animals	Cultural and Natural	Addressed through safety and security programme, refer to section 10.8.7.
Mining	Cultural and Natural	This is not a current threat in the MCL.
Wind erosion	Cultural	This is no longer a threat.
Radiation		
Dust		
Water erosion		Addressed through the site specific management plans.
Illegal activities	Cultural and natural	Through safety and security programme, refer to section 10.8.7.
Storms	Cultural and Natural	Through disaster management plan, refer to section 10.8.10.
Flooding		
Erosion / siltation deposition	Cultural	Siltation on rock art sites is monitored but cannot be stopped
Invasive alien terrestrial species	Natural	Through invasive alien clearing programme, refer to section 10.3.3.

SANParks continues to carry out rehabilitation and maintenance work in critical sites like K2. The sites are also monitored on a regular basis to ensure their continued preservation. Additional monitoring of sites is also carried out on an annual basis as part of the scheduled inspection of the SAHRA in terms of the NHRA.

The cultural landscape has also benefited from several UNESCO World Heritage Centre and the International Council on Monuments and Sites (ICOMOS) reactive monitoring missions, carried out in the last decade. The reactive monitoring missions were sparked largely by the licensing of a mining activity (Vele Colliery) some 7 kilometers east of the world heritage property. At that stage, UNESCO was mainly concerned by the absence of a buffer zone between the mining site and the eastern boundary of the world heritage property. SANParks has welcomed and implemented the recommendations that emanated from the various UNESCO missions including rehabilitation of some key archaeological sites, monitoring and establishment of an effective buffer zone to the east of the world heritage property. Accordingly, during the period 2012 to 2014, SANParks, working with the DEA, redesigned the boundaries of the buffer zone of the world heritage site to ensure that the boundaries of the site are adequately protected. The new boundaries were submitted to UNESCO through the process of a minor boundary modification

resulting in the World Heritage Committee approving a new buffer zone for the world heritage property.

Apart from general issues of conservation and sustainable tourism, the display and storage of the archaeological collections, including gold objects from Mapungubwe Hill that were recovered during archaeological excavations in the 1930s, is of particular importance. These sites have mostly been curated by archaeologists from the University of Pretoria where the artefacts have been on public display since 2000. While it was envisaged that the collection would be on display at the new interpretation centre at the park, the current facilities are inadequate to store and curate the entire collection or parts thereof. In March 2009, a tripartite memorandum of understanding was signed by SANParks, SAHRA and the University of Pretoria regarding co-operation in managing the Mapungubwe collection. Discussions are underway between the three parties to sign a heritage agreement that will, among others, stipulate the future curatorship of the Mapungubwe archaeological collection. In addition, SAHRA conducted a national audit of the Mapungubwe archaeological collections at other repositories in South Africa in February 2010, the outcome of which is still pending.

Owing to a long history of research on extraction, current policy on further cultural heritage research, particularly archaeological research, in the park is conservative and permit applications to SAHRA must be approved by the Park Manager and SANParks. However, there is a critical backlog in recording research on areas such as rainmaking (Schoeman, 2006), and there is a critical gap in identified cultural heritage resources unrelated to settlement by white farmers that are so far unaccounted for in the period between 1,300 AD and the 20th century. Research on the location and distribution of cultural heritage resources in the park and WHS, with the assistance of the Universities of Pretoria, Witwatersrand and Venda, is ongoing.

The priority is to articulate research needs and knowledge gaps and solicit appropriate projects such as research on stone-walling, rock art sites, and colonial and oral history. The current condition of all sites open to the public has been been assed and is monitored periodically by the archaeologist and park personnel, the nature and rate of change is measured and appropriate conservation action taken. Cultural heritage sites are particularly vulnerable to damage through visitation by people. Although the park has been careful to allow only guided visits to the main sites and does not allow visits to most of the other sites, removal of potshards and other artefacts, walking on rock engravings and touching of rock paintings are a constant temptation. The damage needs to be quantified with a programme that will involve the survey of key sites, recording of present conditions and regular and efficient monitoring. Damage by animals such as baboons and elephants might warrant similar monitoring.

The Mapungubwe Cultural Landscape is home to hundreds of archaeological and other cultural sites, making it ideal for cultural heritage tourism. The park and WHS has a number of cultural heritage tourism offerings, including tours to the interpretation centre and the main archaeological sites. Park management will also be introducing rock art trails that will showcase the Stone Age era of the cultural landscape.

To minimise threats to the integrity of the MCL that might be adversely affected in the course of infrastructure development for tourism or other purposes, all developments and interventions in the landscape must be subjected to an impact assessment process, as required by NEMA regulations and by SAHRA. The following issues have been identified as threats to the cultural landscape:

- Non-integration of natural and cultural heritage management tasks and objectives should areas of mutual interest not be identified, recorded and assessed;
- Impact of wildlife on surface artefacts and features;
- Cultural heritage sites – including paleontological sites - are not accurately marked on maps and this could result in the sites being ignored or damaged in the course of fencing, building and other infrastructural development in the landscape;
- Rock engravings are vulnerable to people walking on them if they are located on horizontal rock surfaces;
- Sites close to vehicle access points are most vulnerable to inappropriate visitor behaviour;
- Clearing of vegetation in rock art sites to allow more people onto a site may change the micro-climate and adversely affect paintings;
- Structures, sites and places that are not significant in the context of the Mapungubwe cultural period (900 A.D. – 1,290 A.D.) may be overlooked or destroyed because their significance in the broader history of the landscape is not appreciated; and
- Unco-ordinated research can lead to removal of irreplaceable deposits.

A detailed lower level plan outlining the rationale and operational approach supports this programme. This programme links with high-level objective 4 and objectives 4.1 – 4.5 on page 41. 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 preserve, interpret and present the OUV of cultural heritage associated with MCL through compliance with relevant legislation allowing access, engagement, research and responsible utilisation.				
Objective: To identify and enable effective management of all cultural heritage sites by developing, implementing and monitoring site specific management plans and compliance with relevant legislation.				
Actions	**Responsibility**	**POE**	**Timeframe**	**Reference**
Develop new Site-Specific Management Plans as required.	GM: Cultural Heritage	Documentation	As required	
Update existing Site-Specific Management Plans.	GM: Cultural Heritage		Year 5, 10	
Develop and implement a Site Monitoring Plan.	GM: Cultural Heritage		Year 2, ongoing	
Implement site conservation measures resulting from site monitoring.	GM: Cultural Heritage, PM	Report	Year 2, ongoing	
Develop a legislative / policy compliance checklist.	GM: Cultural Heritage	Documentation	Year 2	
Compile and submit mandatory reports (UNESCO State of Conservation / SAHRA reports) as required.	GM: Cultural Heritage, PM	Reports	As required	
Objective: To effectively manage heritage objects associated with Mapungubwe by identifying, documenting, preserving, conserving, protecting and presenting appropriately.				
Develop and update an inventory of Mapungubwe heritage objects.	GM: Cultural Heritage	Inventory	Year 2, ongoing	
Identify third party institutions that curate the Mapungubwe heritage objects and enter into Memorandums of Understanding.	GM: Cultural Heritage	Documentation	Year 4	
Carry out annual inspections of Mapungubwe heritage objects held by third parties.	GM: Cultural Heritage		Year 4, ongoing	
Develop and implement a tripartite heritage agreement on Mapungubwe collections with SAHRA and the University of Pretoria.	GM: Cultural Heritage, PM		Year 1, ongoing	
Implement the Collections Management Plan.	GM: Cultural Heritage, PM		Annually	
Objective: To create awareness through interactive presentation, improved co-ordinated access, development and sustainable utilisation of heritage resources for spiritual, educational, research and tourism purposes.				
Continuously update exhibitions at the Interpretation Centre.	GM: Cultural Heritage, PM	Documentation	Year 2, 7	
Develop Orientation Centres at key archaeological sites (Mapungubwe Hill, Schroda).	GM: Cultural Heritage, PM		Year 2	
Develop and operate rock art trail tours.	GM: Cultural Heritage, PM		Year 2	
Develop and operate main archaeological sites trail/s.	GM: Cultural Heritage, PM		Year 2	
Develop a virtual tour of the MCL.	GM: Cultural Heritage, PM		Year 5	

CULTURAL HERITAGE MANAGEMENT PROGRAMME				
High-level objective: To effectively preserve, interpret and present the OUV of cultural heritage associated with MCL through compliance with relevant legislation allowing access, engagement, research and responsible utilisation.				
Objective: To create awareness through interactive presentation, improved co-ordinated access, development and sustainable utilisation of heritage resources for spiritual, educational, research and tourism purposes.				
Actions	**Responsibility**	**POE**	**Timeframe**	**Reference**
Develop an online and a mobile exhibition of the MCL.	GM: Cultural Heritage, PM	Online site, vehicle	Year 5	
Participate in the BOA project steering committee and implement approved projects	PM, GM: Cultural Heritage	Documentation	Annually	
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.	GM: Cultural Heritage, PM	Documentation	Annually	

10.6 Stakeholder engagement

The park wishes to establish and maintain meaningful and beneficial relationships with a wide range of stakeholders, in a way as beneficial as possible to the park's values, objectives and various programmes related to the different core functions. Park management 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. Park management 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 are being implemented in and around the park aimed to address this by fostering positive stakeholder relationships and establishing co-learning opportunities through environmental education and awareness.

10.6.1 Stakeholder structures programme

The purpose of this programme is to establish and maintain purposeful and beneficial relationships with a wide range of stakeholders, inclusive of the recognised Mapungubwe descendants, thereby supporting SANParks' core business of biodiversity conservation and tourism, in accordance with the MCL's OUV.

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. Park management's engagement with external stakeholders, needs to be responsive to deal with issues beyond internal 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 the park must serve a conservation-oriented subset of societal values and that it is inevitably situated within a broader landscape and context.

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 depend upon stakeholder understanding, support and involvement. For this reason, the park management wishes to engage stakeholders in an ongoing way, subsequently 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 park management. Park management strives to maintain existing relations and to identify and implement new opportunities for enhancing relationships with surrounding communities, the recognised Mapungubwe descendent groups, all spheres of government and other stakeholders. 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, recognised descendent groups, employees, tourists and the media. Stakeholder engagement and co-operative partnerships are facilitated through a range of informal and formal structures. This in turn will 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 and cultural education and awareness. Restoring people's rights to access and to benefit from and have ownership of conservation land and / or associated businesses, remain an important focus within constituency building.

Park management works closely with various local communities situated in or close to the towns of Alldays and Musina, through supporting specific community projects / initiatives. These include amongst others:

- Working with the various community development workers to collaborate on community events, outreach programmes and job creation;
- Attending the quarterly meetings and collaborating on matters such as security and wildlife management; and
- Participating in the South African Police Service (SAPS) Forum, GMTFCA joint working groups, SANDF, Rhino Owners Management Group Greater Mapungubwe Network and the Musina Tourism Organisation.

The GMTFCA working groups have strengthened cross-border initiatives and working relationships. Trilateral meetings, patrols and collaboration contribute towards community relations and support, with Tour de Tuli and the WildRun specifically addressing social upliftment to some extent. These initiatives will be expanded.

The Park Forum Charter adopted in 2011, largely failed in achieving the desired outcomes due to not considering the diverse group of stakeholders and their expectations. These forums are a means of providing a legitimate platform to communicate park / SANParks matters to ensure participation by all stakeholders on matters of mutual relevance affecting the park. It is expected that the separate forum for the descendant communities, will facilitate constructive interaction between park management and surrounding stakeholders as well as the recognised descendent groups. It will also provide a platform to build constituencies in support of the natural and cultural heritage conservation goals of the park. In 2018, park management established a committee for the five recognised descendant groups in an effort to improve communication, instil a sense of ownership and participation in heritage related matters of the park, and address matters of mutual concern. These descendants are acknowledged and will be interacted with meaningfully through quarterly meetings, heritage events, commemorations and cultural rituals in the park. These forums will also assist in the prevention and management of conflict between park management and the stakeholders (*i.e.* local mmunities, land owners, land claimants).

Park managemet has a close working relationship with the SANParks Honorary Rangers, especially with the Waterberg, Highveld and Polokwane Regions. They contribute both in cash and in kind to the park programmes. Their expertise is used by the park to achieve the park's desired state. They contribute in the following ways, to name but a few:

- Support and assist in environmental education and community outreach programmes;
- Support logistical arrangements of major events such as Tour de Tuli and WildRun;
- Fundraising through initiatives such as birding and photography weekends;
- Participate in park operations during weekends when requested; and
- Participate and assist with holiday programmes.

A detailed lower level plan outlining the rationale and operational approach supports this programme. This programme links with high-level objective 5 and objectives 5.1 and 5.2 on page 42. To achieve the purpose of this programme, the actions listed in the table below will be implemented.

STAKEHOLDER STRUCTURES PROGRAMME					
High-level objective: To build and sustain inclusive relationships and shared understanding through appropriate and meaningful engagement with stakeholders and descendants.					
Objective: To provide an effective interface between the park and its stakeholders by facilitating the establishment and maintenance of appropriate engagement structures and mechanisms					
Sub-objectives	**Actions**	**Responsibility**	**POE**	**Timeframe**	**Reference**
To build and strengthen stakeholder relationships supportive of the park's mandate.	Develop an overarching stakeholder engagement plan containing a sector analysis / profile.	P&C, all departments	Document	Year 1	
	Develop a database of the park's diverse stakeholders and their level of expertise and / or contribution.	P&C	Database	Year 1	Stakeholder engagement plan, Park Forum Charter
	Update the Communication Strategy to include relevant communication media to ensure effective knowledge transfer.	P&C, all departments	Media statements	Ongoing	Communications Plan
	Update and review database of the park's stakeholders.	P&C	Database	Year 4, 7, 10	
To maintain and sustain a purposeful relationship with the Park Forum.	Establish Park Forum inclusive of all relevant stakeholders.	P&C, PM	Minutes of meetings	Year 1	
	Co-ordinate Park Forum and committee meetings.	P&C		Annually	
	Organise annual public meetings.	P&C		Annually	
To nurture co-operative relationships with local and provincial authorities.	Identify and prioritise appropriate forums.	P&C, PM all departments	List	Year 1	
	Encourage and support attendance and effective governance for existing forums.	P&C, PM, all departments	Minutes of meetings	Annually	
	Review of prioritised forums in view of park objectives and align as needed.	P&C, PM All departments	Report, updated list	Year 4, 7, 10	
Objective: To provide a meaningful co-operative interface between the park and the descendants by facilitating the establishment and maintenance of appropriate and effective engagement structures.					
To develop and manage a database for recognised descendent groups in Mapungubwe.	Develop a database of the MCL's recognised descendent groups and their level of expertise and / or contribution through institutionalised structures and non-institutionalised structures.	P&C, PM	Database	Year 1	
	Update and review database of recognised descendent groups.	P&C	Updated Database	Year 4, 7, 10	
To maintain and sustain a purposeful relationship with the Mapungubwe Descendent Committee / Forum.	Develop terms of reference for Mapungubwe Descendent Forum.	P&C, PM	Terms of Reference	Year 1	
	Co-ordinate Descendent Forum and working committee meetings.	P&C	Minutes of meetings	Annually	Terms of Reference
To provide meaningful benefits to recognised descendants.	Investigate ways towards contributing to economic empowerment for descendant communities/land claimants.	SED, PM	Documents	Year 1	
	Allow access for performing rituals and other events in recognition of beliefs.	P&C, PM	Documents	As required	

STAKEHOLDER STRUCTURES PROGRAMME					
High-level objective: To build and sustain inclusive relationships and shared understanding through appropriate and meaningful engagement with stakeholders and descendants.					
Objective: To provide a meaningful co-operative interface between the park and the descendants by facilitating the establishment and maintenance of appropriate and effective engagement structures.					
Sub-objectives	**Actions**	**Responsibility**	**POE**	**Timeframe**	**Reference**
To provide meaningful benefits to recognised descendants.	Arrange annual cultural days / events for descendant communities.	P&C	Documents	Annually	
	Initiate and facilitate awareness meetings regarding identifying business and benefit opportunities.	All departments	Documents	Annually	
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.	PM	Documentation	Annually	

10.6.2 Human wildlife conflict programme

The purpose of the programme is to effectively manage human-wildlife conflict (HWC), both inside and adjacent to the park, by reducing the risk of conflict and managing the impact of such conflict.

The management of HWC issues within the park (concerning problem animals) and adjacent to the park (concerning damage-causing animals - DCAs) remains a contentious issue. HWC 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 in the loss of the support of local communities. The management of HWC is therefore 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, has 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.

The increased presence of visitors and the subsequent association with the availability of food, have 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 storage facilities thereby causing damage in some cases to both humans and property. The human-induced problem has also caused avian species *e.g.* glossy starlings *Lamprotornis nitens* and hornbills *Tockus spp*., to become a nuisance at rest camps and picnic spots, where they have become bold enough to raid food from plates while humans are dining.

The broader MCL is not an exception to HWC involving marauding predator species, primates and elephants that cause a loss of crops, livestock, infrastructure, and in severe situations, a loss

of life. Vehicle accidents on public roads adjacent to the park, namely the R572 and R571, involving antelope such as impala and kudu, warthog and even elephant, occur regularly and is a danger to all who use these roads.

The true nature of the problem is however difficult to quantify, especially confrontations outside the national park, as an open border with Zimbabwe and Botswana, dilapidated farm fences and infrequent maintenance of public road verges, exacerbate the situation. However, management authorities have a responsibility to ensure the safety of wildlife, infrastructure, human life and livelihoods as far as possible within its locus of control.

The management of problem animals at local level involves a 3-"man" local team (consisting of the 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 the local task team and relevant committees.

Responsibility for the management of DCAs, devolves to the provincial conservation authorities in the event that the DCAs are not listed as a threatened and protected species in terms of the NEM: BA: 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 the province and the relevant management authority.

The park's boundary fences are well-maintained, although challenges of permeability along drainage lines and hills remain. Human-induced fence line breakages driven by theft of livestock also occur from time to time. Maintenance of fences has also improved with the Working on Fire (WoF) teams and Environmental Monitors assisting in the clearing of fence lines from vegetation. This not only ensures the structural integrity of fences, thereby ensuring animals are kept within the park boundaries, but also provides less cover to animals that have strayed into public road verges. Good quality and well-maintained electric fences remain the fencing standard for fences in well-managed private game reserves such as Venetia Limpopo Nature Reserve (VLNR) and Mapesu Private Nature Reserve (MPNR). However, other properties adjacent to the park and public roads have increasingly dilapidated fences and pose a danger to human life with animals being able to access these roads through these areas. Public road maintenance is also lacking to a large extent with verges overgrown and/or not being properly cleared with large shrubs and tall grass providing cover and grazing for animals. This impairs visibility and drivers do not have the appropriate time to adjust speed when animals become visible, resulting in accidents. Negotiations through the DPW will ensure the fence line of all properties along the R572 is upgraded.

This programme links with high-level objective 5 and objective 5.3 on page 42. 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 associated impacts through a range of holistic management practices.	Revise and update protocols / SOPs.	PM, SS	Documents	Year 1, 6, 10	NEM:BA
	Revise and update information provided for visitor use, including signage at facilities warning against practices that aggravate HWC.	PM	Documents, signage	Year 1, 6, 10	
	Identify drivers / causes resulting in problem animal incidents.	PM	Documents	Year 1	
	Develop interventions based on a systemic understanding to adaptively respond to emerging drivers and incidents.	PM	Documents	Ongoing	Risk Management
	Ensure proper maintenance of fences.	PM	Documents	Ongoing	Infrastructure LLP

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 associated impacts through a range of holistic management practices.	Monitor implementation and effectiveness of integrated waste management plan to minimise HWC issues.	PM	Documents	Ongoing	Environmental Management LLP
	Educate staff on incident prevention mechanisms and develop relevant products to promote broader awareness / understanding.	PM	Information Documents	Annually	Code of conduct Internal rules
	Engage internal and external stakeholders to keep abreast of problem animal matters.	PM	Minutes Reports Workshops	As required	Stakeholder engagement LLP
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 and within biodiversity, effective park management, tourism, risk response, communication, constituency building.	PM	Documents	Year 3, 6	All associated LLP
	Maintain, continuously monitor and report on the fence condition to minimise the escape of DCAs from the park.	PM	Reports	Ongoing	
To control DCAs that escape from the park (with mandated partners), through range interventions.	Review measures for the management of DCAs, which should be aimed at preventing or mitigating recurring damage.	PM, SS	Documents	As required	
To control DCAs that escape from the park (with mandated partners), through range interventions.	Record damage causing animal incidents, and timeously assess and report on the severity of the damage and circumstances underpinning the incident.	PM	DCA register	Ongoing	NEM:BA DCA Protocols
	Implement a range of management responses as per legislation, policies, protocols and DCA norms and standards.	PM, VWS	Documents	As required	NEM:BA DCA Protocols
	Develop, review and / or amend guidelines for the translocation of DCAs only in special circumstances in accordance to legislation, policies, protocols and guidelines.	PM, VWS	Guidelines	Year 2	NEM:BA DCA Protocols
	Respond to escaped animals where it might require intervention from a disease management perspective.	State Vets, PM	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 control DCAs that escape from the park (with mandated partners), through range interventions.	Monitor the prevalence of DCA hunting packages being issued along the park boundaries and implement corrective actions.	PM, SED	Documents	Annually	NEM:BA, Provincial Conservation Legislation
	Receive the DCA register from provinces, and update DCA register.	PM	Reports, DCA register	Ongoing	NEM:BA
To review, amend and provide inputs into the Internal policy framework, external institutional arrangements, and the national and international legislative framework.	Review and participate in a range of committees and external programmes through which DCAs and their impact should be communicated and monitor effectiveness of programmes.	P&C, CS, CM	Documents	Ongoing	
	Implement and/or participate in environmental and awareness programmes along the boundaries of the park, and measure impact of interventions.	PM	Programmes	Annually	
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, such as research institutions.	PM, SS	Programmes	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.	SS, PM	Documentation	Annually	

10.7 Access and benefits

The conservation of biodiversity and culture within the MCL has both an intrinsic and / or moral justification, as well as being important for maintaining the flows of natural and cultural ecosystem services that arise from it. The sustainability of the park relies on the maintenance of ecological and cultural integrity, economic viability and social relevance, the latter being dependent on relationships and connectedness to the park. These social links can be as a result of cultural ties or they can be as a result of vested interest that is grown through conservation related access and benefit accrual. Benefits vary in their scale and scope, including both tangible and intangible aspects, often going hand in hand with costs. Benefits are perception based and the subsequent "value" of various conservation related benefits (and costs) are perceived (and felt) differently by different stakeholder groups based on their own world views. In the context of Mapungubwe, facilitating access to a range of benefits by an array of stakeholders is important for ensuring that the landscape remains socially relevant to broader society, but a special emphasis on facilitating access to and sharing benefits with the direct descendants of Mapungubwe remains a priority. Various processes linked to sharing benefits associated with employment and business opportunities, capacity building (through training and environmental education), infrastructure support and a whole arrange of ecosystem services (provisioning, regulating, supporting and cultural services) that flow from the park, aim to facilitate both access to the park its self as well as access to opportunities for various stakeholders to benefit from the park and as such to grow a societal vested interest in supporting its long term sustainability.

10.7.1 Natural resource use programme

The purpose of this programme is to enhance the sustainable use of natural and cultural resources found within the park, by facilitating access to a range of relevant benefits as defined in the NEM: PAA.

The NEM: PAA and SANParks Resource Use policy (SANParks, 2010) provide for the sustainable use of renewable and non-renewable resources in 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 ecosystem services, and that gives rise to costs and benefits through impacting either positively or negatively on human well-being. Park management 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, is guided by sustainability principles as set out in the SANParks policy framework. 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 park, provides an almost continuous record of San, Khoekhoe, and Iron Age farmer habitation over more than 5,000 years (Deacon, 2009) and demonstrates that people were living in and harvesting resources from these areas. Promoting access for people to certain resources at a small scale, which does not impact significantly on ecosystem integrity, provides opportunities for park management to both maintain the role of humans as an ecosystem driver and to build the value of protected areas through relevant benefit accrual and distribution. By implementing specific, controlled actions in this context, additional resources may also become available for use.

Resource use in the park has been largely limited to the internal use of sand for maintenance purposes (*e.g.* gravel pits), water abstraction and the off-take of animals for use during park events or cultural celebrations. Park management has not officially implemented a programme for the utilisation of resources by communities and therefore baseline information regarding sustainable use is lacking. Because the park is currently fragmented it does not conserve complete and intact ecological systems. Due to this scenario, resource use such as mopane worm harvesting, will only be implemented in exceptional cases as determined in the Resource Use Protocol.

With its tolerance for the sustainable use of natural and cultural resources, the park management aims to share biodiversity benefits more equitably and fairly, and thereby promote long-term relationships with stakeholders and neighbours. The strong emphasis of resource use by and for local communities, further aims to promote access and benefit sharing locally. This goes far beyond simply the resource itself within the spirit of historical redress and environmental justice. As such, monitoring for the outcomes of resource use should go beyond simple numbers and quantities of resources (Swemmer & Taljaard, 2011) and should consider the impact of these projects in fostering lasting positive relationships with neighbours.

Monitoring of small-scale resource harvesting projects in the Kruger National Park (Swemmer *et al.,* 2017), suggests that these projects have the potential to enhance local stakeholders' perceptions of the park, at a low cost, operating for a short time frame while meeting multiple objectives such as:

- enhancing access to the park;
- contributing positively to basic livelihoods in a tangible way;
- enhancing human well-being;
- promoting conservation constituency; and
- engendering positive long-term relations with neighbours.

Through the promotion of the sustainable use of natural and cultural resources, the park also aims to share biodiversity benefits more equitably and fairly, which promote relationships at various scales. The strong emphasis on resource use by local communities, further aims to

promote access and benefit sharing locally, in the spirit of historical redress and environmental justice extending beyond the resource itself.

There is currently no mechanism in the park to monitor resource use by communities. However, research conducted in Kruger National Park and elsewhere provides a reasonable starting point. Monitoring and research are inter-disciplinary spanning social, economic and ecological fields and are done by both management and researchers based on the individual project context and human resource capacity. Challenges remain with a lack of capacity to monitor impact, subjective mechanisms to determine off-takes (mopane worms and thatch), as well as security concerns which reduce incentives for project support (Swemmer *et al*., 2015). Conflicting value systems between stakeholders remain an organisational risk and going forward, this will require proactive communication, transparency and shared decision-making.

A detailed lower-level plan outlining the rationale and operational approach supports this programme. This programme links with high-level objective 6 and objective 6.1 on page 42. To achieve the purpose of this programme, the actions listed in the table below will be implemented.

NATURAL RESOURCE USE PROGRAMME					
High-level objective: To promote equitable access to and create value from a range of tangible and intangible benefits through the sustainable use of ecosystem services.					
Objective: To enhance the sustainable use of natural resources found within the park by facilitating access to a range of relevant benefits.					
Sub-objective	**Actions**	**Responsibility**	**POE**	**Timeframe**	**Reference**
To manage the harvesting / off-take and use of natural and cultural resources according to ecologically sound principles, guidelines and criterion.	Develop a mopane worm harvesting protocol.	SS, CM, RS, SED, PM	Document	Year 2	SANParks Resource Use Policy, SANParks Wildlife utilisation strategy, SANParks SOP off-takes and disposal of wildlife
	Develop harvest / use / off-take systems per species / type of species / type of use.	SS, CM, RS, PM	Documents	As required	
	Update the Code of Conduct to outline the conditions under which staff may harvest natural resource products from within the park.	CM, RS, PM, SED	Document	Year 2	
	Build and consolidate data on the access to and use of natural resources by local communities.	SS, SED	Database	Year 3, 5, 7, 9	
	Build a theory of change model into each resource-use project / programme to guide adaptive implementation.	SS, SED	Document	Year 5, 10	
	Incorporate broader resource-use issues and individual species being used into communication plan for both internal and external stakeholders.	SED, Communications, SS	Documents	As required	
To monitor and evaluate the impact of the programme 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	

10.7.2 Knowledge, awareness and co-learning

The purpose of this programme is to enhance co-learning, knowledge and awareness through implementing innovative education, facilitating relevant research and communicating effectively with a range of stakeholders, thereby building constituencies amongst stakeholders in support of the park's various objectives.

SANParks has prioritised the provision of environmental education and environmental learning (SANParks EE Policy, 2005). This is further underpinned by the Constitution, in which the 'right to a healthy environment' and the need for environmental protection, is clearly stated. The need for environmental

education is further strengthened by the fact that the national school curriculum includes “the environment” as an integral focus in a number of learning areas. 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 focuses on 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 current learning material 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 involvement.

The EE programme currently is a major contributor towards transformation in the region with +90 % of participants originating from ethnic groups that have been previously denied access. Co-learning, knowledge and awareness have been enhanced through the construction of the Mapungubwe Interpretation Centre, with the number of leaners visiting the park and making use of this facility, increasing from 884 in 2012 / 2013 to 14,005 during 2017 / 2018. The centre showcases the storyline of the MCL and artefacts discovered**.** Regular updates within the Interpretation Centre are vital to ensure that returning groups remain interested to visit it again. The Children in the Wilderness Programme have brought small groups of learners to the park for multiple-day programmes. Community visitation has also been encouraged with the construction of a day-visitor site, specifically with rituals and ceremonies in mind. The construction of an archaeological workspace furthermore intends to promote knowledge exchange as it allows for researchers to conduct studies on site, thereby not only providing the space and access to artefacts for students and academics to enhance their knowledge, but also providing SANParks with valuable information to ensure best-practice.

A major disadvantage is the distance from major town centres, making extended EE programmes for larger groups (10+) impossible. Low-cost accommodation for research purposes is also lacking. The proposed plans to construct an overnight facility for learners and other interest groups will greatly facilitate knowledge-exchange possibilities. The proposed use of the Balerno house as accommodation for research teams will further enhance co-learning opportunities. This will provide for innovative learning, communication and mutually beneficial knowledge exchange and relationship building as well as informing stakeholders and constituencies of the emerging lessons, trends, and best practice in environmental awareness.

A detailed lower level plan outlining the rationale and operational approach supports this programme. This programme links with high-level objective 6 and objective 6.2 on page 42. To achieve the purpose of this programme, the actions listed in the table below will be implemented.

KNOWLEDGE, AWARENESS AND CO-LEARNING PROGRAMME					
High-level objective: To promote equitable access to and create value from a range of tangible and intangible benefits through the sustainable use of ecosystem services.					
Objective: To enhance co-learning, knowledge and awareness through implementing innovative education, facilitating relevant research and communicating effectively with a range of stakeholders.					
Sub-objective	**Actions**	**Responsibility**	**POE**	**Timeframe**	**Reference**
To implement programmes that facilitate meaningful environmental / cultural education amongst communities, stakeholder groups, schools, and contribute to youth development and environmental awareness amongst staff.	Compile a comprehensive plan for the park, covering applicable co-learning, knowledge and awareness levels.	SED	Documentation	Year 1	EE plan Stakeholder Engagement Plan, Communication Plan
	Implement plan as required.			Year 1, ongoing	
	Review plan.			Year 5, 10	
	Facilitate and / or participate in educator support and development initiatives with schools, universities, colleges and communities.			Year 1, ongoing	
	Implement youth development programmes such as Children in the Wilderness and eco-schools.			Year 1, ongoing	
	Implement campaigns to enhance environmental awareness amongst local communities and stakeholder groups.			Year 1, ongoing	Annual environ-mental calendar
	Implement programmes to enhance the environmental awareness amongst staff.			Year 1, ongoing	
To improve awareness and reputation of SANParks with visitors and the public in general.	Implement programmes for visitors and stakeholders as required, *e.g.* holiday programmes and activities for special interest groups.	SED	Documents	Year 1, ongoing	EE plan
	Plan, develop and implement a range of appropriate interpretive materials to enhance environmental awareness.		Interpretive materials available to the public	Ongoing	Annual plan of operations
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.		Document	Annually	

10.7.3 Employment and business opportunities programme

The purpose of this plan is to strive for equitable employment and business development by promoting fair access to a range of opportunities. This will be achieved through a significant, targeted and effective contribution to local economic development, economic empowerment and social development in communities and neighbouring areas adjacent to the park by partnering with local government to form part of the IDPs, participating in government programmes such as the EPWP to contribute to local skills development by supporting learnerships, implementing needs-related training programmes and by creating business opportunities.

The government promised socio-economic transformation and stated its commitment to eradicate poverty by creating opportunities where the poor become involved in productive activities. This applies especially to those residing in rural areas. The promotion of Broad Based Black Economic Empowerment in various sectors is part of the government vision for the upliftment of previously disadvantaged individuals. The focus will be on their integrating into viable sectors, which would potentially boost communities economically. Socio-economic empowerment is critical to meeting the government's 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 to understand mutually beneficial practises and to safeguard the sectors they are involved in.

This is a new programme within the SANParks Management Plan and SANParks is committed to ensure that a broad base of South Africans participate and get involved in biodiversity initiatives. All SANParks operations should also have a synergistic relationship with neighbouring or surrounding communities for the educational and socio-economic benefit of these communities, hence enabling the broader society to be connected to national parks. In line with the Annual Plan of Performance the park management commits to nation building, economic transformation and combatting the triple challenges of poverty, inequality and unemployment by aligning the SANParks socio-economic development strategy to government programmes such as the National Development Plan, Nine Point Plan for growing the economy, DEA Biodiversity Economy strategy *etc.* by creating economic opportunities and beneficiation through various mechanisms. The aforementioned strategy outlines SANParks' role in supporting the government mandate on radical socio-economic development which can be achieved by upholding corporate governance principles and working in unison with intergovernmental programs such EPWP, amongst others, while also contributing to local skills and enterprise development.

The management of protected areas has increasingly recognised the need to re-define its identity and usher in the new ways of managing protected areas. It has moved out of the 'island' mentality of management, with consideration of landscapes and seascapes as a whole, and the need to focus as much on the political, economic, and cultural aspects as on the crucial biological values. Protected areas have resources that can be used to unlock opportunities with a 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.

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 and neighbouring local communities, the park has made strides towards enabling previously disadvantaged individuals and small micro-medium enterprises (SMMEs) providing better access to park-related opportunities. Considering that Mapungubwe is a developing park with daily and seasonal business operational needs, several small SMMEs are encouraged to take advantage of business opportunities in the park. Park management will utilise small local businesses for catering, cultural group dancing and cultural instrument displays to name a few.

Empowering young people is a national priority. 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. The 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 presented by national parks.

The EPWP is a nationwide programme and covers all spheres of government and state-owned enterprises. It focuses on poverty alleviation and on labour intensive projects that create temporary jobs in the short term while simultaneously achieving biodiversity objectives. This programme provides an important avenue for labour absorption and income transfer to poor households in the short to medium-term. It specifically targets the creation of employment for

poor, unemployed people who are either unskilled or poorly skilled. SANParks has implemented EPWP projects in the park since 2003. Four programmes namely Environmental Monitors, Working for Ecosystems, Working for Water and Working for Wetlands are currently active in the park. Since inception until 2018 / 19, 1,507 temporary jobs were created and R 24,869,241 has been spent on operations and the management of these programmes.

As a developing country, South Africa, exhibits typical associated challenges and there are for example, 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. Most national parks are located in rural areas that experience these problems. 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 to the sustainable development goals on social development, through collaboration with local municipalities, provincial and national government departments by contributing towards the provision of much needed facilities and services in communities bordering national parks. A dedicated fund has been established by SANParks 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 (2019), the fund is used to provide facilities which support education.

This programme links with high-level objective 6 and objective 6.3 on page 42.

EMPLOYMENT AND BUSINESS OPPORTUNITIES PROGRAMME					
High-level objective: To promote equitable access to and create value from a range of tangible and intangible benefits through the sustainable use of ecosystem services.					
Objective: To strive for equitable employment and business development by promoting fair access to a range of opportunities.					
Sub-objective	**Actions**	**Responsibility**	**Indicators**	**Timeframe**	**Reference**
To facilitate job creation in local communities through the implementation of the EPWP and other infrastructure development initiatives.	Develop criteria and guidelines to inform feasible EPWP programmes and recipients and review regularly.	SED, HSM, CM, BSP, SS	Guidelines	Year 1, 3, 6, 9	SED strategy, Infrastructure Development Strategy and EPWP Strategy
	Develop and implement work plans.		Work plan	Ongoing	
	Identify and foster strategic partnerships.	SED, CM, SS	Documents	Year 1, as required	
	Report on total number of job and SMME opportunities created, including youth, women and disabled.	SED, HSM, CM, BSP, SS	Reports	Ongoing	
To develop and implement a local enterprise support programme.	Develop a SMME framework, including criteria and guidelines to inform the local enterprise development programme and review regularly.	SED, HSM, CM, SS	Documents	Year 1, 3, 6, 9	SED Strategy
	Conduct baseline assessment through relevant research to determine the status and feasibility of SMMEs in the broader multi-stakeholder environment.		Report	Year 2	SMME Development Policy and Strategy
	Facilitate agreements / contracts between the park and community-based enterprises for supply of goods and services.	SED, HSM, PM	Agreements	Year 2, ongoing	

EMPLOYMENT AND BUSINESS OPPORTUNITIES PROGRAMME					
High-level objective: To promote equitable access to and create value from a range of tangible and intangible benefits through the sustainable use of ecosystem services.					
Objective: To strive for equitable employment and business development by promoting fair access to a range of opportunities.					
Sub-objective	**Actions**	**Responsibility**	**Indicators**	**Timeframe**	**Reference**
To develop and implement social legacy programmes that will address the needs of multi stakeholder groups.	Develop criteria and guidelines to inform the approach and implementation of the social legacy programme within the broader multi-stakeholder environment and review regularly.	SED, HSM, P&C, PM	Document	Year 1, 3, 6, 9	SED strategy, Department of Education Building Specification Strategy, Infrastructure Development Strategy
	Identify, develop and implement work plans for approved projects.		Document	As required	
	Identify, develop and formalise collaborative partnerships to influence education, awareness, mentorship, training and career pathing opportunities, and develop relevant collaborative programmes.	SED, SM, CM, SS	Documents	As required	
To leverage strategic business partnerships and participate in economic clusters and planning processes.	Determine the value and contribution of the protected area to the local and regional economy, and leverage value added chains.	SED, HSM, CM	Report	Year 3, 6, 9	
	Participate in relevant local, provincial, national and regional socio-economic cluster and portfolio committees.		Documents	Ongoing	

10.8 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.

10.8.1 Environmental management programme

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

Park management is required to practice sound environmental management in accordance with required standards of environmental best practice and in compliance with legislation. Several management tools are 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 as stipulated by the NEMA:

EIA Regulations. Further to the provisions of NEMA, park management 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 precautionary principle states that if an action might cause harm to the environment, in the absence of a scientific consensus that harm would not ensue, the burden of proof falls on those who would advocate taking the action.

Further to the provisions of NEMA, park management will develop standards of best practice to guide all operational activities that may have an impact on the environment. The park will therefore be guided by all legislative requirements in ensuring best practise towards environmental management and subscribes towards minimum impact on the environment.

This programme links with high-level objective 7 and objective 7.1 on page 42. To achieve the purpose of this programme, the actions listed in the table below will be implemented.

ENVIRONMENTAL MANAGEMENT PROGRAMME					
High-level objective: To ensure 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 the environmental and climate change impact of its operations and activities.	Develop and implement a set of Standard Operating Procedures to manage all significant environmental impacts.	HODs	Documents	Year 2, ongoing	Ecosystem Based Adaptation Strategy and Guidelines, Draft National Adaptation Stratrgey, Draft Climate Change Bill, National Climate Change Response Policy
	Review the Standard Operating Procedures.		Documents	Year 3, 6 and 9	
	Develop and implement a reduction programme related to single use plastics in all commercial operations.		Documents	Year 2, ongoing	
	Adopting sustainable procurement principles by purchasing eco-friendly, biodegradable, energy efficient products.	HODs	Documents	Year 2, ongoing	
	Investigate how to reduce energy usage through the usage of green technology.	TS	Document	Ongoing	
	Create awareness amongst staff and overnight visitors regarding energy usage and energy saving measures.	SED, HODs			
To ensure monitoring and evaluation of the implementation of the programme and its effectiveness.	Monitor, evaluate and review the programme, and inform relevant risk responses and adaptive management.	CM, RS, TS	Documents	Annual	

10.8.2 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, (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 the thorough understanding of the environment in which the organisation operates and the strategic corporate objectives it intends to deliver upon.

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 within the organisation are exposed to the various types of risks, the focus of this framework is on the optimisation of the balance between potential risks and the potential rewards that may emanate from both proactive 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 risk is addressed and / or monitored. At park level, the general managers are responsible for risk management. As 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 plans 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 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. The park may also, from time to time, experience extreme environmental / weather conditions (*i.e.* droughts, floods, runaway fires) as part of the normal cycle. An appropriate response to each of these events will be addressed in the disaster management plan.

The heads of departments need to ensure that emerging issues of risk, that can jeopardise achievement of the park's (and SANPark's 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 staff 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 7 and objective 7.2 on page 42. To achieve the purpose of this programme, the actions listed in the table below will be implemented.

RISK MANAGEMENT PROGRAMME					
High-level objective: To ensure 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.	Review and revise the Risk Response Plan on an annual basis.	HODs, PM	Document	Annually	CRMF
	Implement the risk response initiatives, review and update this as required.	HODs, PM	Document	As required	CRMF

10.8.3 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 PFMA, 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 the 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 ensures 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 Northern Region Finance Division reports directly to the General Manager Parks Finance who further reports to the Office of the Chief Financial Officer while providing support to the Northern Region Parks consisting of Mapungubwe National Park and WHS, Marakele National Park and Golden Gate Highlands National Park.

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

- Budgeting management;
- Financial accounting;
- Financial administration;
- Asset management (including the GRAP 103 accounting standard); 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 and the capital expenditure budgets. Furthermore, quarterly reporting on the actual budget performance against allocated budget for the period is provided. It is 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 and evaluated before the budget proposal is submitted.

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 moveable asset (non-living) base with a book value of R 107.6 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 Preferential Procurement Policy Framework.

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 Environmental Protection and Infrastructure Programmes for natural resource management and infrastructure development programmes; donor and Biodiversity offset programmes (SHR, PPF, MCMining) in support of safety and security-, developmental- and operational 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 mostly short-term except for the BOA which is secured for 25 years. This

might pose a major financial risk to the park, should alternative funding sources not be secured. This requires that innovative mechanisms for financial sustainability be investigated to ensure that the core functions are maintained, including the increasing burden as a 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 towards delivering 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 does not consider any additional activities;
- The increase in the poaching activities (which may be related to cross-border socio-economic and political instability) impact on the operational costs to the park; and
- The cost for the in-sourced fleet for the park.

This programme links with high-level objective 7 and objective 7.3 on page 42. To achieve the purpose of this programme, the actions listed in the table below will be implemented.

FINANCIAL MANAGEMENT AND ADMINISTRATION PROGRAMME					
High-level objective: To ensure effective and efficient management and administrative support services through good corporate governance, enabling the park to achieve its objectives.					
Objective: To ensure sound financial management and administration 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.	PM, HODs, BSP: Cluster Manager, Regional Finance Manager	Statements with <1% variance	Annually	
	Ensure sound financial management of special projects – BSP.		Budget targets achieved	Quarterly / annually	
	Participate in the independent audit of financial records.		Audit report	As required	
	Address audit findings.		Audit findings report	As required	
To grow revenue (Including alternative sources of revenue).	Identify possible external funding to supplement current income streams.	PM, HODs	Funding proposals	Annually	
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.	Regional Finance Manager, PM, HODs	Annual budgets	Annually	
	Provide quarterly financial reports timely.		Reports	Quarterly	
	Review the insurance schedule and submit to corporate.		Documents	Annually	
	Submit insurance claims as and when required.	Regional Finance Manager, PM, HODs	Claims	As required	

FINANCIAL MANAGEMENT AND ADMINISTRATION 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 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 proper asset and SCM.	Verify and manage assets registers.	Regional Finance Manager, PM, HODs, SCM Practitioner	Asset register	Bi-annually	
	Assist with the procurement of goods and services.		Documentation	As required	
	Provide input when contracts are sourced.		Documentation	As required	
	Ensure sound management of vehicle fleet (*i.e.* logbooks, services, licencing, fuel management).		Logbooks, service records, fuel card statements	Monthly	

10.8.4 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 park management 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 Officer must report on new appointments, resignations, attendance registers, overtime claims, leave *etc.* A salary instruction is prepared from this for processing and preparation of monthly salaries. Park management 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 (2019) has 92 permanent positions and 4 employees that are on fixed-term contracts. In addition there are also 3 internships, conservation students and temporary workers.

This programme links with high-level objective 7 and objective 7.4 on page 43. 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 ensure effective and efficient management and administrative support services through good corporate governance, enabling the park to achieve its objectives.					
Objective: To ensure sufficient and effective staff capacity to achieve management objectives by adhering to legislation, corporate human resource policies and guidelines.					
Sub-objectives	**Actions**	**Responsibility**	**POE**	**Timeframe**	**Reference**
To ensure the park attracts and retains the most suitable human capital.	Preparation and processing of monthly salaries and employee benefits and leave management.	HCM	Salary instructions	Monthly	
	Ensure implementation of the prescribed disciplinary code and procedures.		Documentation	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	As required	
	Ensure all post are evaluated and graded.		Job Descriptions	As required	
	Develop human capital in the fields of tourism, conservation and administration through the internship programme.		Contracts	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, PM, HODs	Document,	Annually	
	Implement ABET Programme for internal employees.		Training register	As required	
	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	As required	
	Conduct workshops and Imbizos to address HCM matters.		Minutes	As required	SANParks Policies
	Participate in the internal and independent audit of human capital documentation.		Report	As required	
	Address audit findings.		Reports	As required	
To implement workplace wellness programmes.	Participate in wellness awareness workshops.	HCM, HODs	Documents	Annually	Wellness Policy
	Provide facilities within the park to enable employee's access to the wellness programme.		Facility	As required	
	Refer employees that require assistance through the employee wellness programme.		Number of referrals	As required	

HUMAN CAPITAL MANAGEMENT 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 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.	Participate in occupational health and safety (OHS) awareness and health related workshops.	HCM, HODs	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	As required	
	Provide access to clinics, school, and emergency medical services.		Reports, registers, documents	As required	
To manage labour relations matters and provide sound employee relations.	Handling of grievances, disputes, disciplinary matters and Commission for Conciliation, Mediation and Arbitration cases.	HCM	Reports	As required	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.	Implement and manage Management and Shop Stewards committees.	HCM, PM, HODs	Minutes of meetings	Monthly	Organisational Rights Agreements
	Participate in labour relations related training interventions.		Registers	Annually	
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	Documents	Annually	

10.8.5 Information and records management programme

The purpose of this programme is to preserve the institutional memory of SANParks, 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 aims to manage knowledge generated so that it benefits the organisation.

Information is not only essential to formulate effective long-term management objectives, plans, programmes and systems, but also to educate and inform residents, associations, user groups, local authorities, provincial and national decision- and policy-makers, international organisations and aid / donor agencies. SANParks however, shall at all times 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 7 and objective 7.5 on page 43. 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 ensure 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.	PM , HODs	File plan	Year 2	National Archives and Records Services Act
	Implement the records management and file plan.		Records and documents filed	Year 3, ongoing	Corporate file plan and policy
	Ensure appropriate access to park files and records in accordance to corporate records management policy and guidelines.		Access procedures	Ongoing	Corporate file plan, Records Management Policy
	Provide access to interpretation centre.		Statistics	Ongoing	

10.8.6 Infrastructure programme

The purpose of this programme is to direct 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 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 entails facilities in support of conservation (such as management roads and tracks, office facilities, staff housing, fences, bulk services, 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.

Management policies and procedures ensure that infrastructure is maintained, renovated, upgraded and replaced at the required intervals and according to specific design norms and standards, including national construction regulations, "green building" and "touch the earth lightly" principles, as well as measures to save water and electricity and to minimise waste. The 10-year maintenance plan addresses issues related to securing funding for upgrading, renovation / maintenance and replacement. Technical services continue to periodically review and assess performance to align activities and allocate resources. The total estimated replacement value of the park's infrastructure is R 177,199,420. There is a major shortfall in addressing the maintenance backlog, annual maintenance, upgrading and new capital development. The required infrastructure maintenance budget for 2019 / 2020 is R 2,641,878 however, only R 1,383,311 has been allocated.

Detailed lower level plans outlining the rationale and technical detail to this programme. This programme links with high-level objective 7 and objective 7.6 on page 43. To achieve the purpose of this programme, the actions listed in the table below will be implemented.

INFRASTRUCTURE PROGRAMME					
High-level objective: To ensure 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 the scope of compliance projects.	TS	Documents	Ongoing	IDP programme, CAPEX and OPEX
	Ensure all building projects are designed according to the National Building Regulations and Building Standards Act (Act No. 103 of 1977).		Documents	Annually	Technical services approval procedure
	Ensure all building infrastructure is built with measures to prevent bat and mice infestation.		Documents	As required	
To ensure sound contract and project management to enhance good governance	Appoint suitable staff, contractors and consultants who will implement projects in accordance with approved Contracts Management SOP.		Documents	As required	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 infrastructure works.		Guidelines	Annually	Sustainable Design Guiding Principles document
	Investigate 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 storm water drainage structures maintenance plan.	Reprioritise the Road Maintenance Plan at the beginning of every financial year according to the budget allocation.	TS	Documents	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	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 require safety inspections or evaluation as per regulation.		Reports	Annually	Dam Safety Regulation Notice No: R 139
	Identify sections of the fence to be upgraded or removed.	PM	Reports	Annually	MoU between DPW, DEA, SANParks
	Upgrade, remove and maintain the fences.	PM, BSP	Documents	Ongoing	
Objective: To plan and design all new, upgrading and replacement projects and programmes by implementing all relevant legislation and approved design standards and principles.					
To ensure the implementation of boundary and internal fence maintenance plan, removal and or upgrading.	Review and implement broader infrastructure development as required for operational and recreation activities.	PM	Documents	As per plan	

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 that electrical and mechanical equipment and two-way radio communication equipment are serviced and maintained to acceptable standards.	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 and service intervals for all equipment.		Schedule	Annually	
	Continuously improve skills, and knowledge of maintenance teams.		Register	Annually	
	Ensure that legal inspections / scheduled services are conducted accordingly.		Report	As required	
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 developing solar power infrastructure.		Reports	Quarterly	
To ensure that all vehicles in the park vehicle fleet comply with applicable legislation and comply with prescribed service intervals and are replaced accordingly.	Service all vehicles according to service / maintenance plan at prescribed intervals.	TS	Records	Quarterly	
	Compile necessary documentation to keep record of *i.e.* km utilisation, inspection records and annual vehicle replacement schedule budget.		Reports	Annually	Approved Replacement Cycle
To ensure that all vehicle accidents and incidents are investigated and damage repaired.	Ensure all accidents / incidents are reported, evaluated and repaired as per prescribed documentation.	TS	Reports	Monthly	Fleet Management Procedure
To ensure that all water purification plant 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 usage group.	TS	Reports	Monthly, annually	
	Monitor surface and underground water abstractions.		Reports	Monthly, 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	Annually	SANS 241
	Provide emergency water where / when required.		Report	As required	

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 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 required.	TS	Inventory	Year 1	
	Implement the annual work plan.		Documents	Annually	
To ensure that all sewerage plant infrastructure in the park is maintained and upgraded to a desired state.	Compile an inventory of all sewerage infrastructures in the park and determine the extent of maintenance required.	TS	Inventory	Year 1	
	Implement the annual work plan.		Reports	Annually	
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	

10.8.7 Safety and security programme

The purpose of this programme is to provide a safe and secure environment for 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 contractors, all visitors visiting national parks, infrastructure and facilities including entrance gates and the area within the park.

Crime generally constitutes significant risk, and as such poses a major threat to an organisation such as SANParks to deliver on its mandate. This includes the successful protection of all assets (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 mandate of SANParks.

In an effort to ensure a safe environment and experience for visitors, SANParks has to execute the safety and security programme with due consideration of the perceived intrusive nature of mitigating interventions to address the risks associated with a safety and security programme. In this regard, the South African National Defence Force (SANDF) may be observed in the park whilst performing regular border patrols occasionally as part of their normal operating procedures to ensure international area integrity.

SANParks implements and enforces the requirements contained in legislation and organisational policies. The primary legislation and organisational policies include:

- NEMA;
- NEM: PAA and Regulations;
- Internal park rules;
- Safety and Security Strategy and Procedures;
- Criminal Procedures Act No. 51 of 1977;
- Control of Access to Public Premises and Vehicles Act No. 53 of 1985;
- Firearms Control Act No. 60 of 2000; and
- Rhino protection plan.

The Safety and Security Plan comprehensively addresses both the strategic and operational aspects of visitor and staff safety, as well as environmental / cultural heritage asset protection and area integrity. An 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 capturing, record keeping, monitoring, information and intelligence.

Park management has a good working relationship with the SAPS, SANDF and other government agencies. In co-operation with SANParks, joint operations relating to safety and security interventions in the park are planned and implemented. Cross border initiatives with Zimbabwe and Botswana are implemented on a continuous basis, contributing toward overall area integrity within the GMTFCA.

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 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. Poaching activity involving the use of dogs, snares and poisons, which target indiscriminately, also poses a challenge and risk to wildlife. Proactive patrolling and operational plans are implemented to protect the biodiversity assets. Certain plant species sought after for their medicinal qualities could also be at risk. Unregulated wood collection can further contribute towards ecosystem degradation.

The threat and associated risks relating to cross-border international criminal syndicates making use of the park as a smuggling route for human trafficking, vehicle and drug smuggling, 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.

The following challenges have been identified:

- **Criminal activities**. The proximity of the international borders with Zimbabwe and Botswana poses a threat to the park. Illegal activities such as border crossing, poaching, theft and trafficking through the park occur on a weekly basis. In addition, crime syndicates might target members of SANParks personnel with bribery and corruption to achieve their criminal objectives. The involvement of the SAPS and SANDF in border security is vital. Rhino poaching and farm attacks have also occurred in the vicinity;
- **Localised and surrounding farming activities**. The fact that the operational area of the park is not consolidated, interspersed by large scale commercial farming activities.
- **Tourism threats**. Tourist complaints of not feeling safe, shots heard at night (local farmers / hunting / poaching), large numbers of alleged foreigners observed visiting Treetop, Confluence, Leokwe or Wilderness Camp, pose a serious challenge to the park;
- **The international boundary fence**. The FMD and old military fences are not being maintained by the DAFF and the Department of Public Works.

A detailed lower level plan supports this programme. This programme links with high-level objective 7 and objective 7.7 on page 43. To achieve the purpose of this programme, the actions listed in the table below will be implemented.

SAFETY AND SECURITY PROGRAMME					
High-level objective: To 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 and infrastructure, whilst improving capacity.	Implement the SANParks Safety and Security Strategy.	RS	Report	Annually	Safety and Security Strategy
	Conduct regular proactive and reactive interventions *i.e.* patrols and surveillance operations to ensure that area integrity is maintained.	RS	Document	Ongoing	
	Ensure that all SANParks personnel involved with law enforcement operations receive the appropriate advanced / specialised training in operational tactics, investigations & crime scene management *i.e.* tracking, poison crime scenes & advanced technology management.	RS	Training records, reports	Ongoing	
	Align the safety and security plan with existing park species level implementation strategies and plans *e.g.* Rhino Management Strategy.	RS	Documentation	Quarterly	Relevant Strategies & Plans
	Provide law enforcement officers with an all-inclusive legal support services.	RS, legal services	Reports	Ongoing	
	Provide a specialist K9 support and reaction capability to safety & security operations.	RS	Documentation	Ongoing	K9 Strategy and Procedures
	Ensure appointment and appropriate designation of Environmental Management Inspectors status for law enforcement officers.	RS	Documentation	As required	EMI status reports
	Ensure boundary and facility fence line integrity.	RS	Documentation	As required	Infrastructure LLP
	Ensure boundary and facility fence-line integrity and maintenance.	RS	Documentation	As required	Infrastructure LLP
	Report environmental concerns in the adjacent areas.	RS	Reports	Monthly	
	Provide safekeeping for certain animal products.	RS	Documentation	As required	
To provide a safe and secure environment with due regard for the safety and security of people.	Implement an effective permit system and control over private visitors to regulate after hours movements.	RS	Documentation	Ongoing	
	Ensure regular visible patrolling.	RS	Reports	Ongoing	
To develop a proactive relationship with safety and security authorities and alliance partners to assure quick and deliberate safety and security response actions.	Improve overall park safety and security through regular interactions with relevant cross border stakeholders (National & International).	RS	Documentation	Ongoing	
	Engage in joint cross border operations according to agreements.	RS	Reports	Ongoing	Joint Operations Plan

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 causing animal and damage causing animal investigations.	RS	Documentation	As required	DCA policy
	Participate in relevant operational forums with the Limpopo Economic Development, Environment and Tourism.	RS	Minutes of meetings	Ongoing	
To ensure monitoring and evaluation of programme implementation and effectiveness.	Monitor implementation of programme.	PM, RS	Reports	Ongoing	
	Ensure Information Intellectual Property Rights are maintained according to SANParks Policies and Procedures.	PM, RS	Documents	Ongoing	IT Policies and procedures

10.8.8 Safety, health, environment and quality programme

The purpose of the current 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 (Act No. 85 of 1993), to ensure that workplace hazards are managed and controlled to guarantee a safe working environment at all times, including contractor activities on site. The OHS programme is guided by the SANParks Safety, Health, Environment and Quality (SHEQ) 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' commitment to the health, safety and the well-being of all its employees as well as the environment is integral elements of SANParks' business model. It aims to continually improve its performance with the efficient use of natural resources with no harm to people and the environment, and in this regard, SHE risks are identified, assessed and managed to mitigate the impact on employees, visitors and the environment with suitable control measures. SANParks has adopted the internationally recognised and best practice 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:

- Identification of hazards and risks;
- Identification of legal and other requirements;
- Determination and development of objectives and programmes;
- Operational control;
- Emergency preparedness and response; and
- Internal audit.

The ISO 45001 will be phased in with the first phase (2019/20 – 2023/24) focussing on the first three bullets listed above. Phase two (2024/25 – 2028/29), will focus on the last three bullets listed above.

This programme links with high-level objective 7 and objective 7.8 on page 43. 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 ensure 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.	Technical Manager, OHS reps	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 4, ongoing	
	Develop and implement emergency preparedness and response plans.		Documents	Year 5, ongoing	
	Conduct regular self-audits.		Reports	annually	
	Support internal audits.			As required	
	Support external audits.			As required	

10.8.9 Communication programme

The purpose of this programme is to build and maintain good relationships and a positive park image. It aims to provide key stakeholders, descendent communities, the general public and staff with relevant and accurate information pertaining to the park's operations through media relations and event initiatives. This will be achieved through:

- **External communications**
  Media relations will 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, its cultural heritage values and emerging conservation issues as well as ensuring that conservation debates receive prominent 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 and therefore the internal communications section exist to ensure that staff members, management and businesses operating within the park, are always well informed about the business activities, processes and new developments in the park.

The programme is intended to ensure transparency and ongoing stakeholder relationship building. A future focus will be to build more capacity to engage in a more meaningful basis with social media.

The communication programme closely links with the stakeholder structures programme and is implemented in close collaboration with all departments and their associated programmes. This programme links with high-level objective 7 and objective 7.9 on page 43. To achieve the purpose of this programme, the actions listed in the table below will be implemented.

COMMUNICATION 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 build, maintain and constantly improve relations between the park and all its relevant stakeholders, both internally and externally through various mediums.					
Sub-objective	**Actions**	**Responsibility**	**POE**	**Timeframe**	**Reference**
To strengthen collaborative multi-stakeholder partnership.	Develop a communication plan based on the Stakeholder Engagement Plan.	RCS, all departments	Document	Year 1	Stakeholder engagement LLP
	Disseminate a range of media products based on the respective internal and external stakeholder groups and programmes.		Media products	Annually	Communications Plan, Stakeholder engagement LLP
	Identify interested and affected stakeholders and develop a joint communication strategy and programmes on themes of joint interest.		Document	Year 1	
	Implement the Joint Communication Strategy.		Media products	Annually	
To inform the public through mass media about major developments or incidents that take place in the park.	Issue relevant media releases and alerts and ensure timeous response to media queries.	RCS, PM	Media statements and alerts issued	As required	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		
	Engage on social media platforms.		Online interactions		
	Administer and maintain photography and filming permits.		Number of permits issued		
	Ensure up-to-date online content on the SANParks platforms.	RCS	Number of updates posted	As required	
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.	RCS, HCM	Document	Annually	Communications Plan
	Timeously issue internal bulletins and information broadcast.	RCS	Number of internal bulletins and information broadcasts issued	As required	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	Annually	
	Encourage line management to share and clarify fresh information.		Reports		
	Respond timely and accurately to queries both internally and externally.		Reports		

COMMUNICATION 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 build, maintain and constantly improve relations between the park and all its relevant stakeholders, both internally and externally through various mediums.					
Sub-objective	**Actions**	**Responsibility**	**POE**	**Timeframe**	**Reference**
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.	RCS	Number of events executed	Annually	SANParks Strategic Plan and APP Communications and Marketing Annual Plan
To monitor and evaluate the impact of the programme and adapt as required.	Monitor and evaluate the impact of the Communication plan and the support to various programmes	RCS	Report	Annually	Communications Plan
	Adapt / review the Communication Plan based on the respective internal and external programmes and stakeholder groups, as informed by monitoring and evaluation processes.		Document review	Year 4, 7, 10	Stakeholder engagement LLP

10.8.10 Disaster management programme

The purpose of this programme is to identify potential disasters disaster risks, to develop a disaster management plan that provides risk mitigation plans, risk response plans and risk recovery plans.

The programme provides for an integrated and co-ordinated disaster management approach that focuses on preventing and reducing the risk of disasters, mitigating the severity of disasters, emergency preparedness, rapid and effective response to disasters and post-disaster recovery as required by the Disaster Management Act 2002 (Act No. 57 of 2002). The programme will also address the training of staff and provide emergency procedures to manage disaster events *i.e.* droughts, flooding, infrastructure fires.

This programme links with high-level objective 7 and objective 7.10 on page 43. To achieve the purpose of this programme, the actions listed in the table below will be implemented.

DISASTER MANAGEMENT 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 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.	Develop a Disaster Management Plan.	PM	Documents	Year 1	
	Hold annual disaster meetings, drills, planning and liaison with provincial structures.	PM, HODs	Minutes of meetings	Monthly, quarterly, annually	

10.8.11 Climate change programme

The purpose of this programme is to document extreme weather events and changes in average climatic conditions and to understand and recognize climate change impacts in the park and its cascading consequences on biodiversity and park operations. Park management options under predicted climate change scenarios need to be assessed to ensure that effective adaptation and mitigation strategies are developed. Key to the success of this programme will be the development and implementation of SANParks' Adaptation and Mitigation Implementation Plan which is aligned to international and national initiatives.

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 the result of increased earth surface temperatures, often referred to as Global Warming, which is accelerated through 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, the 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 park management acknowledges 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 & Herbst (2017), it is predicted that by 2050, the park could face temperature increases of between 1.3 °C (best case scenario) and 2.7 °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 extreme events, could have a major negative impact on tourist experience, visitor numbers, tourism products and infrastructure, since the tourism industry is dependent on the environmental state of a region (Uyarra *et al*., 2005). This is also important to note that climatic changes are 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 CO_2 gases in the atmosphere and nutrient deposits may accelerate bush encroachment (proliferation of bushes and shrubs in place of grasses) in the park and alter vegetation dynamics. These impacts on, among others, vegetation dynamics could have major cascading effects on herbivores, fire management, hydrological processes, game viewing, predation, livelihoods in surrounding areas and neighbouring countries that could lead to increases in environmental crime, human traffic (unauthorised) and illegal harvesting all as a response to changes in water and resource availability and agricultural viability of surrounding areas in response to climate change. Besides the impact on biodiversity and tourism, there are also risks associated with the organisational reputation of the park as a conservation body if climate change mitigation and adaptation are not perceived to be targeted as far as possible.

This programme links with high-level objective 7 and objective 7.11 on page 43. To achieve the purpose of this programme, the actions listed in the table below will be implemented.

CLIMATE CHANGE PROGRAMME					
High-level objective: To ensure effective and efficient management and administrative support services through good corporate governance, enabling the park to achieve its objectives.					
Objective: To enable responsible action, adaptation and mitigation of climate change impacts on SANParks' ability to achieve its objectives by better understanding climate change and its effects in and around the park.					
Sub-objective	**Actions**	**Responsibility**	**POE**	**Timeframe**	**Reference**
To monitor and assess status of changing climate.	List available weather stations and document data availability.	CSD, CM	Database update	Year 1	

CLIMATE CHANGE 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 enable responsible action, adaptation and mitigation of climate change impacts on SANParks' ability to achieve its objectives by better understanding climate change and its effects in and around the park.					
Sub-objective	**Actions**	**Responsibility**	**POE**	**Timeframe**	**Reference**
To monitor and understand how the variation in climate and weather extremes impact on biodiversity, and other SANParks' mandates.	Documenting impacts of climate change and / or extreme weather events.	CM, TS, CSD, external researchers	Reports, research publications	As required	South African National Climate Change Response White Paper (2011)
To develop and implement an Adaptation Response Plan.	Develop and implement an Adaption Response Plan.	CM, CSD, TS, SED, HSM	Documentation	Year 3, ongoing	Ecosystem Based Adaptation Strategy and Guidelines, Draft National Adaptation Stratrgey, Draft Climate Change Bill, National Climate Change Response Policy
To implement measures to reduce carbon footprint over time.	Facilitate and encourage appropriate lifestyle choices of both staff and tourists in order to manage behaviour (*e.g.* waste management, recycling, being water-wise) and reduce carbon footprint.	CM, CSD, TS, SED, HSM	Reduced water and electricity use; Increased recycling of waste	Annually	Infrastructure Development programme: Biogas Plant; Social Economic Development programme; Eco-tourism,
To ensure monitoring and evaluation of programme implementation and effectiveness.	Monitor implementation of programme.	PM, CM	Reports	Ongoing	

10.8.12 Outcomes programme

The purpose of this programme is to evaluate outcomes of management interventions related to protected area management.

Protected areas are under increasing threat from a range of external and internal pressures. Monitoring is an essential component of measuring the outcomes of management interventions. Various tools and processes have been adopted to track progress.

The Management Effectiveness and Tracking Tool (METT) provides an over-arching framework for assessing the management effectiveness of protected areas world-wide. The assessment provides guidance for protected area managers and tracks progress towards the effective management of protected areas. Assessment is conducted biennially to measure strategic achievements. An agreement was reached with the DEA regarding the assessment intervals. Parks that score below 67 % will perform annual assessments while those that score above 67 % will perform biennial assessments.

The State of Biodiversity (SoB) assessment is aimed at assessing the effectiveness of SANParks' management of its biodiversity. It will form a component of the organisation's assessment tool aimed at measuring SANParks management effectiveness. The information gained through this assessment can also be used in the biennial METT assessment. Given the fact that limited changes occur from one year to the next, the assessment will be repeated every five years.

The State of Area Integrity Management (SoAIM) assessment, evaluates the operational ability of a park to perform its required function effectively and efficiently with strong focus on safety, security and biodiversity issues related to law enforcement and compliance. This assessment ensures that people, systems, processes, and resources are in place and in use to ensure integrity to achieve the desired ecological and security status of a park.

All the programmes in the management plan are expected to be implemented to achieve the park's desired state. It is therefore vital that park management track progress towards achieving these outcomes. SANParks has designed a Integrated Management Plan implementation assessment tool, adopted from the METT scoring model. The total score of 67 % and above is used as a guideline to determine sound management. Lessons learnt should be fed back into the adaptive management planning cycle (see Section 10.7). These evaluation criteria are also complemented by engagements at science-management forums where progress on implementation of biodiversity programmes is continuously assessed and adaptive management is applied to achieve the expected outcomes.

This programme links with high-level objective 7 and objective 7.12 on page 43. To achieve the purpose of this programme, the actions listed in the table below will be implemented.

OUTCOMES 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 evaluate outcomes of management interventions related to protected area management.				
Actions	**Responsibility**	**POE**	**Timeframe**	**Reference**
Participate in the METT assessment.	RS, PM, SS	Report	Year 1, 3, 5, 7, 9	
Participate in the SoB assessment.	RS, PM, SS	Report	Year 4, 9	
Assess the implementation of the Integrated Management Plan.	HODs, PM	Tool	Annually	
Participate in the SoAIM assessment.	RS, PM	Report	Annually	

10.9 Evaluation and learning

10.9.1 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 14).

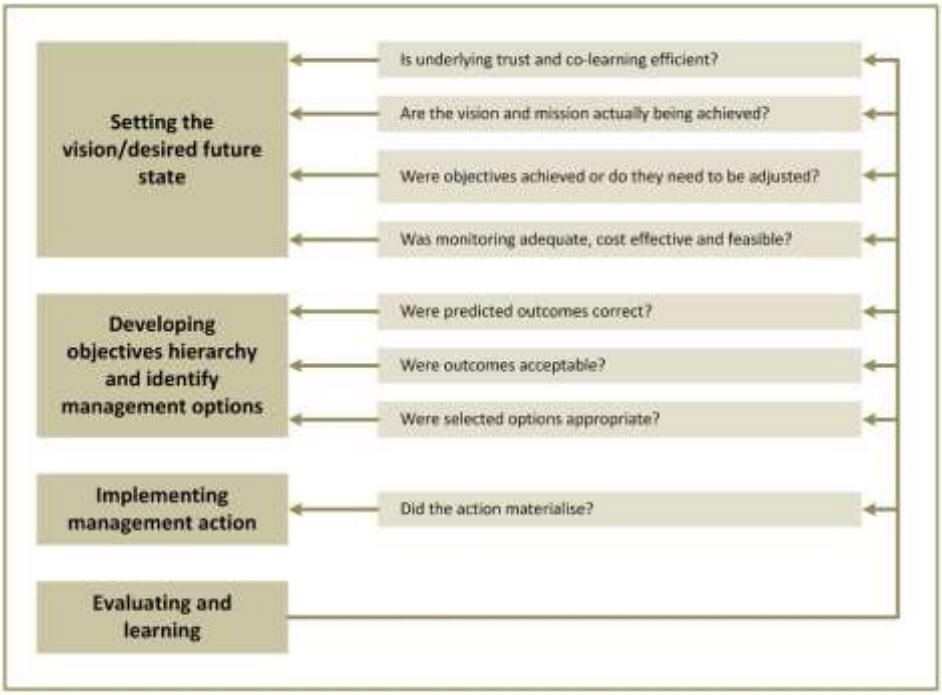

Figure 14. Feedback questions essential for adaptive learning (from Kingsford and Biggs, 2012).

10.9.2 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 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 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.

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 to the Public Finance Management Act as well as SANParks' financial policy and procedures.

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

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

11.2 Income

SANParks manages a number of national parks as part of the national park system, currently 21 in total. Not all 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 2019 / 2020 is budgeted at -R 13,561,447 increasing to an estimated -R 17,121,014 in 2023 / 2024. A summary is presented in Table 16.

Table 16. A summary of the total estimated income budgeted for the Integrated Management Plan over the next five years.

	2019 / 2020	2020 / 2021	2021 / 2022	2022 / 2023	2023 / 2024
Total income	-R 13,561,447	-R 14,375,134	-R 15,237,642	-R 16,151,900	-R 17,121,014

11.3 Expenditure

11.3.1 Once-off costs

In addition to the above there is a further once-off cost estimated at R 230,353,000 over the period 2019 / 2020 – 2023 / 2024 as can be seen in Table 17 below.

Table 17. The estimated once-off cost of the various programmes.

Programme	Estimated budget
Cultural heritage (upgrade exhibitions and mobile exhibition)	R 2,200,000
Fresh water programme (flow meters)	R 130,000
Infrastructure (new infrastructure and equipment)	R 142,403,000
Knowledge, awareness and communication (interpretative material)	R 150,000
Park expansion	R 85,000,000
Responsible tourism (interpretations boards and brochures)	R 120,000
Safety and security (new radio communication system)	R 350,000
Total	**R 230,353,000**

11.3.2 Recurring costs

The annual directly allocated cost (including staff salaries, travel, supplies and tools) is estimated at R 30,439,099 for 2019 / 2020. These ongoing costs are split according to the programmes listed in Table 18 below.

Table 18. The estimated annual operational costs for the park for 2019 / 2020.

Programme	Amount	Percentage of total
Restoration	R 7,564,910	24.85%
Responsible tourism	R 6,700,955	22.01%
Safety and security	R 6,181,294	20.31%
Infrastructure	R 3,895,514	12.80%
Cultural heritage	R 1,093,903	3.59%
Species of special concern	R 927,894	3.05%
Herbivory	R 561,031	1.84%
Knowledge, awareness and co-learning	R 514,155	1.69%
Financial management and administration	R 352,727	1.16%
Stakeholder structures	R 304,482	1.00%
Human capital management	R 286,480	0.94%
Human wildlife conflict	R 244,379	0.80%
Predation	R 231,236	0.76%
Fresh water ecosystems	R 210,598	0.69%
GMTFCA and Vhembe biosphere reserve	R 176,121	0.58%
Outcomes	R 148,140	0.49%
Employment and business opportunities	R 143,446	0.47%
Invasive alien species	R 140,059	0.46%
Resource use	R 118,377	0.39%
Disaster management	R 115,173	0.38%
Environmental management	R 106,729	0.35%
Risk management	R 85,814	0.28%
Co-operative management	R 80,090	0.26%
Park expansion	R 76,777	0.25%

Programme	Amount	Percentage of total
Disease management	R 39,441	0.13%
Safety, health, environment and quality	R 39,098	0.13%
Communication	R 38,766	0.13%
Climate change	R 38,476	0.13%
Information management	R 23,034	0.08%
Total	**R 30,439,099**	**100 %**

11.3.3 Unallocated fixed costs

The unallocated fixed costs applicable but not allocated in Table 17 above for 2019 / 2020 amounts to R 4,538,442.

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 2019 / 2020 is provided in Table 19. The projected maintenance for existing infrastructure is estimated at R 2,800,390 in 2019 / 2020. If the new planned infrastructure is developed, it will add a further R 2,196,951 (at 2019 / 2020 rates) to this annual maintenance budget, increasing it to R 4,997,341. The maintenance requirement was calculated as a percentage of the replacement value.

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

	Estimated replacement value			Estimated maintenance		
	Existing (R)	**New (R)**	**Total (R)**	**Existing (R)**	**New (R)**	**Total (R)**
Buildings	116,808,205	124,073,000	240,881,205	1,682,038	1,737,467	3,419,505
Roads and tracks	49,851,800	13,780,000	63,631,800	717,758	275,600	993,358
Trails	0	0	0	0	0	0
Fencing	16,620,800	10,396,480	27,017,280	329,092	149,709	478,801
Water system	1,068,480	0	1,068,480	20,292	0	20,292
Electricity	2,019,300	1,325,000	3,344,300	29,078	34,174	63,252
Other	190,800	0	190,800	3,816	0	3,816
Sewerage	1,272,000	0	1,272,000	18,317	0	18,317
Total	**187,831,385**	**149,574,480**	**337,405,865**	**2,800,390**	**2,196,951**	**4,997,341**

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 2,019,421 in 2019 / 2020, and this figure is presented in Table 20.

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

Asset type	Asset value	Provision for replacement
Airconditioners	R 437,293	R 66,219
Computer equipment	R 614,392	R 217,085
Firearms	R 60,540	R 6,417
Furniture	R 1,347,526	R 204,054
Mechanical equipment	R 2,557,181	R 387,230
Office equipment	R 241,012	R 36,496
Veicles and trailers	R 6,711,883	R 1,016,371
White goods	R 564,944	R 85,549
Total	**R 12,534,770**	**R 2,019,421**

11.4 Summary

It is estimated that the park will require an annual operating budget of R 39,797,352 for 2019 / 2020, increasing to R 50,243,240 in 2023 / 2024. In addition to this amount, the park will also require R 230,353,000 over the next five-year period for once-off costs. A summary is presented in Table 21.

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

	2019 / 2020	2020 / 2021	2021 / 2022	2022 / 2023	2023 / 2024
Once-off costs over five years	R 230,353,000				
Annual cost	R 39,797,352	R 42,185,193	R 44,716,305	R 47,399,283	R 50,243,240
SANParks expenditure budget	R 35,181,716	R 37,292,619	R 39,530,176	R 41,901,987	R 44,416,106
Shortfall	**R 4,615,636**	**R 4,892,574**	**R 5,186,129**	**R 5,497,296**	**R 5,827,134**

The shortfall can be broken down as follows:

- An additional amount of R 519,956 is required for the replacement of assets;
- An additional amount of R 1,417,079 is required for the maintenance of infrastructure; and
- An additional amount of R 2,632,518 is required to cover operational exspenses (OPEX).

11.5 Implications

Should the park be unsuccessful in securing the shortfall amount of R 4,615,636 then the following programmes will be affected:

- Assets: The park will be unable to replace assets that have reached the end of their life span, operations could be adversely affected and thereby increasing the risk profile;
- Infrastructure programme: The park will be unable to maintain the current infrastructure to a high standard; and
- OPEX: Various programmes (*i.e.* cultural heritage, responsible tourism, safety and security technical) will be negatively affected. This funding is required mainly for additional personnel and vehicles.

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 490 in **Government Gazette 18814 of** 0**9 April 1998 declared the following land to be part of the Vhembe / Dongola National Park in terms of the National Parks Act (Act No. 57 of 1976)**

Farm Den Staat 27 MS (remainder), MS Registration Division, Northern Province, in extent 1,842.1763 ha, as indicated on Diagram SG No. A1 237/60

Government Notice 339 in **Government Gazette 21042 of 07 April 2000 declared the following land to be part of the Vhembe / Dongola National Park in terms of the National Parks Act (Act No. 57 of 1976)**

Farm Greefswald 37, situated in the District of Zoutpansberg, in extent 2,503.8386 ha, as described in Diagram SG No. A3456/1906.

Government Notice 355 in **Government Gazette 22231 of 26 April 2001 declared the following land to be part of the Vhembe / Dongola National Park in terms of the National Parks Act (Act No. 57 of 1976)**

Portion 1 of the Farm Riedel 48, MS Registration Division, Northern Province, in extent 2,569.7720 ha as described in Diagram SG No. A2781/43.

Government Notice 1494 in **Government Gazette 25562 of 17 October 2003 declared the following land to be part of the Vhembe / Dongola National Park in terms of the National Parks Act (Act No. 57 of 1976)**

Portion 1 of the farm Balerno 18 MS Registration Division, Limpopo Province, in extent 768.6940 ha, held under Deed of Transfer T146928/2002

Remainder of the farm Schroda 46 MS Registration Division, Limpopo Province, in extent 929.0942 ha, held under Deed of Transfer T37654/1990

Portion 4 of the farm Schroda 46 MS Registration Division, Limpopo Province, in extent 929.0942 ha, held under Deed of Transfer T37654/1990

Portion 7 of the farm Schroda 46 MS Registration Division, Limpopo Province, in extent 1,295.4212 ha, held under Deed of Transfer T25629/1990

Portion 8 of the farm Schroda 46 MS Registration Division, Limpopo Province, in extent 419.9119 ha, held under Deed of Transfer T25629/1990

Government Notice 902 in **Government Gazette 26615 of 30 July 2004 declared the following properties to be part of the Vhembe / Dongola National Park in terms of the National Parks Act (Act No. 57 of 1976)**

Portion 2 of the Farm Hamilton 41, MS Registration Division, Limpopo Province, in extent 65.1140 ha, held under Title Deed T5669/2004

The Remaining extent of the Farm Hamilton 41, MS Registration Division, Limpopo Province, in extent 359.4617 ha, held under Title Deed T5669/2004

Portion 3 of the Farm Tuscanen 17, MS Registration Division, Limpopo Province, in extent 1301.0380 ha, held under Title Deed Tl54756/2000

Government Notice 1056 in Government Gazette 31461 of 03 October 2008 declared the following properties to be part of the Mapungubwe National Park in terms of the National Environmental Management: Protected Areas Act (Act No. 57 of 2003)

Portion 1 of the Farm Janberry 44, MS Registration Division, Limpopo Province, in extent 755.5492 ha, held under Title Deed T3014/2005

Remainder of the farm Samaria 28, MS Registration Division, Limpopo Province, in extent 431.9858 ha, held under Title Deed T141762/2004

Portion 3 of the farm Samaria 28, MS Registration Division, Limpopo Province, in extent 431.9858 ha, held under Title Deed T141762/2004

Portion 3 of the farm Welton 16, MS Registration Division, Limpopo Province, in extent 708.0486 ha, held under Title Deed T103662/1997 and T46309/1998

Appendix 2: Stakeholder participation report

STAKEHOLDER EVENTS AND ACTIVITIES

Stakeholder consultation

This table reflects the various organisations that were identified to participate in the Integrated 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	TFCA partners, UNESCO, African World Heritage Fund
National Government	Departments of Arts and Culture, Environmental Affairs, Public Works, Tourism, SAHRA, SANDF and SAPS
Provincial government	Limpopo Departments of Agriculture (State Veterinarians), Basic Education, Economic Development, Environment and Tourism, Public Works, Sports, Arts and Culture, Limpopo Provincial Heritage Resources Authority, Provincial Land Claims Commissionaire
Local government	Musina Local Municipality, Blouberg Local Municipality, Vhembe Distyrict Municipality
Local Resident / Neighbours	ZZ2, Weipe farming community, Den Staat community, Anglo American, Coal of Africa, Venetia mine
Land claimants	Machete and Sematla communities
Community organisations	Lemba Cultural Association
Business associations	Musina Chamber of Commerce
Research	Universities of Venda, Pretoria, Witswatersrand, Ditsong Museum
Conservation organisations	Vhembe biosphere
Tourist organisations	Limpopo Tourism Agency, Vhembe Tourism Forum, Musina Tourism Forum
Honorary Rangers	Waterberg

Desired state workshop

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

Activities	Description
Invitations	Park management, certain SANParks specialists, key stakeholders and the general public were invited.
Desired State workshops	The workshops took place on 17 and 18 April 2018 at the Musina Show Grounds and Alldays Community Hall.
Attendance	135 Participants partook in the workshops representing the following constituencies to name a few: • Alldays community police forum; • Alldays rate payers association; • Alldays ward committee members; • Blouberg Local Municipality; • Decendents; • Endangered Wildlife Trust; • Farm owners; • Lemba Cultural Movement; • Limpopo Department of Agriculture;

	• Limpopo Department of Economic Development, Environment and Tourism; • Members of the public; • Musina local municipality; • SANParks; • SANDF; • SAPS; • Vhangona Cultural Movement; and • Vhembe biosphere.

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 Integrated Management Plan and invite stakeholders to participate

Mechanism to register	Description
Printed media advertisements	Advertisements to inform interested and affected parties of the public days and request to register to participate was placed in the following national newspapers on 03 February 2019: • Sunday Times; • Rapport.
Radio	Announcements were made on Musina FM 104.0 three times per day on 16 and 18 February 2019. Listeners were informed of the revision process and invited to attend the public meetings.
Registration at meetings	Participants were also able to register at the following meetings: • Desired state workshop on 17 and 18 April 2018 in Musina and Alldays; and • Public meetings were held on 19 and 20 February 2019 and 06 and 07 March 2019 in Alldays, the park and Musina.
Internet	Stakeholders were ask to register via the SANParks website from 01 April 2018.
Public information boards	Official notices were place at 5 public venues in the region, namely: • Musina Municipality front office door; • Checkers information board at the Musina Mall; • Shoprite at the Musina Mall; • Spar at the Musina Mall; • Front office door at the Alldays local municipal satellite office; • Savemore at the Alldays Mall; • Filling station next to Nedbank; • The Community Hall.

Public days to allow comment on the draft management plan

Four public day meetings were held.

Venue	Date	Number of stakeholders that attended
Musina Show Grounds	19 February 2019	19
Alldays Community Hall	20 February 2019	33
Mapungubwe National Park	06 March 2019	11
Alldays Community Hall	07 March 2019	92

Dissemination of documentation and feedback to stakeholders

Item	Action	Date
Draft Integrated Management Plan for comment placed in public venues.	• Community Hall, Eksteenfontein; • Community Hall, Kuboes; • Community Hall, Lekkersing • Community Hall, Sanddrift; and • Richtersveld Municipal Office, Port Nolloth.	26 January 2018
Draft Integrated Management Plan for comment placed on SANParks website.	https://www.sanparks.org/conservation/park_man/	22 January 2018
Dissemination of comment and response document	The document will be available on the SANParks website, or emailed, mailed, faxed or delivered by hand where no contact details were supplied.	N/A
Dissemination of approved Integrated Management Plan	The plan will be available on the SANParks website once approved by the Minister.	N/A

Appendix 3: Tourism product development framework

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

Similarly, whilst specific products or activities may be developed within the park, they will be restricted to specific areas within the park or on the periphery (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 the legal definition. Pristine natural environment, essentially undeveloped and roadless. Controlled non-motorised access - usually on foot. Could have paths where erosion is a problem or for safety.
2	**Primitive**	Almost completely natural state to be maintained. Development footprints absolute minimum. Controlled access - 4x4s, horse-riding. Small basic overnight facilities.
3	**Quiet**	General natural state to be maintained. Only non-motorised access. Access not specifically controlled. Ablution facilities can be allowed.
4	**Low intensity leisure**	Motorised self-drive with basic facilities. Small - medium sized camps. Infrastructure should be minimised in order to maintain natural state.
5	**High intensity leisure**	High density tourism development node with concentrated human activities. High volume roads, high density camps with modern amenities.
6	**Buffer / adjoining**	Land in the delineated buffer zone or adjacent to national parks. Products indicated are those with which SANParks is comfortable to be associated with as long as it does not conflict with the LUMS.

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

Table 22: Tourism product development framework for the park.

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

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		YES	NO	YES	NO	1	2	3	4	5	6
Leisure / recreational	Fishing (catch and release)	√		√			√		√	√	√
	Funicular		√		√						√
	Game drives - night drive	√		√			√		√	√	√
	Game drives - night drive (Night Vision aided)		√	√			√		√	√	√
	Game drives - premium		√	√			√		√	√	√
	Game drives - standard	√		√			√		√	√	√
	Game drives - UA		√	√			√		√	√	√
	Games facilities (*e.g.* table tennis, pool, *etc.*)		√	√					√	√	√
	Geocaching	√		√			√	√	√	√	√
	Golf		√		√						√
	Golf club membership		√		√						√
	Green hunting / darting safaris		√		√						√
	Hang gliding		√		√						√
	Hiking	√		√		√	√	√	√	√	√
	Hiking trails - Wilderness (full service)		√	√		√	√				√
	Hiking trails - Wilderness (no facilities) (backpack)	√		√		√	√				√
	Hiking trails (budget)	√		√		√	√	√	√	√	√
	Hiking trails (premium)		√	√		√	√	√	√	√	√
	Horse riding		√		√						√
	Horse riding trails (varying facilities)		√		√						√
	Jet skiing		√		√						√
	Jogging / running		√		√						√
	Kayaking / paddling		√		√						√
	Kayaking / paddling trails		√		√						√
	Kitesurfing / kiteboarding / fly surfing		√		√						√
	Kloofing (guided)		√		√						√
	Mini golf / putt-putt		√	√						√	√
	Model aircraft flying		√		√						√
	Motorcycle trails (varying facilities)		√	√			√		√	√	√
	Motorcycling		√		√						√
	Motorcycling - off-road		√		√						√
	Motorised boating		√	√			√		√	√	√
	Mountain bike trails (varying facilities)		√	√			√		√	√	√
	Mountain biking		√		√						√
	Mountain biking - unicycling		√		√						√
	Mountaineering		√		√						√
	Paddle boards		√		√						√
	Paddle boats		√		√						√
	Paddle skiing		√		√						√
	Paragliding		√		√						√
	Parasailing		√		√						√
	Park and ride		√	√			√		√	√	√
	Photography	√		√		√	√	√	√	√	√
	Picnicking (basic facilities)		√	√			√		√	√	√
	Picnicking (full facilities)	√		√			√		√	√	√

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

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

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		YES	NO	YES	NO	1	2	3	4	5	6
Developmental	Wilderness search and rescue		√	√			√		√	√	√
Children / youth	Babysitting		√	√					√	√	√
	Child care centres in camps		√	√					√	√	√
	Children activity centres (jungle gym)		√	√					√	√	√
	Children encounter zone		√	√					√	√	√
	Children game drives	√		√			√		√	√	√
	Children holiday programmes in camps	√		√					√	√	√
	Children trails	√		√			√		√	√	√
	Learner programmes	√		√			√		√	√	√
	Paint ball		√		√						√
	Youth camps (KampKwena, "summer" camps)		√	√					√	√	√
Business tourism and events	Events - any		√	√			√		√	√	√
	Events - adventure	√		√			√		√	√	√
	Festivals		√	√			√		√	√	√
	Fundraising events *e.g.* WWF Swim for Nature	√		√			√		√	√	√
	Lapas / bomas (to rent)		√	√					√	√	√
	MICE (Meetings, Incentives, Conventions and Exhibitions)	√		√					√	√	√
	Musical concerts	√		√			√		√	√	√
	Photographic shoots and filming		√	√			√		√	√	√
	Product launches		√	√			√		√	√	√
	Races / competitions - marathons / trail running	√		√			√		√	√	√
	Races / competitions - mountain-biking	√		√			√		√	√	√
	Races / competitions - other		√	√			√		√	√	√
	Races / competitions - adventure / expedition racing	√		√			√		√	√	√
	Scientific conferences		√	√					√	√	√
	Team building		√	√			√		√	√	√
	Weddings	√		√			√		√	√	√
Retail / services	Apparel outlets		√	√					√	√	√
	Airport / aerodrome / airstrip		√	√			√		√	√	√
	Banking - Bank or ATM		√	√					√	√	√
	Rental - bicycle		√	√					√	√	√
	Camping equipment rental		√	√					√	√	√
	Rental - car		√	√					√	√	√
	Car wash		√	√					√	√	√
	Casinos		√		√						√
	Clinics / Doctor/ first aid		√	√					√	√	√
	Outlets - community curios		√	√					√	√	√
	Outlets - curios	√		√					√	√	√
	Essential commodities in camps (ice, wood, *etc.*)	√		√					√	√	√
	Fast moving consumer goods (FMCG) outlets		√	√					√	√	√
	Fuel stations		√	√					√	√	√
	Gas equipment hire		√	√					√	√	√
	Hop-on guides		√	√			√	√	√	√	√
	Internet café / Wi-Fi hotspot		√	√					√	√	√
	Laundromats and laundry service	√		√					√	√	√

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

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Appendix 4: Internal rules

The park does not have internal rules.

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Appendix 5: Maps

Map 1: Regional context

Map 2: Physical features

Map 3: Land tenure and park expansion

Map 4: Zoning

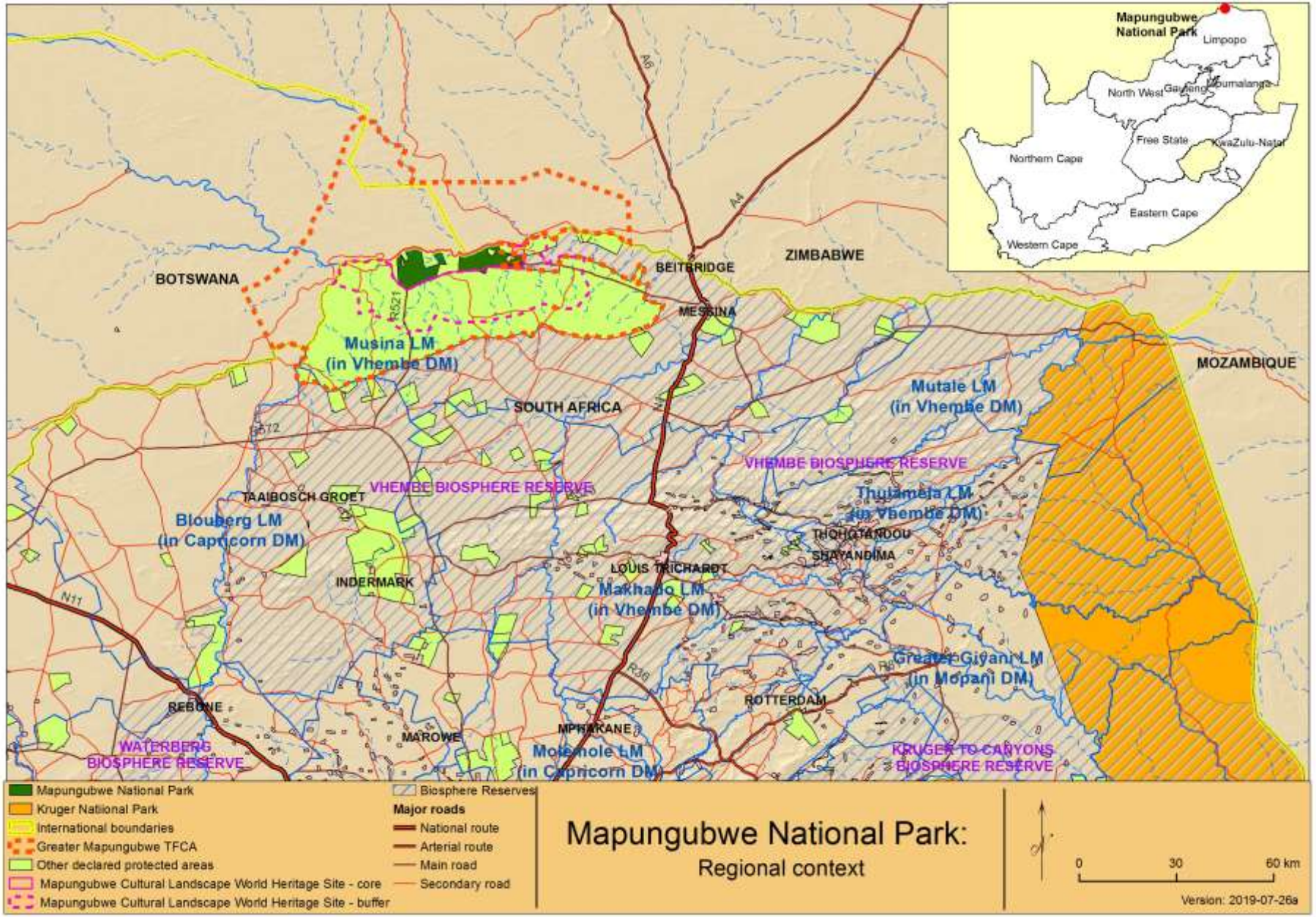
Map 5: Zoning with sensitivity value

Map 6a: Buffer zone

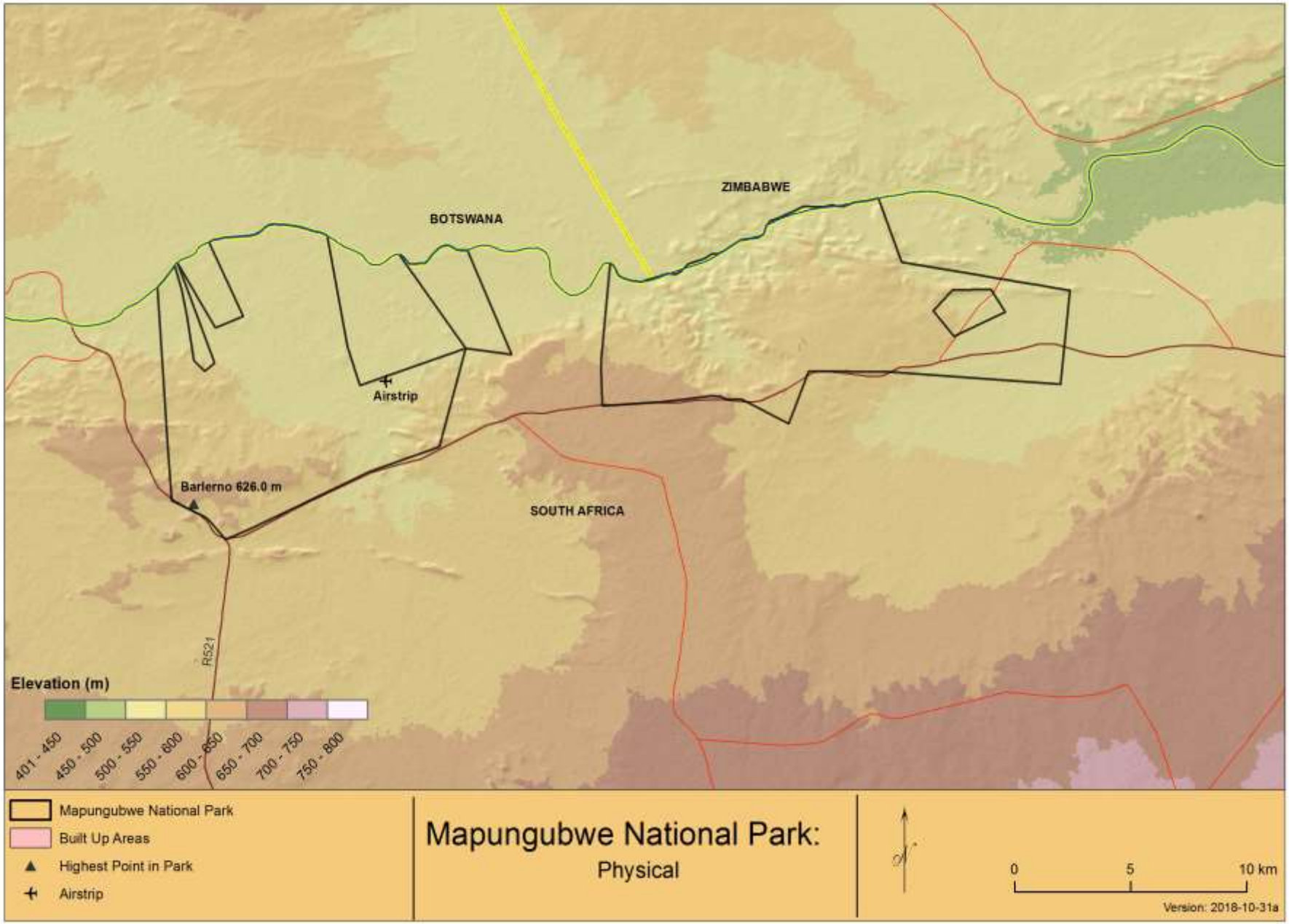
Map 6b: Buffer zone wioth cadastral data

Map 7: Infrastructure

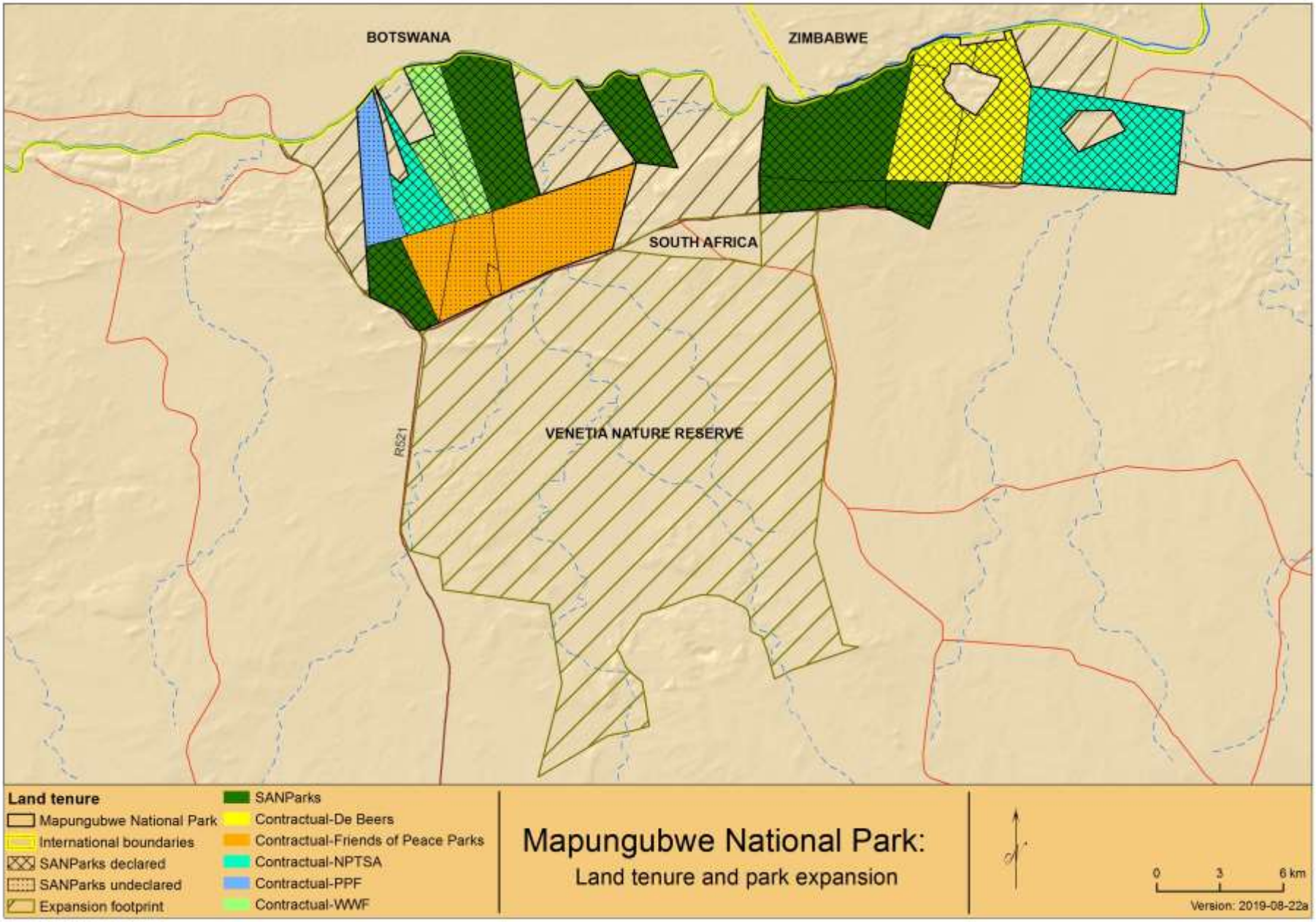
Map 8: Vegetation



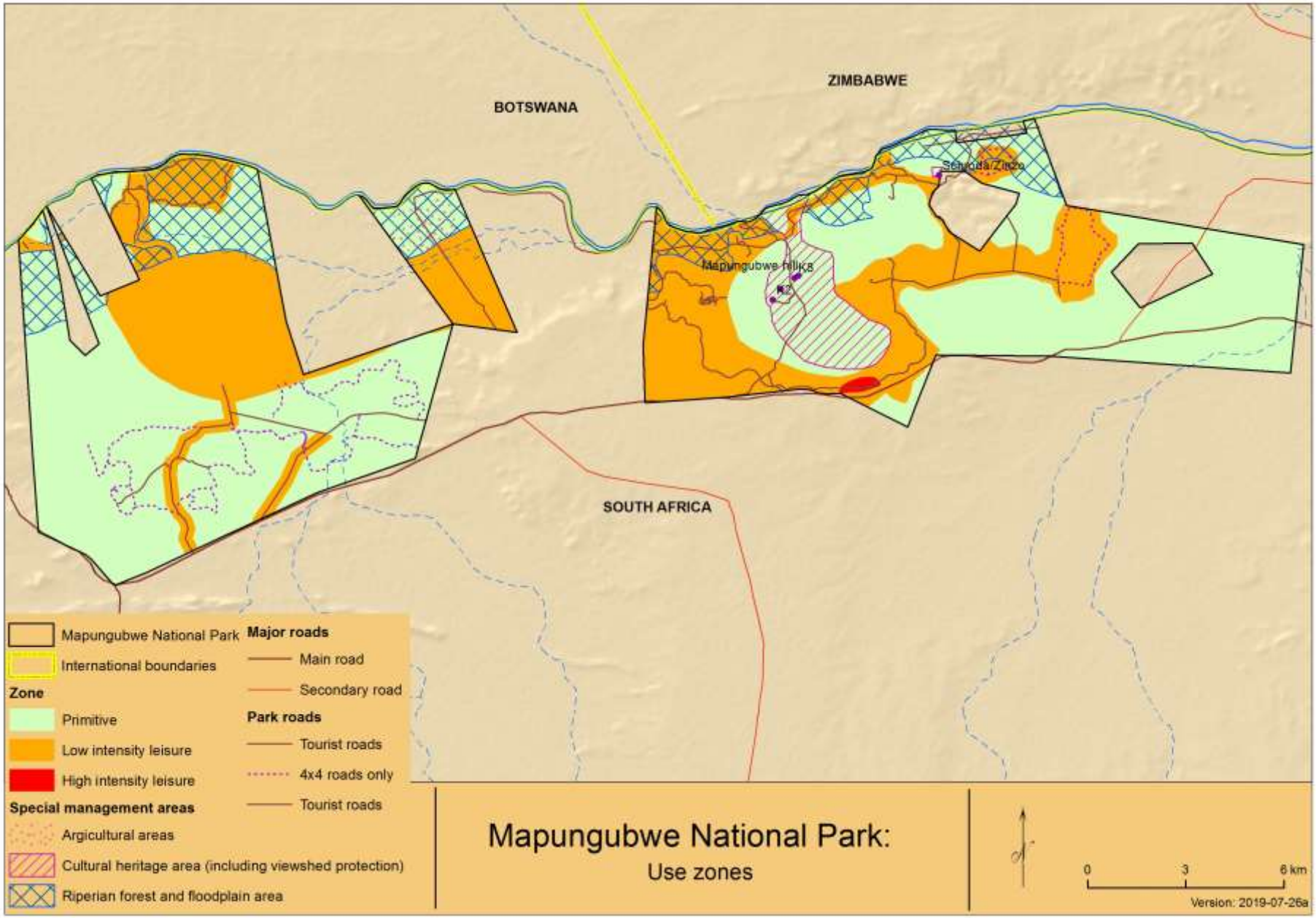
Map 1: Regional context



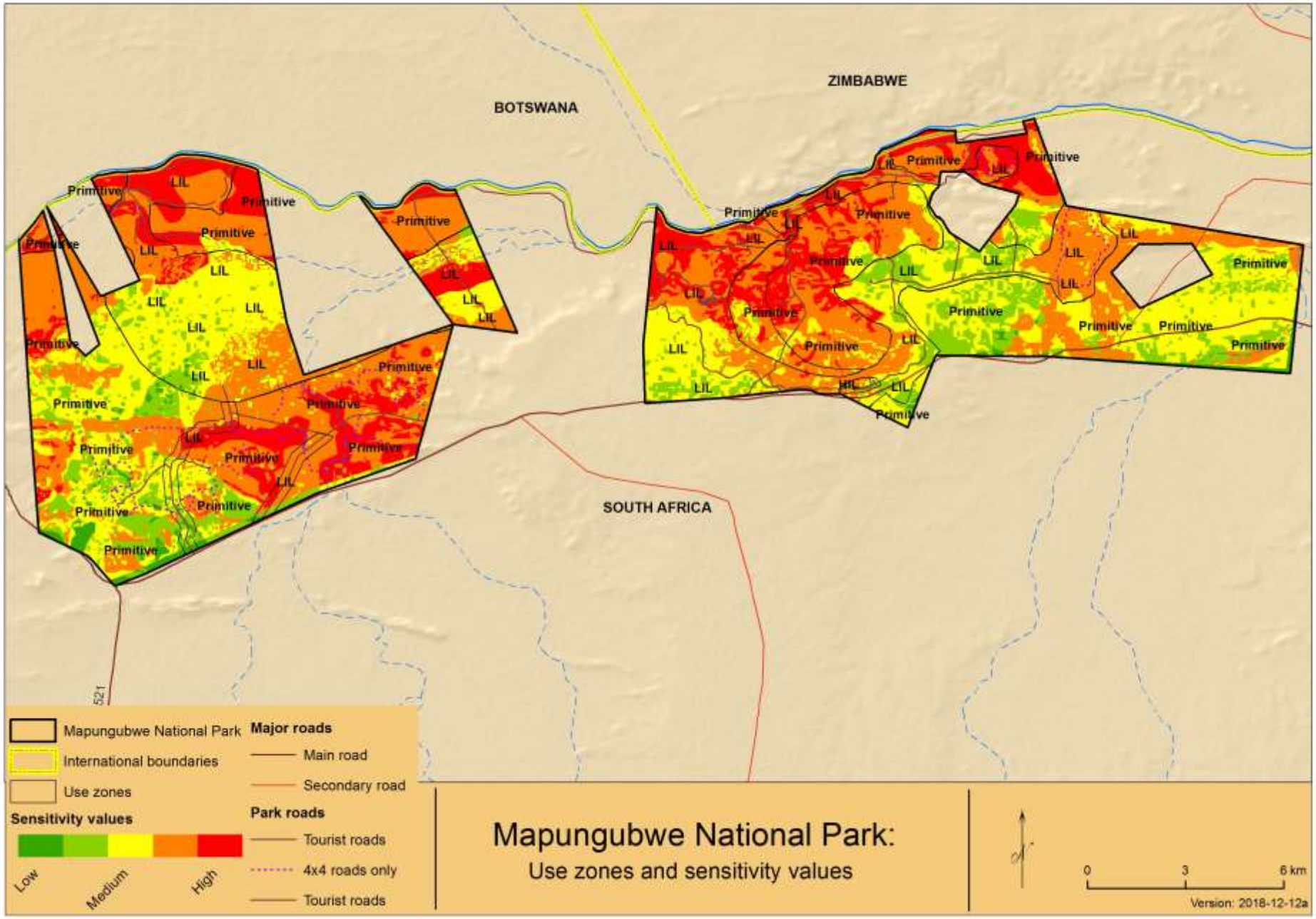
Map 2: Physical features



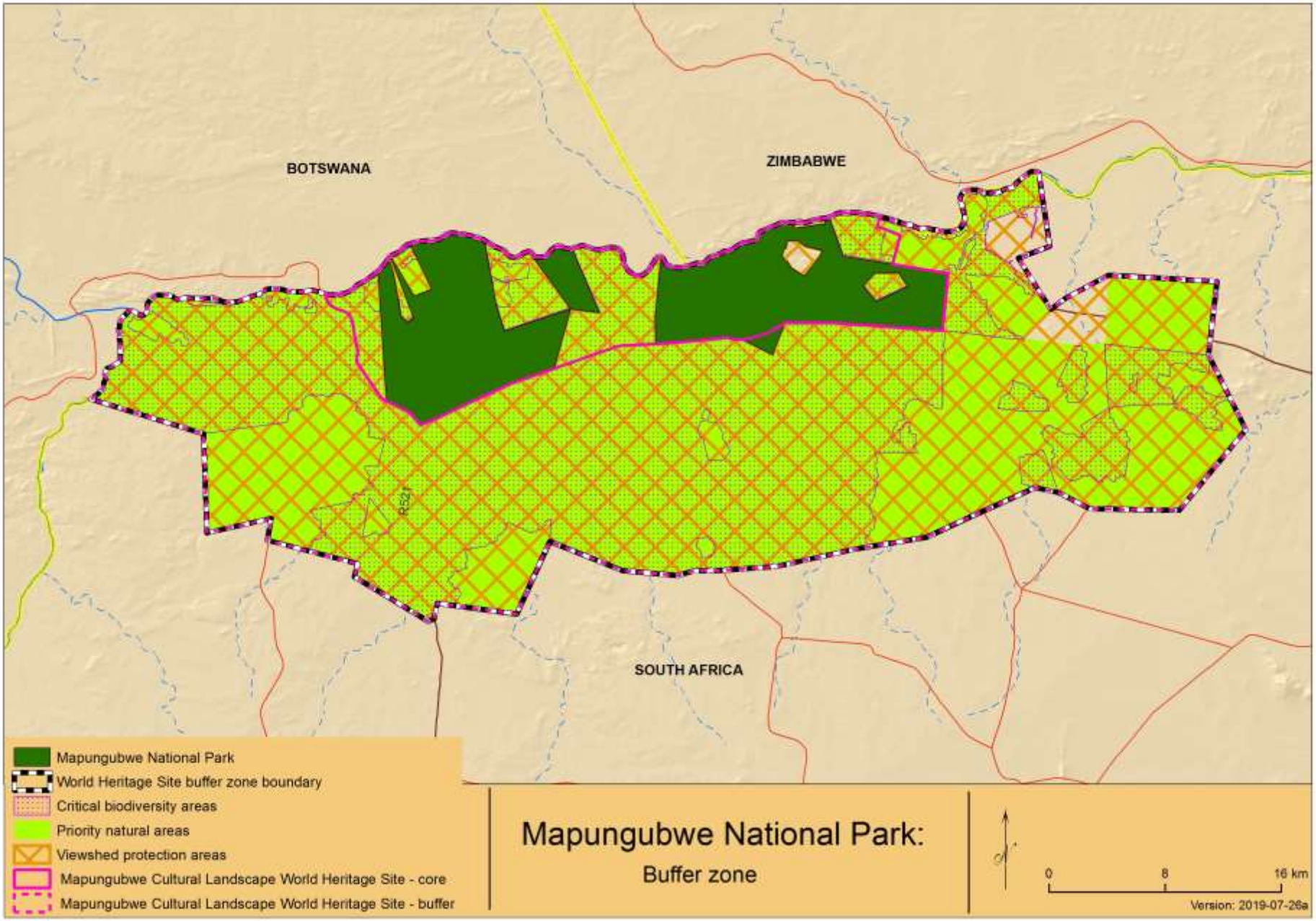
Map 3: Land tenure and park expansion


ZIMBABWE
BOTSWANA
SOUTH AFRICA
Schroda/Zinca
Mapungubwe hilltop
Mapungubwe National Park
International boundaries
Zone
Primitive
Low intensity leisure
High intensity leisure
Special management areas
Argicultural areas
Cultural heritage area (including viewshed protection)
Riperian forest and floodplain area
Major roads
Main road
Secondary road
Park roads
Tourist roads
4x4 roads only
Tourist roads
Mapungubwe National Park:
Use zones
0
3
6 km
Version: 2019-07-26a

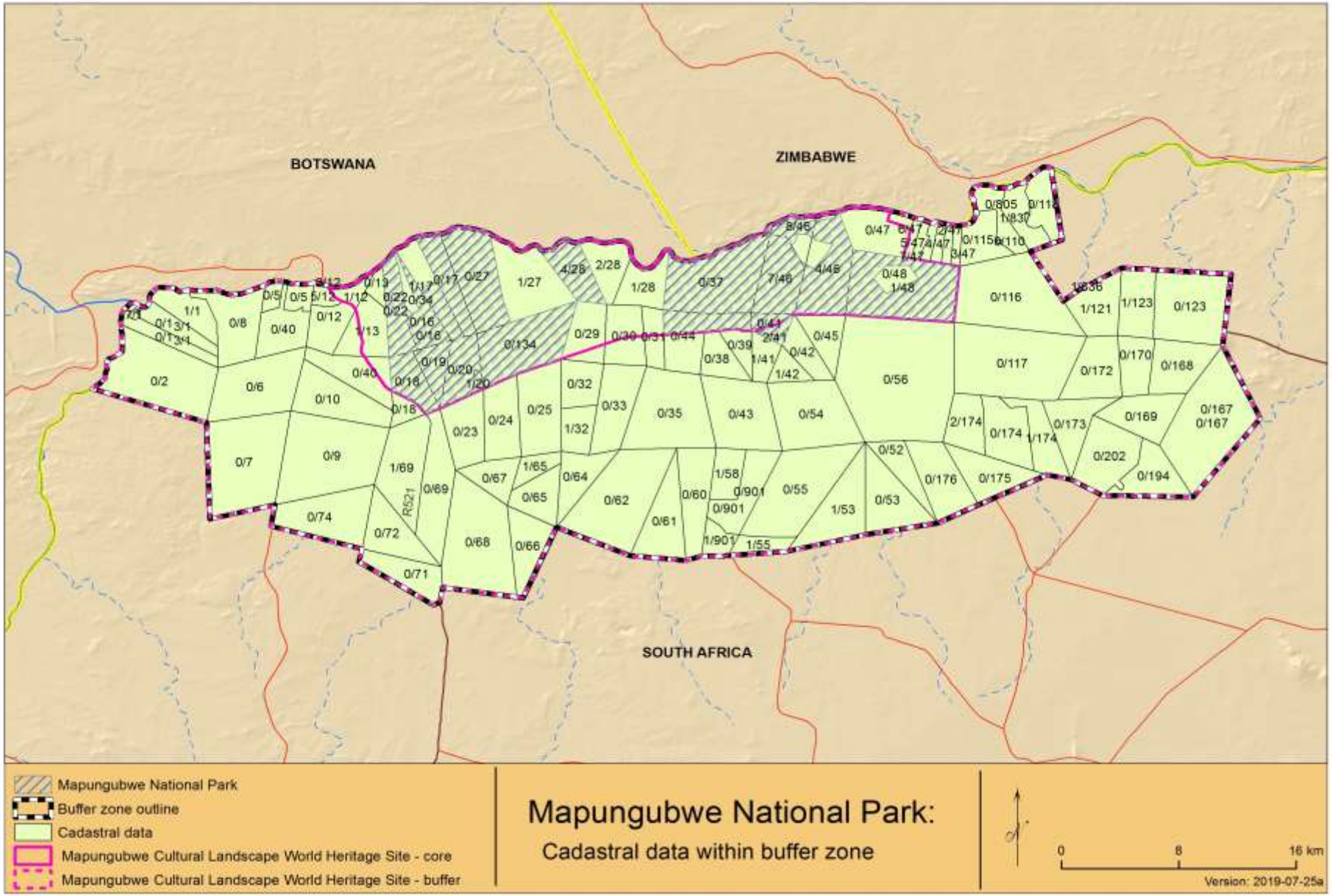
Map 4: Zoning



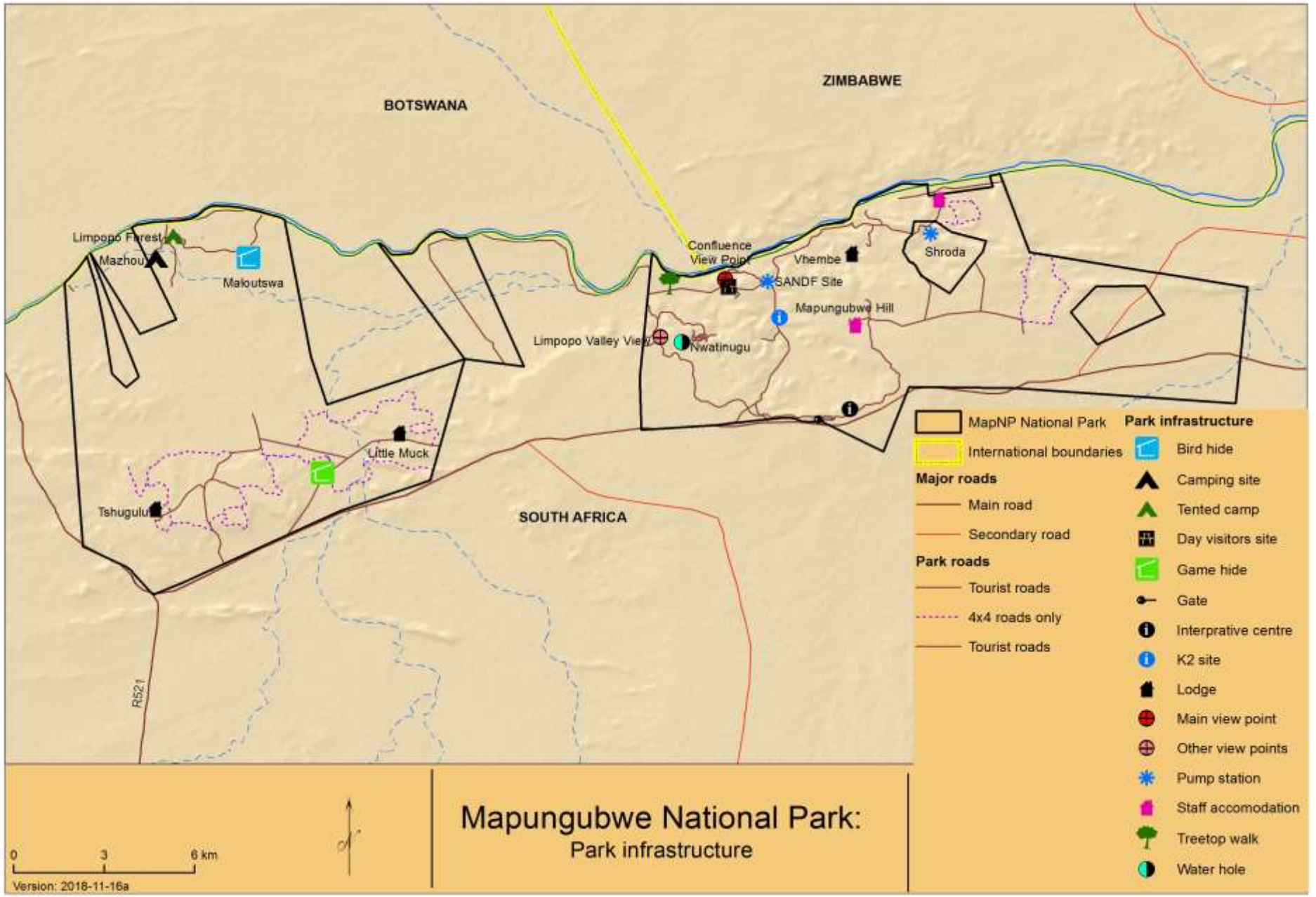
Map 5: Zoning and sensitivity



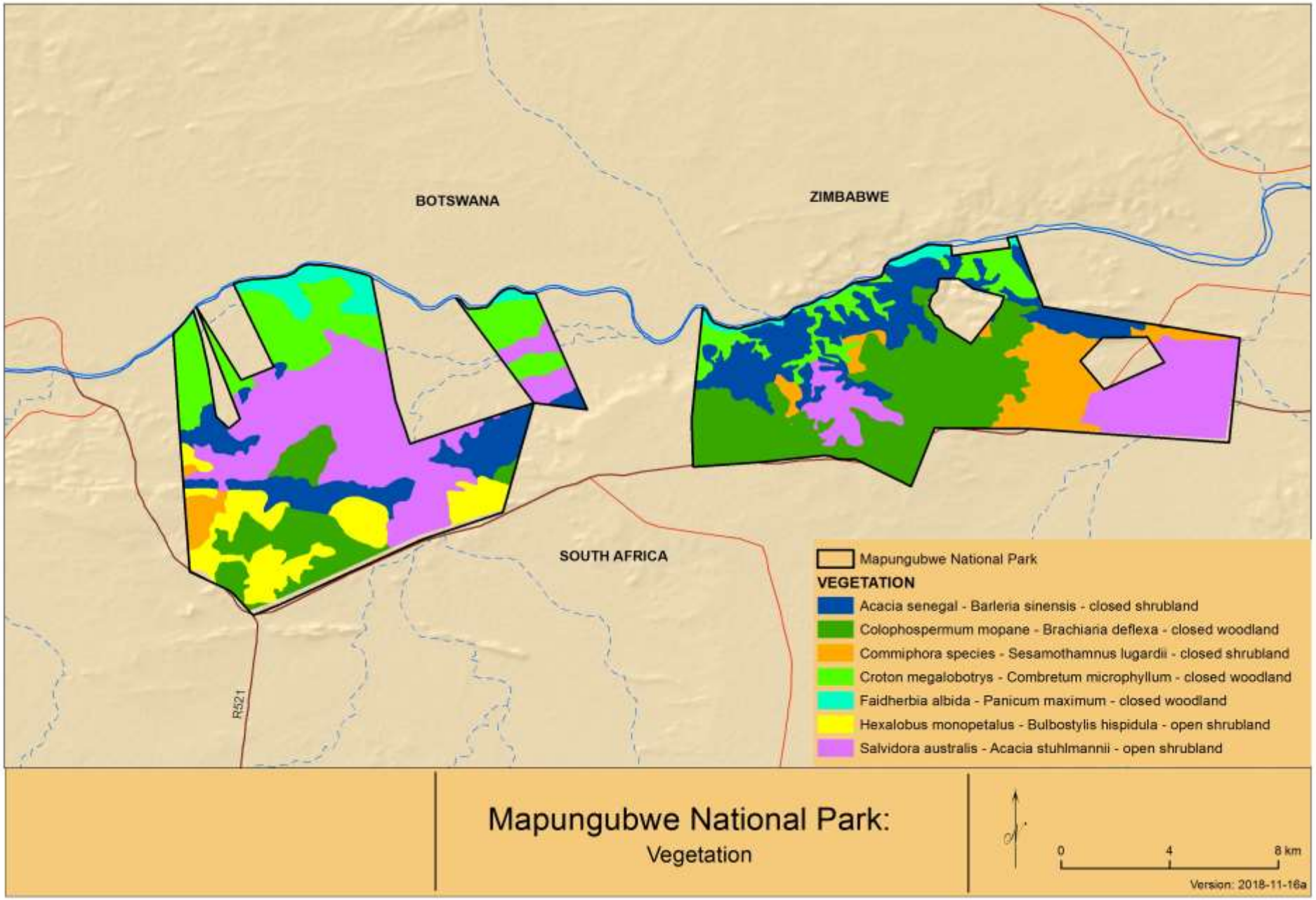
Map 6a: Buffer zone



Map 6b: Buffer zone with cadastral data



Map 7: Park infrastructure



Map 8: Vegetation