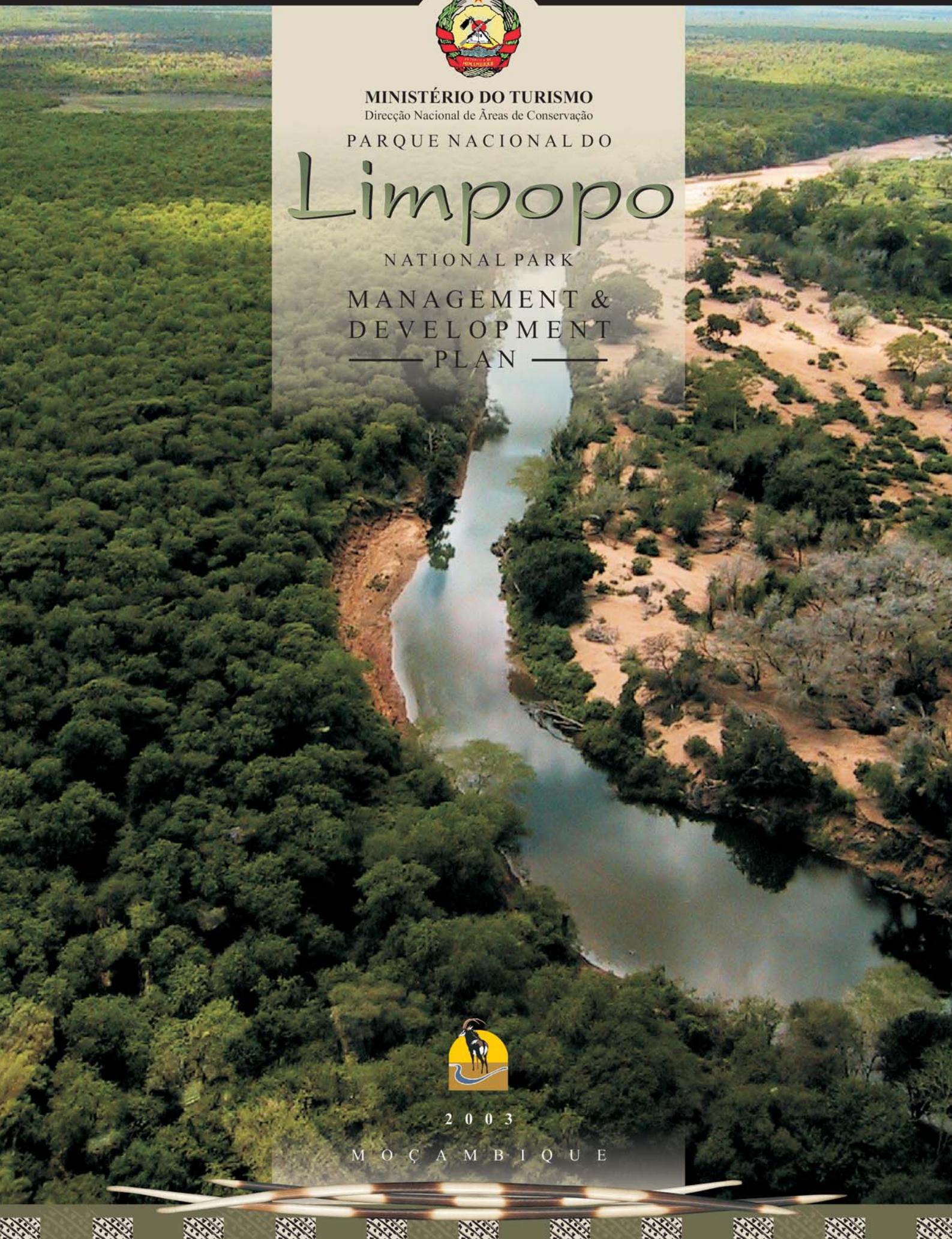


MINISTÉRIO DO TURISMO

Direcção Nacional de Âreas de Conservação

PARQUE NACIONAL DO

Limpopo

NATIONAL PARK

MANAGEMENT & DEVELOPMENT PLAN

2003

MOÇAMBIQUE

GREAT LIMPOPO TRANSFRONTIER PARK

MINISTÉRIO DO TURISMO
Direcção Nacional de Ãreas de Conservação

PARQUE NACIONAL DO

Limpopo

NATIONAL PARK

MANAGEMENT & DEVELOPMENT PLAN

FIRST EDITION
2003

REPÚBLICA DE MOÇAMBIQUE

MINISTÉRIO DO TURISMO

DESPACHO

O Parque Nacional do Limpopo é uma zona de protecçao de recursos florestais e faunísticos e representativo do património nacional destinado à conservação da biodiversidade e garantia da continuação dos processos ecológicos e preservação dos valores naturais.

Impõe-se que a gestão de um parque nacional deve ser feito de acordo com um plano de maneio de cuja elaboração é feita com a participação das comunidades locais como garante de um modelo de gestão participativa nesta zona de protecção.

Assim havendo necessidade de estabelecer mecanismos de administração e maneio de recursos, ao abrigo do número 5 do artigo 10 da lei no 10/99 de 7 de Julho e do No. 2 do artigo 87 do regulamento No. 12/2002 de 6 de Junho determino:

1. É aprovado o plano de maneio, do Parque Nacional do Limpopo para o periodo de 2003 a 2007 que é parte integrante do presente despacho.

2. O presente despacho produz efeitos imediatos.

Maputo, aos 05 de Dezembro de 2003

O Ministro do Turismo

Fernando Sumbana Júnior

PREFACE

The Government of Mozambique and the donor agencies involved in the establishment of the Limpopo National Park determined that the elaboration of the Management Plan would be conducted by means of an inclusive, participatory process. Accordingly, in October 2001, an inception workshop was held at Massingir, attended by community representatives, National, Provincial and Local Government officials, NGO representatives, as well as representatives of donor agencies, University personnel, South African National Parks and consultants.

During the proceedings of this workshop, it became quite clear that considerable preparatory work was required, in order to better inform communities living in and around the Park of the establishment and proposed development of the Park, and to equip them to participate in the planning process.

With the appointment of a Manager for the Project Implementation Unit and a Park Director, a process of systematic, focussed engagement with the communities was initiated, with the active participation and assistance of an NGO Forum established for the purpose.

A Management Plan Planning Team was constituted to inform and guide the preparation of the Management Plan. Membership consisted of:

Dr S Magane, DNFFB

Dr B Soto, TFCA UNIT

Dr S Munthali, Adviser to TFCA UNIT

Dr M Schneider, Eduardo Mondlane University

Mr G Vicente, Park Warden

Mr A van Wyk, PIU Manager

Mr A Nhalidede, PIU Community Officer

Mr P Rode, PIU Accountant

Dr D Grossman, Lead Consultant

Ms P Holden, Lead Consultant

Ms T Kleibl, NGO Forum Observer

Mr L Maluleke, NGO Forum Observer

A Planning Workshop was held in Maputo during April 2002, during which a wide array of stakeholders and Interested Parties contributed to the formulation of the Vision and Broad Objectives of the LNP. During the course of 2002, the PIU and NGO Forum began the process of capacity building among community members, and community representatives for each village were duly nominated by the people.

A series of Planning Team meetings was held and a draft Management Plan was prepared and circulated to stakeholders. A second draft was prepared, incorporating feedback, and presented to stakeholders, including six nominated community representatives, at a meeting in Maputo during May 2003. Based on feedback, a final draft was prepared and the Project Implementation Unit then presented the final draft to senior provincial and national government representatives during June and July 2003.

THIS DOCUMENT

This first edition of the Management Plan is a multi-authored, collaborative effort. The first part contains background information relating to the establishment of the LNP and main biophysical and socio-economic features are presented. It then goes on to deal with the various programmes, and each chapter includes guiding principles, and management objectives. Where appropriate and feasible, actions and responsibilities are presented.

Certain priority areas are evident, and certain 'milestones' within these priority areas need to be achieved before further developments can occur. Most obviously, issues relating to people resident in the Tourism and Support Zones need satisfactory, wholly acceptable resolution before the boundary fence with Kruger National Park is totally removed and before private sector involvement in the prime tourism areas can be expected. The realignment of the support zone boundary, in a participatory manner, is a further priority.

Issues such as Park integrity and security, personnel appointment and deployment and the development of a pilot fenced 'Sanctuary' area in the south-western corner of the Park proceeded in tandem with the elaboration of the Management Plan, as the Park was formally proclaimed in November 2001. Similarly, the preparation of a framework for voluntary resettlement of people in the Shingwedzi River area commenced under the guidance of the Steering Committee established to oversee management and development of the Park. Most of these issues have been duly incorporated into the Management Plan.

As with all Management Plans, this First Edition, which guides the initial establishment and development phase (years 1- approximately 5), will require periodic review and amendment as objectives are attained or modifications become necessary. A review of this edition is suggested after 3 years. The Management Plan provides the basic framework for management and development of the park. The PIU will use the plan to develop annual operational plans with budgets.

ACKNOWLEDGEMENTS

The lead consultants sincerely thank the men and women of the Limpopo National Park, the members of the Planning Team, section authors including Dr S Magane, Dr M Schneider (also responsible for translation of species names into Portuguese and Shangaan), Mr B Harris, Mr P Massyn, Ms F Carvalho, Park Director Mr G Vicente, PIU Director Mr A van Wyk, Mr Paul Rode, the KfW backstopper Dr G Schuerholz, Dr M Stalmans, Ms T Kleibl for suggestions relating to Information Centres and conflict resolution, the NGO Forum, Mr H Massongo and the IUCN, donor agencies including PPF and KfW, World Bank representatives and in particular, Mr R de Vletter, personnel of the German Embassy, Maputo and the head of DNAC, Dr A Madope, for constructive support and inputs during the preparation of this edition.

CONTENTS

ACRONYMS

APU	Anti-Poaching Unit
CBD	Convention on Biological Diversity
CBNRM	Community Based Natural Resource Management
CBT	Community Based Tourism
CITES	Conventions on International Trade in Endangered Species
CPP	Community Public Private
DNAC	National Directorate for Conservation Areas
GEF	Global Environment Facility
GIS	Geographical Information System
GLTP	Great Limpopo Transfrontier Park
GNP	Gonarezhou National Park
GOM	Government of Mozambique
GPS	Geographical Positioning System
GTZ	German Development Co-operation
IDP	Integrated Development Plan
IEM	Integrated Environmental Management
IGO	International Government Organisation
JMB	Joint Management Board
KfW	German Development Bank
KNP	Kruger National Park
LNP	Limpopo National Park
M&E	Monitoring and Evaluation
MOU	Memorandum of Understanding
NGO	Non-Governmental Organisation
PCIA	Participatory Conflict Impact Assessment
PIU	Project Implementation Unit
PPF	Peace Parks Foundation
R&M	Research and Monitoring
RAIDP	Resettlement Area Identification and Development Plan
RCMIP	Resettlement Compensation and Management Implementation Plan
SABS	South African Bureau of Standards
SADC	Southern African Development Community
SMME	Small, Medium and Micro Enterprises
TFCA	Transfrontier Conservation Area

1. INTRODUCTION

1.1 HISTORY OF THE LNP

The area proclaimed as Limpopo National Park (LNP) in November 2001 was formerly used as a hunting zone (Coutada 16). As early as 1938, the linking of the Kruger National Park, Coutada 16 and Gonarezhou National Park in Zimbabwe was mooted. After the Mozambique Peace Accord of 1992, on the recommendation of the Mozambican Council of Ministers, the Global Environment Facility, through the World Bank, funded feasibility analyses, which culminated in a series of recommendations contained in a 1996 report. The long-held vision of linking the three national parks, as well as key interstitial areas, became reality with the formal agreements of the Governments of Mozambique, South Africa and Zimbabwe on 10th November 2000, to establish the Great Limpopo Transfrontier Park and Conservation Area. One of the first steps taken by the Mozambican Government to implement the formal agreement was to change the legal status of Coutada 16 to that of a National Park. A formal treaty establishing the Transfrontier Park was signed by the Heads of State in Xai Xai in December 2002.

1.2. LEGAL STATUS

1.2.1 PROCLAMATIONS

In terms of the published Government Gazette (Boletim de Republica[1]) containing Decree number 38/2001, dated 27th November 2001, the area formerly known and proclaimed as Coutada 16 became the Limpopo National Park (Parque Nacional do Limpopo). The proclamation was based on the area's ecological characteristics, diverse ecosystems, endemic species and dangers of species extinction.

1.2.2. BOUNDARIES

There is an apparent contradiction between the description of the boundaries and the published co-ordinates. In terms of a decision of the Steering Committee, the boundary is to be re-aligned in a participatory manner by the PIU and in association with communities in the affected area (Support Zone). When completed, this will necessitate formal amendment by means of a further Decree published in the Government Gazette (Boletim de Republica). N.B. The revised boundaries will be inserted into this Management Plan immediately they are made available.

1.2.3. PROTECTED AREA CLASSIFICATION AND INTERNATIONAL STATUS

Under Mozambique law, the Park is classified in terms of the Forest and Wildlife Act as a National Park. This confers the highest status of protection to the land, and prohibits certain activities, including prospecting and mining. The responsibility for the Management and Development of the Park rests with DNAC, within the Ministry of Tourism. At the time of preparation of this first edition of the Management Plan, the Park is managed by a Project Implementation Unit (PIU) with a Steering Committee comprising representatives of the Ministry of Tourism, Peace Parks Foundation and DNAC.

In terms of international classification, the Park is an IUCN Category ll National Park. The definition of this is:

> "An area of land or sea designated to protect the ecological integrity of one or more ecosystems for present and future generations; to exclude exploitation or occupation inimical to the purposes of designation of the area, and to provide a foundation for spiritual, scientific, educational, recreational and visitor opportunities, all of which must be environmentally and culturally compatible" (IUCN, 1998[2]).

[1] Boletim da Republica. Quarta-feira, 28 Novembro de 2001. 1 Serie - Numero 48

[2] Davey, A. G. (1998). National System Planning for Protected Areas. IUCN, Gland, Switzerland and Cambridge, UK. X + 71pp

2. BACKGROUND

2.1. STATUTORY FRAMEWORK

2.1.1. THE CONSTITUTION

The current Constitution was promulgated in 1990 and acknowledges the importance of a more consistent and broad participation of the civil society in administration, as problem solvers, and as "full right" participatory agents of development initiatives. They should not be mere instruments or passive recipients as spectators of central government directives but pro-active agents of change.

In terms of the Constitution, zones of protection of nature are defined as State public domain.

Article 36 stipulates that the State promotes "initiatives directed at obtaining further knowledge of natural resources, at carrying out inventories and valorization, and at defining the conditions of their utilisation in conformity with the national interests".

Article 37 of the Constitution consecrates the general principle that "the State promotes initiatives to guarantee the ecological equilibrium and the preservation and conservation of the environment, with the aim of improving the quality of life and living standards of the citizens".

Article 46 stipulates beyond doubt the principle that all land is State property and in no way permitted as an object of alienation, sale, pledge or mortgage.

Under Article 48 a certain degree of protection is awarded to land users when these are the result of an inheritance or of occupation and use rights long established. However, this shall not apply if, and when, the law considers such land as a legal reserve, i.e. a Protection Zone, or if it has already been legally assigned to any other citizen or entity.

2.1.2 NATIONAL LAW

THE ENVIRONMENTAL LAW
The Environment Law (no. 20/97, MICOA) defines the following fundamental principles:

- The rational use and management of environmental components regarding the promotion of the improvement of the quality of life of the citizens and the maintenance of biodiversity and of ecosystems.

- The global and integrated view of the environment, as unity of interdependent ecosystems, natural and man-made, that need to be managed in a way to maintain their functional equilibrium without exceeding their intrinsic limits.

Furthermore, this law defines the government's competence to establish Environmental Protection Areas. These areas, in accordance with the interests that are to be safeguarded, may be national, regional, local or even international and may cover land areas, lakes, rivers and the sea. They may be declared in relation to natural systems that for their peculiar characteristics (i.e. ecosystems of ecological and socio-economic value) should be given special attention and preserved.

The local communities, and to a certain extent the NGOs and the private sector, shall have at this level, a considerable and indispensable participation in the management of such areas. However, any activity within these areas shall be subjected to close surveillance and inspection.

Certain activities are prohibited and these include activities that may threaten conservation; reproduction, quality and quantity of biological resources, especially those that are threatened with extinction; the installation of infrastructure; the deposit of waste and other materials and residues that may impact negatively on the environment, etc.

FORESTRY AND WILDLIFE LAW

The 'Forest and Wildlife Law of Mozambique' (DNFFB, 1999) is based on the following principle:

- To protect, conserve, develop and use, in a rational and sustainable manner, forest and wildlife resources for the economic, social and ecological benefit of the current and future generations of Mozambicans.

The 'Policy and Strategy of the Development of Forests and Wildlife' (DNFFB, 1999) more specifically characterizes the ecological objective as:

- Protection and conservation of forests and wildlife with emphasis on the rehabilitation […] of national parks, wildlife reserves and forests and the extension of conservation areas. This objective is defined by the following […]: Improvement of protection, management and use of conservation areas […] in order to contribute to the sustainable national and local development, appropriate land use and conservation of biodiversity.

- The main principles of this law relate to the promotion of integrated management and the sustainable use of resources. Various zones for the protection of nature are outlined and this includes national parks.

ARCHAEOLOGY AND CONSERVATION

The law establishes the need for all projects that imply excavation, demolition or enlargement of land fields, to ensure the safe removal of submerged or buried archaeological objects. Provision has to be made for this in the budget(s) of any work that is to be done, in order to protect the objects found. In accordance with the law, the budget shall be of at least 0.5% of the value of the projected works of the investment.

In terms of the land act and the law on archaeological works, zones of archaeological value should be protected and declared as archaeological protection zones. Therefore, the physical planning of any area or region must give due respect to this provision.

LAND ACT

The act envisions that "as a universal means of creating wealth and social well-being, the use and enjoyment of land is the right of all the Mozambican people." The revision of the law was "intended to encourage land use and enjoyment so that this resource, which is the most important that the country has, is valued and contributes to the development of the national economy".

Article 3 of the law states that all land is State property and may not be sold or in any other way alienated, mortgaged or pawned.

Article 6 of the law states that all total and partial protection zones are public domain i.e. area for compliance with the public interest. This obviously includes national parks, these being total protection zones.

Article 8 states that the right to use and enjoy land may be acquired through occupation by Mozambican individuals who have been using the land in good faith for at least ten years, and by local communities whose right to use and enjoy land in terms of Article 7 will comply with the principles of co-titularity for all purposes of the law.

Article 14 states that the right to use and enjoy the land may be terminated through revocation of such right for reasons of public interest, after the payment of a fair indemnity and/or compensation, in which case the non-removable improvements will revert to the State.

Article 20 states that in rural areas the communities and villages take part in the (1) management of natural resources, (2) allocation of the right to use and enjoy the land, (3) identification and definition of the boundaries of the parcels they occupy, and (4) resolution of conflicts.

2.1.3. INTERNATIONAL CONVENTIONS AND PROTOCOLS

Mozambique is a signatory to a number of international conventions that have an implication for conservation in the country. These include the Convention on Biological Diversity (CBD), Convention on International Trade in Endangered Species (CITES) and RAMSAR.

Mozambique is also a signatory to various SADC protocols. Of direct relevance are the SADC Protocol on Wildlife Conservation and Law Enforcement and the SADC Protocol on Shared Watercourse Systems in the SADC Region.

The former calls on member states to promote co-operative management of shared wildlife resources and wildlife habitats across international boundaries as well as ensuring sustainable use of wildlife and effective enforcement of relevant legislation within each State. Water is one of the critical trans-boundary resources in the SADC region. The latter protocol on shared watercourse systems was developed in 1995 and provides for the judicious and co-ordinated development of shared watercourse systems in the region to support socio-economic development.

2.2. REGIONAL SETTING

2.2.1. LOCATION AND SIZE

The LNP is located adjacent to the international border with South Africa and to the south of the international border with Zimbabwe, in the west of Gaza Province.

It covers a vast area of 1,123,316 ha.

(See Map 1: Regional Setting of Limpopo National Park)

2.2.2. BOUNDARY DESCRIPTION

The western perimeter of the Park is formed by the border with South Africa and stretches in a north-south direction for a distance of nearly 200km. The Zimbabwean border touches on the most northerly tip of the area and then extends to the north-east.

The Limpopo River forms the eastern boundary, whilst the Olifants (Elefantes) River forms the southern boundary. The course of the Limpopo River is of fundamental importance in determining the physical position of the north-eastern boundary and a number of related factors needs to be considered. These include the hydrological regime of the river, which experienced great flooding in early 2000 and which periodically flows at a very high level. The extent of the 2000 floods was so great that the valley was submerged and the floodplain boundaries were exceeded.

The support zone (so called as it is intended to provide support to the Park whilst at the same time the Park benefits the people living adjacent to it in this zone) or buffer zone (legal term) of the Park extends westwards from the Limpopo River and northwards from the Olifants River in the area between the latter's confluence with the Limpopo and Massingir Dam. The position of the western boundary of this zone is to-date unclear as the map contained in the proclamation reflects certain surveyed points in the floodplain whilst the text indicates that the boundary lies five kilometres west of the Limpopo River. In any event, this boundary is to be refined by a dedicated team working together with the local communities in order that the proclamation can be suitably amended. Its relocation will take into account the use of the land by local residents.

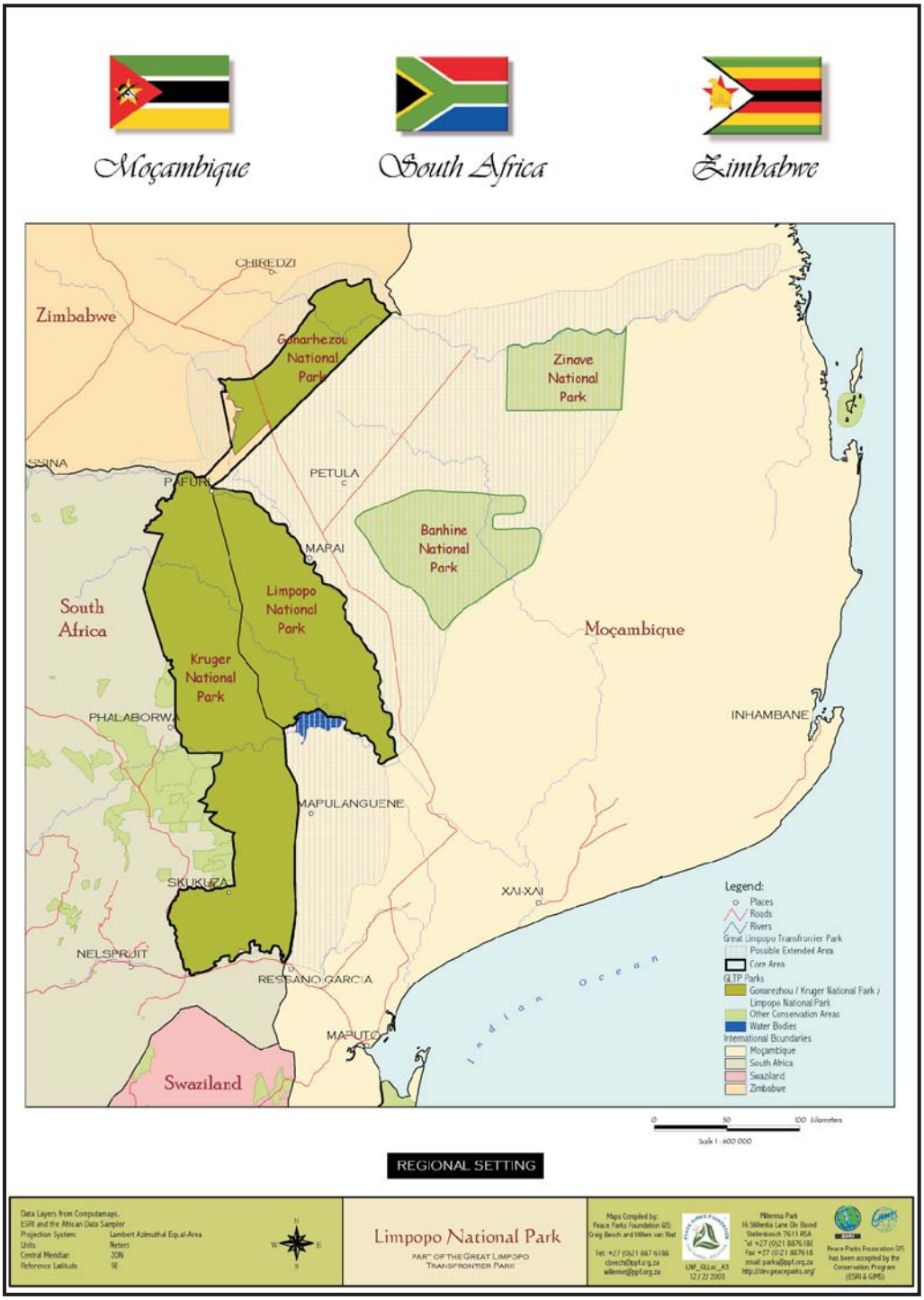
2.2.3. THE GREAT LIMPOPO TRANSFRONTIER PARK

The LNP is a part of the Great Limpopo Transfrontier Park, which also includes the Kruger National Park (KNP) and Gonarezhou National Park (GNP). However, the original vision for the area and the Transfrontier Conservation Areas Pilot and Institutional Strengthening Project also includes Banhine National Park and Zinave National Park in Mozambique as well as the interstitial land between the parks. The planning and development of this greater area is the subject of ongoing work in which the GOM and various NGOs and IGOs are involved.

The Kruger National Park, lying immediately to the west of LNP, has an important bearing on the planning and development of LNP. This is so for a number of reasons, but perhaps most

importantly because of the need to fulfil one of the primary objectives of TFCAs, that being to manage ecosystems holistically. The KNP itself has in the past, been zoned as if it were an island, with no consideration being taken of neighbours on either side. Whilst the thinking on this has changed over the past few years, it has yet to be practically implemented. It is intended that from here on, both parties co-operate to harmonise their respective management and development plans with the intention of improving the ecological management of the area. The zoning of the two areas will be complementary and supportive and will be based on natural (e.g. habitat types, distribution of wildlife populations) and existing man-made (e.g. rest camps, development nodes) features.

GNP is not contiguous with either LNP or KNP. It is separated from the northern part of KNP (owned by the Makuleke Communal Property Association and managed as an integral part of KNP as a Contract Park) by a corridor of tribal land. The Zimbabwe authorities have initiated a process of engagement with people living in and near the corridor with a view to future planning of the region, and incorporation into the TFCA activities.



Map 1: *Regional Setting of the Limpopo National Park.*

2.3. BIOPHYSICAL PARAMETERS

2.3.1. CLIMATE

GENERAL

The climate of the LNP may be described as subtropical, with hot, wet summers and mild, dry winters.

The climate is related to the regional climate of the subcontinent as a whole insofar as it is influenced by anti-cyclonic systems moving rhythmically over southern Africa from west to east.

During the summer months, the presence of anti-cyclonic conditions in the interior of southern Africa gives rise to extremely hot and dry conditions which may persist for up to two weeks at a time. These conditions are normally followed by the development of a low-pressure cell over the interior, resulting in an influx of hot, moist equatorial air from the north and northeast, with subsequent thunderstorms. The establishment of equatorial low-pressure troughs over the subcontinent normally gives rise to widespread and continuous rain over the lower lying coastal plains.

Tropical cyclones occasionally enter the area in the late summer months. They originate in the equatorial areas of the Indian Ocean when the surface temperature of the sea rises above 27° C and move slowly down the Mozambique Channel, gaining moisture as they proceed. The high rainfall associated with tropical cyclones moving overland frequently causes extensive flooding and damage to infrastructure and services. In addition, it may also impact severely on the natural environment.

Winter months are normally characterized by the presence of anti-cyclonic conditions over the interior of southern Africa, which result in fine and mild weather over the area. These conditions intermittently give way to cooler, cloudy conditions when cold frontal systems of polar origin penetrate from the south.

TEMPERATURE

The average, maximum day temperatures increase from south to north, with absolute maximum temperatures of above 40° C being common for the months November to February.

Although the mean minimum temperature is above freezing point, frost is periodically recorded in the lower lying areas along the rivers in the Shingwedzi area.

RAINFALL

Mean annual rainfall decreases from south to north. Precise rainfall figures are not available for the LNP area. Based on adjacent KNP long-term figures, mean annual rainfall varies from the order of 360mm in the far northern part to over 500mm along the Lebombo Range in the south west of the Park. Effective rain occurs from September to April with a short dry period of four months.

Analysis of the rainfall patterns of the adjacent KNP over the past 100 years also indicates a cyclical nature with approximately 10 years of generally above average rainfall, followed by a period of similar duration with generally below average rainfall. This is likely to hold for the LNP.

The high temperatures during summer result in high evaporation rates that impact negatively on the effectiveness of the precipitation.

Hail occurs on a regular basis, but at low frequencies. Mist in winter may occur in the lower lying areas.

In terms of conservation biology, the key climatic features of the Park are thus generally low and highly variable rainfall with regular periods of drought, and extreme ranges in temperature both within and between seasons.

2.3.2. GEOLOGY, LANDFORMS AND SOILS

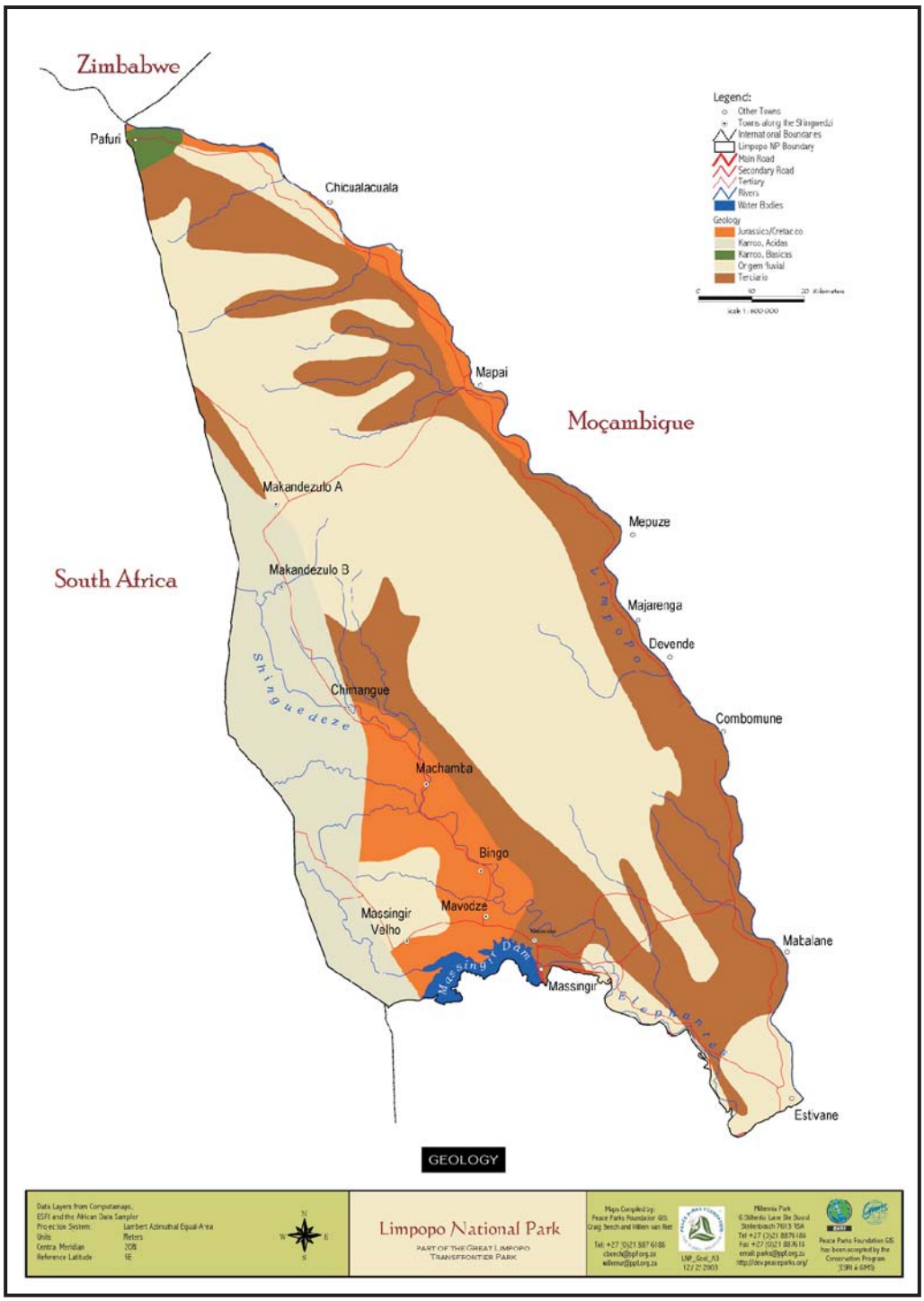
The escarpment zone of the southern region (plateau area) is underlain by rhyolite volcanic rock. Pebble-beds crest areas with red clays are therefore also common on the Lebombo hills. Whereas the well-drained soils of the rhyolite on the escarpment are shallow and clayey; poorly drained, deeper and structured clays characterize the Shingwedzi floodplains. The eastern part of this region consists of sandy substrates. Geologically, the southern region has a relatively high proportion of rhyolite volcanic rock forming an escarpment zone along its western boundary and comprising Glenrosa and/or Mispah soil forms. The floodplains below the escarpment form part of a greater sedimentary basin, which incorporates the Shingwedzi River to the east and the Olifants River to the south. Deep structured clay soils derived from calcaric sedimentary rocks are broadly associated with the drainage systems of these rivers, each with its narrow strip of alluvial sediments. Sandy soils, including dunes, are characteristic of the higher lying stepped slopes and crests away from the drainage lines.

The higher lying slopes and crests of the northern region consist of remnants of a red sand mantle. Grey shallow sandy soils on pebble-beds are well represented on the Lebombo crest and on the eastern stepped slopes. Sandy dunes are therefore common as remnant patches on the higher lying plateau and the stepped slope areas of the sedimentary basin. Along the alluvial plains, a red neocutanic soil is found. Geologically, the northern region forms part of a greater sedimentary basin that is contained within the alluvial systems of the Limpopo River to the east and the Olifants River to the west. It also includes a narrow tongue of rhyolite volcanic rock, which extends northwards part of the way along its western boundary. Immediately up-slope of the narrow strip of alluvial sediments that follow the course of the Limpopo River, sandy soils derived from calcaric sedimentary rocks are evident. Deep sandy soils are in the form of a red sand mantle and include dunes, which are characteristic of crests away from the rivers. Shallower, grey sandy soils are found on the periphery of the red sands, where pebble-beds are exposed to the surface.

Alluvium and clay sediments and calcaric sedimentary rocks are characteristic of the Limpopo flood plains, but a relatively small section of sand dunes are found in the south. Geologically, the Eastern Region forms part of a greater sedimentary basin that is contained within the alluvial systems of the Limpopo River to the east and the Lebombo Mountains to the west, with the Socco River intersecting the region. Immediately up-slope of the narrow strip of alluvial sediments that follow the course of the Limpopo and Olifants rivers, clay soils derived from

calcaric sedimentary rocks are evident. Sandy soils, derived from Mananga sediments and including dunes, is characteristic of the higher lying crest areas away from the rivers.

(See Map 2: Geology of the Limpopo National Park)



Map 2: *Geology of the Limpopo National Park.*

2.3.3. HYDROLOGY

The hydrology of the region is dominated by three river systems, the Limpopo and the Olifants and to a lesser degree the Shingwedzi.

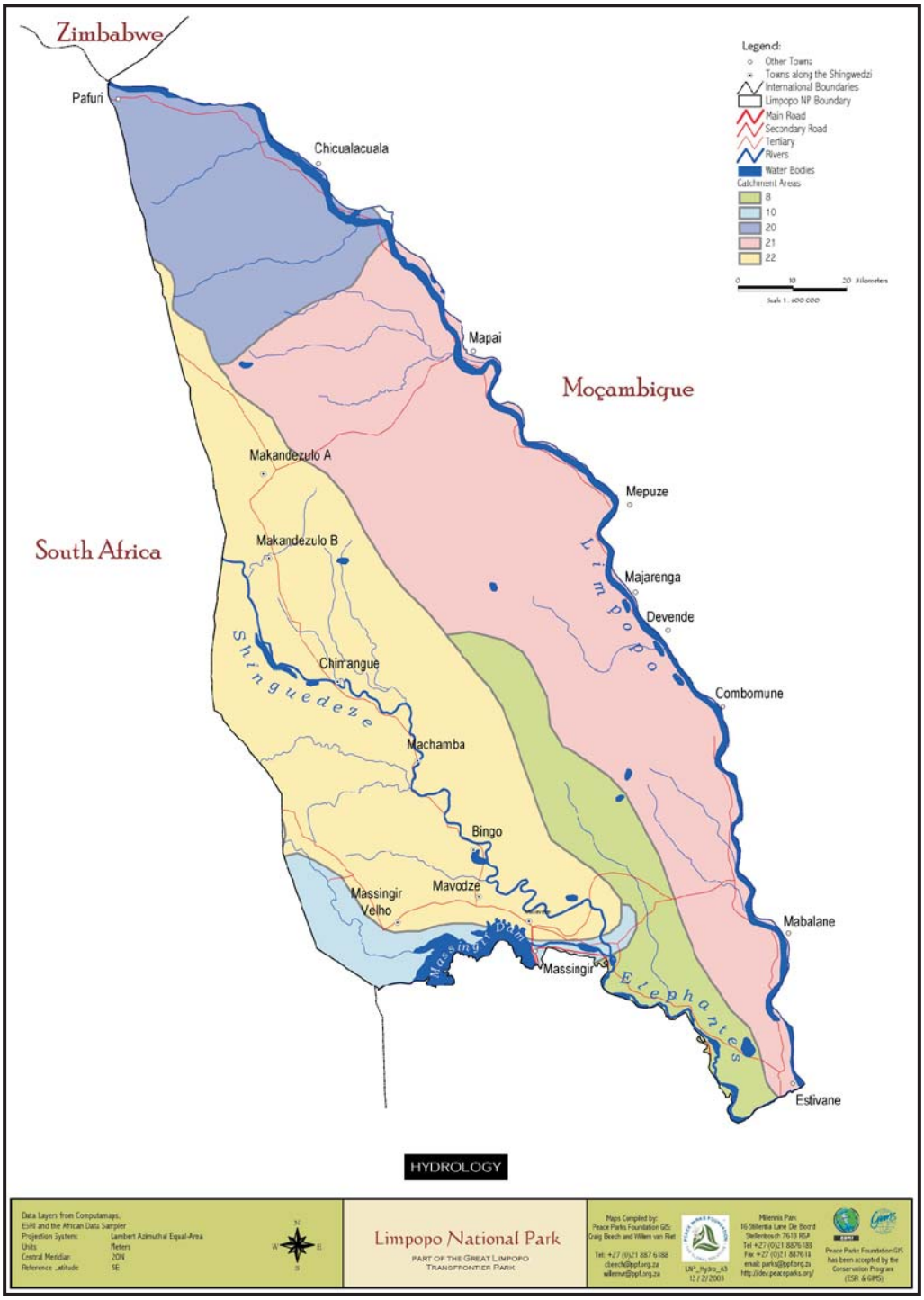
The Limpopo is the largest, and its catchments are derived from the interior plateau of South Africa, the interior plains of eastern Botswana and the northern part of the eastern escarpment of South Africa. The varying landscape and rainfall patterns have widely differing effects on the hydrologic regime of the Limpopo. The highveld produces most of the runoff and floods, but is controlled by the various dams in the Crocodile, Marico and Pienaars Rivers. These dams reduce runoff and control the moderate floods. The Botswana catchments of the Shashi, and others produce little runoff but can dramatically influence flooding. The escarpments catchment of the Pafuri can influence flooding as well as runoff to a lesser degree. The Limpopo, once perennial, currently dries up at the end of winter during dry cycles and only pools remain in the riverbed.

The Olifants River is derived from the eastern interior plateau of South Africa and high runoff and flooding is produced by the catchments of the Olifants, the Wilge and Steelpoort Rivers. Dams in these catchments also influence runoff and flooding. The eastern escarpment rivers such as the Letaba and Blyde have a large effect on the flooding and runoff regime of the Olifants River. The Massingir Dam in Mozambique controls these escarpment rivers but as the dam is not complete, it releases water in a controlled manner to the lower Olifants River. This river remains perennial throughout the season.

The Shingwedzi is a much smaller river system with only a small part of its catchment reaching the escarpment and its high rainfall regions. The river is therefore not perennial and dries up in its lower reaches. As it drains the central portion of the LNP, it has a large effect on the wildlife distribution through the Lebombo rhyolite mountain drainage. These smaller streams retain water for long periods and attract wildlife from the dry waterless sandveld interior. The sandveld interior is waterless except for the many small pans, which retain water during the summer and for periods during the winter. Most dry up at the end of winter.

These river systems have an overwhelming impact on the land use of the region, which influences the population distribution as well as wildlife distribution. It also impacts on tourism zoning and utilisation. It must be seen as the prime factor in determining land use.

(See Map 3: Hydrology of Limpopo National Park)



Map 3: *Hydrology of the Limpopo National Park.*

2.3.4. FLORA

The LNP falls within the Mopane vegetation of the Sudano-Zambezian Region[1] and corresponds to the Acocks Veld Type 15, Mopani Veld[2].

In terms of ecological determinants, the availability of moisture is the overriding factor in determining vegetation composition and spatial distribution. The greater moisture availability along quasi-perennial or seasonal waterbodies results in riverine communities. Thereafter, the gradient in soil clay content (resulting from the underlying geological substrate and landscape position) and landscape position per se (in determining water flow) largely determine soil moisture availability. Secondly, nutrient availability is important to composition. Geology determines intrinsic nutrient potential. Landscape position influences nutrient depletion and accumulation.

A total of fifteen, distinct plant communities can be identified in the field:

- Community 1: *Androstachys johnsonii* (Lebombo ironwood) – *Guibourtia conjugata* (small copalwood) short forest,
- Community 2: *Baphia massaiensis* (sand camwood) – *Guibourtia conjugata* (small copalwood) low thickets,
- Community 3: *Terminalia sericea* (silver clusterleaf) – *Eragrostis pallens* (broom love grass) low woodland,
- Community 4: *Combretum apiculatum* (red bushwillow) – *Pogonarthria squarrosa* (herringbone grass) low woodland,
- Community 5: *Combretum apiculatum* (red bushwillow) – *Andropogon gayanus* (blue grass) low woodland,
- Community 6: *Colophospermum mopane* (mopane) – *Panicum maximum* (Guinea grass) short woodland,
- Community 7: *Colophospermum mopane* (mopane) – *Combretum imberbe* (lead wood) tall shrubland,
- Community 8: *Kirkia acuminata* (white seringa) – *Combretum apiculatum* (red bushwillow) tall woodland,
- Community 9: *Terminalia prunioides* (Lowveld clusterleaf) – *Grewia bicolor* (white raisin) thicket,
- Community 10: *Acacia tortilis* (umbrella thorn) – *Salvadora persica* (mustard tree) short woodland,
- Community 11: *Acacia xanthophloeia* (fever tree) – *Phragmites sp*. woodland,
- Community 12: *Acacia xanthophloeia* (fever tree) – *Faidherbia albida* (ana tree) tall forest,
- Community 13: *Plugia dioscurus* – *Setaria incrassata* (vlei bristle grass) short grassland,
- Community 14: *Sporobolus consimilis* – *Setaria incrassata* (vlei bristle grass) tall grassland, and
- Community 15: *Stenotaphrum secundatum* (coastal buffalo grass) – *Cynodon dactylon* (couch grass) short grassland.

Different combinations of these plant communities can be grouped in10 landscapes that belong to five landscape alliances. Landscapes strongly reflect the underlying geology. The landscapes of the LNP have strong affinities to a number of landscapes found in the adjoining KNP. The main difference is the much greater importance of sandveld landscapes in the LNP that constitute 44% of its surface area.

The following 10 landscapes are found:

Recent sand plains (landscape alliance no. 17)

- Nwambia Sandveld (Landscape no. 32)
  Approximately 458,641 ha (41.1% of LNP),
  Stretches from the NW border with the KNP in a SE direction down towards the confluence of the Limpopo and Elefantes,
  On sandy substrate, including deep red soils of the red sandy mantle dunes of the interior. Well-defined drainage channels are absent and a variety of pans are found,
  Made up of plant communities 3, 4, 2, 1, 6 and 5 (in descending order of importance).

- Pumbe Sandveld (Landscape no. 30)
  Approximately 25,608 ha (2.3% of LNP),
  In SW section of the LNP, to the NW of Massingir Velho,
  On sandy substrate,
  Made up of plant communities 3, 4 and 6

Calcitic plains with *C. mopane* shrub savanna (Landscape alliance no. 15)

- *Adansonia digitata / Colophospermum mopane* Rugged veld (Landscape no. 25)
  Approximately 1,219 ha (0.1% of LNP),
  In extreme NW part of LNP at Pafuri,
  On rocky hill slopes (basalts and calcrete). Low annual rainfall (<450 mm).
  Shallow, calcareous soils with clay.
  Made up of plant communities 8, 9 and 6

- *Colophospermum mopane* shrubveld on calcrete (Landscape no. 26)
  Approximately 415,890 ha (38.8% of LNP),
  Distributed along north-south lines above Limpopo Valley, and on both sides of Shingwedzi Valley.
  On sedimentary foot slopes and ravines with calcareous pebble-beds.
  Shallow and calcareous soils.
  Made up of plant communities 6, 7, 9, 14 and patches of 1.

Basaltic or gabbroic plains with *C. mopane* bush or shrub savanna (Landscape alliance no. 13)

- *Combretum spp. / Colophospermum mopane* Rugged Veld (Landscape no. 22)
  Approximately 69,911 ha (6.21% of LNP),
  Distributed north and south of the Shingwedzi as it enters the LNP,
  Relatively shallow soils, with skeletal soils on the Lebombo rhyolites of koppies and slopes with deeper, clayey soils in low-lying areas.
  Made up of plant communities 8, 7 and 6.

- *Colophospermum mopane* shrubveld on basalt (Landscape no. 23)
  Approximately 271 ha (0.02% of LNP),
  Extends marginally from the KNP into the LNP north of the Shingwedzi River.
  On basalts that have developed dark colored soils with vertic characteristics.
  Made up of plant community 7.

Basaltic plains or rhyolitic mountains with *C. apiculatum* or *C. mopane* bush savanna plains (Landscape alliance 14)

- Mixed *Combretum* spp. / *Colophospermum mopane* Woodland (Landscape no. 27)
  Approximately 10,576ha (0.94% of LNP),
  Occurs north of the Shingwedzi River between the border with the KNP and the large sandveld expanse to the east.
  On soils of mixed origin that consists of weathered products of basalt, Quaternary sand and gravel.
  Made up of plant community 6.

- Lebombo North (Landscape no. 31)
  Approximately 39,878 ha (3.5% of LNP),
  Along the western boundary with the KNP, south of the Shingwedzi River, with a few isolated outcrops north of the river.
  On shallow stony soils derived from rhyolite with rocky outcrops.
  Made up of plant communities 5, 6, 13 and 8.

Alluvial plains with *Faidherbia albida* or *Salvadora angustifolia* tree savanna (Landscape alliance no. 16)

- Limpopo Levubu Floodplains (Landscape no. 28)
  Approximately 17,292 ha (1.5% of LNP),
  Upper Limpopo from Pafuri to Mapai.
  Underlying material is alluvium. Subject to flooding.
  Made up of plant communities 12, 14, 15, 11 and 10.

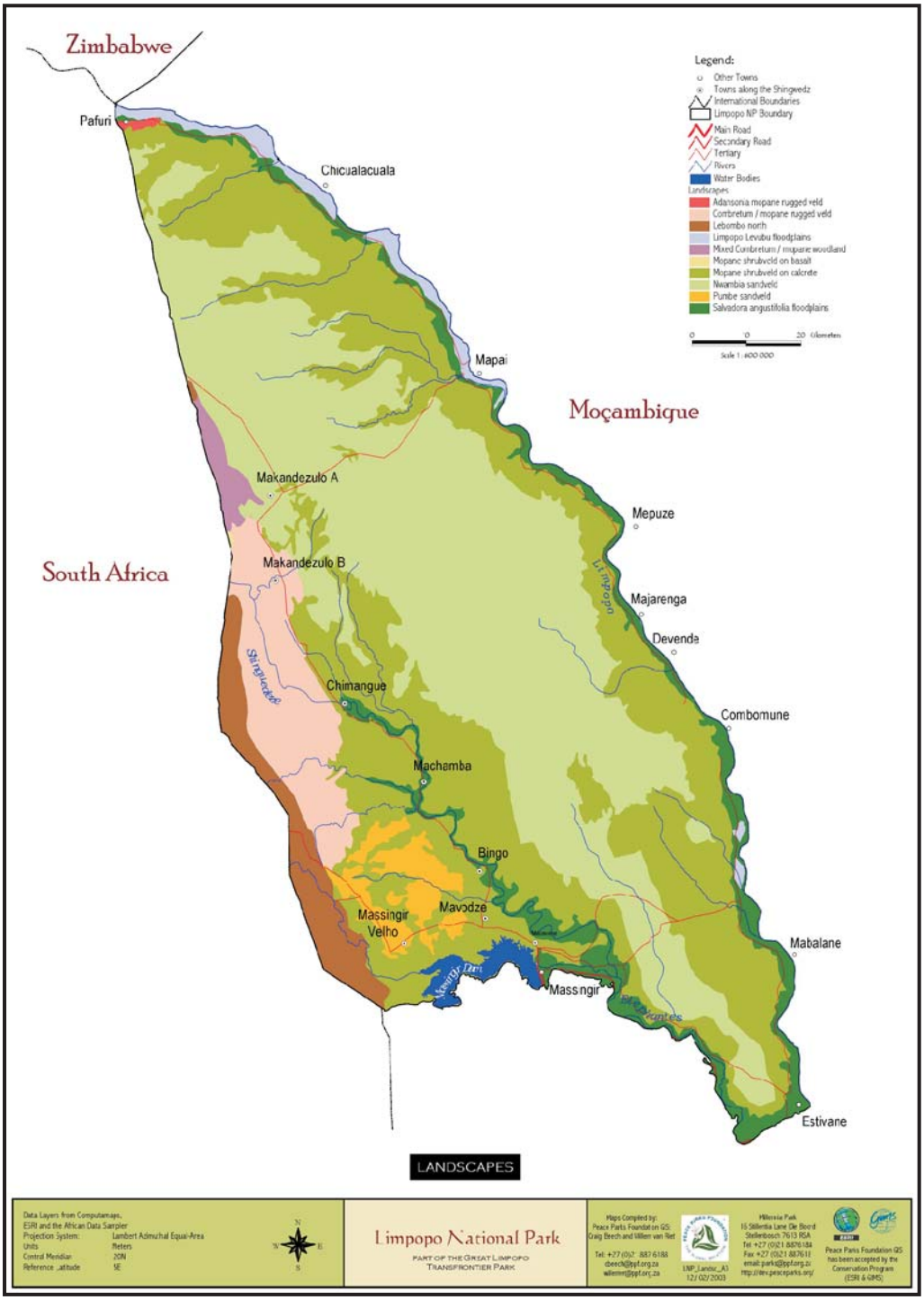
- *Salvadora angustifolia* Floodplains (Landscape no. 35)
  Approximately 76,692 ha (6.81% of LNP),
  Distributed.along Shingwedzi River, Limpopo south of Mapai and Elefantes.
  On alluvium. Soils of this landscape are often brackish
  Made up of plant communities 10, 14, 6, 11 and 12.

Based on their plant communities composition it can be expected that the Nwambia Sandveld landscape, *Adansonia digitata / Colophospermum mopane*, Rugged Veld and Lebombo North landscapes are relatively richer than other landscapes. Species of conservation importance include *Stadtmannia oppositifolia* and *Pterocarpus lucens.*
The clearing of vegetation for agricultural purposes is presently still taking place, even in

sensitive and species-rich areas such as the riverine forest of community 12 (*Acacia xanthophloeia – Faidherbia albida* tall forest) and the sandveld of community 4 (*Combretum apiculatum – Pogonarthria squarrosa* low woodland).

The following invasive alien species were observed: *Nicotiana glauca* (on banks of Massingir Dam), *Parkinsonia aculeata* (in Limpopo floodplain near Pafuri), *Ricinus communis* (along Limpopo River near Mapai), *Agave* sp. (proposed Ngwenya development site on upper Shingwedzi), and *Xanthium strumarium* (riverine areas). The Limpopo River near Pafuri more than likely is infested by the following waterweeds; *Pistia stratiotes, Salvinia molesta* and *Azolla filiculoides* which are all found in the Limpopo River within the KNP.

(See Map 4: Landscapes of the Limpopo National Park)



Map 4: *Landscapes of the Limpopo National Park*

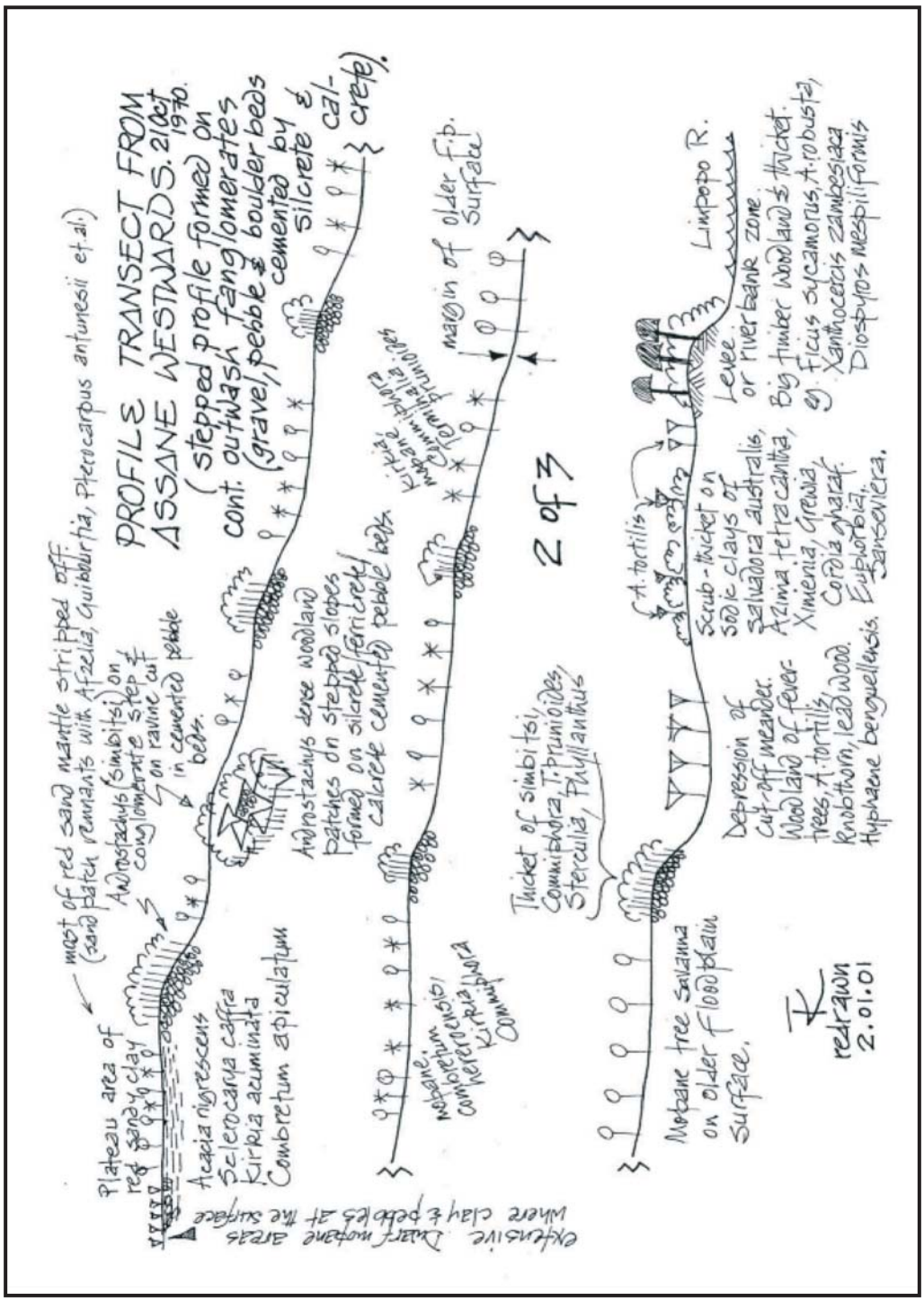


Figure 1: *Cross-section from Sand Plateau to Limpopo River. This diagram was drawn by Dr Ken Tinley following a number of field trips to the region during the 1970's. It clearly illustrates the salient ecological features of the area.*

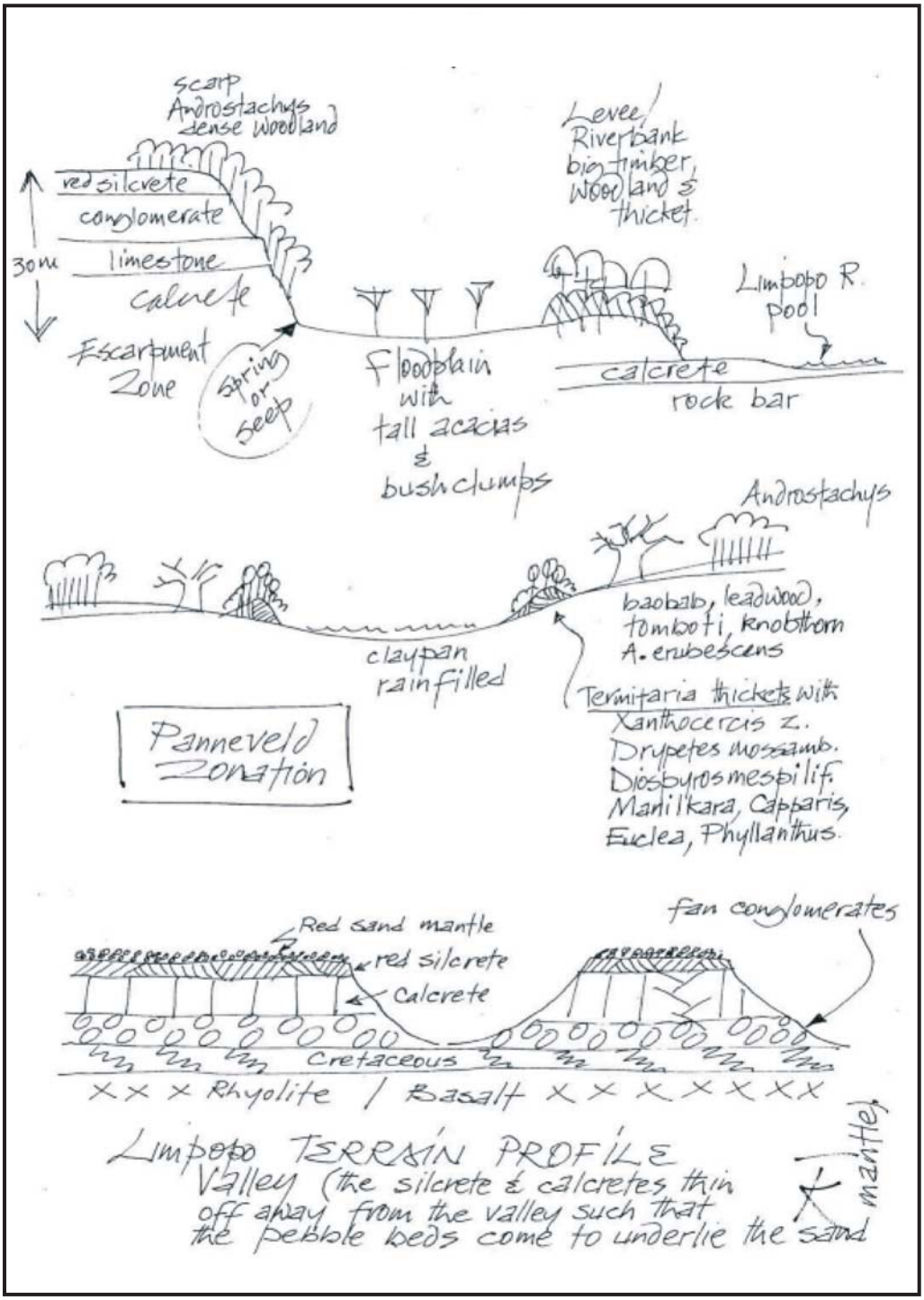


Figure 2: *A further diagrammatic analysis of edaphic controls by impervious horizons such as clay or calcrete (by Dr Ken Tinley).*

2.3.5. FAUNA

Forty-nine species of fish are known from the area. Three species deserve special conservation status because of their rarity and limited distribution, these being the two small seasonal pan inhabitants *Nothobranchius orthonotus* and *Nothobranchius rachovii*, as well as the lungfish *Protopterus annectens*.

Thirty-four species of frogs are known from the area. The sandveld pyxie *Tomopterna krugerensis* was discovered within the Kruger Park and has its main area of distribution within the Transfrontier Park area, although it has also been recorded in Kwa-Zulu Natal, South Africa.

At least 116 species of reptiles are known from the Transfrontier Park area. Included amongst these are two near-endemic species: *Nucras caesicaudata* (blue-tailed sandveld lizard) and *Monopeltis decosteri* (De Coster's spade-snouted worm lizard).

A total of 505 species of birds are known from the Kruger National Park, but a small number of additional species is likely to be present in the LNP. None of the KNP species is endemic.

A total of 147 mammal species are known from the area, of which none is endemic. However, aside from a localised population around Pretoria in South Africa, Juliana's golden mole *Amblysomus julianae* is known only from a few specimens collected from Pretoriuskop area in the KNP. Currently KNP is also one of the last areas anywhere in the world to have significant and viable populations of wild dog *Lycaon pictus*, having some 300 individuals in total. The population of 3 000 white rhino *Ceratotherium simum* present in the KNP is the largest anywhere, while the 300 black rhino *Diceros bicornis* is the second largest population. Both these species are increasing steadily and increased range opportunities into Mozambique and Zimbabwe will enhance the conservation of these threatened animals, as it will for the endangered wild dogs. One as yet undescribed new species of *Eptesicus* bat is known from the KNP. Several rare antelope species representing unique gene pools are also largely localised within the TFCA area, such as roan antelope *Hippotragus equinus*, sable *Hippotragus niger* and tsessebe *Damaliscus lunatus*.

2.4. SOCIO-ECONOMIC AND CULTURAL BACKGROUND

2.4.1. BRIEF HISTORY OF THE PEOPLE

In the greater GLTP area, early inhabitants were San hunters and gatherers, while Bantu farmers and ironworkers entered 800 years ago gradually displacing the San. From about 1500, Portuguese trading posts became regular ports of call on the new route to the east. Later, traders and prospectors penetrated the hinterland. The discovery of gold in the latter half of the 19th century attracted large numbers of Europeans closer to the area. This contributed to sustained and increasing hunting pressure on wildlife, leading to the establishment of protected areas in South Africa and then Mozambique.

The predominant tribe in the LNP today is the Shangaan / Tsonga. International boundaries between South Africa, Mozambique and Zimbabwe divide the tribe and its families, and traditional tribal structures have been disrupted. During the civil war, numbers of people moved into the apartheid homeland of Gazankulu in South Africa and were accepted into the community there. However, with the transition to peace, many people have started to return to their former homes and are re-establishing a means of ensuring their basic survival, especially difficult in areas with low potential and high risk for agriculture and livestock rearing. As the situation presently stands, people can maintain only sporadic contact with each other. Visa applications in Maputo or Johannesburg are out of reach for that population for economic and logistical reasons and this makes the legal border crossing impossible for them. Therefore, contact is rare and dangerous, as people cross the border illegally.

It is evident that despite many political and social changes in both Mozambique and South Africa, people have generally retained many aspects of their traditional lifestyle including their language, house building styles and indigenous authority system. These factors need to be respected when negotiating any aspect of change in the communities both regionally and at household level. This is particularly important when discussing issues such as the fencing, moving of people and work opportunities and setting up a Tribal Legal System which prevents poaching and through Compensation Law can deal with minor poaching offences.

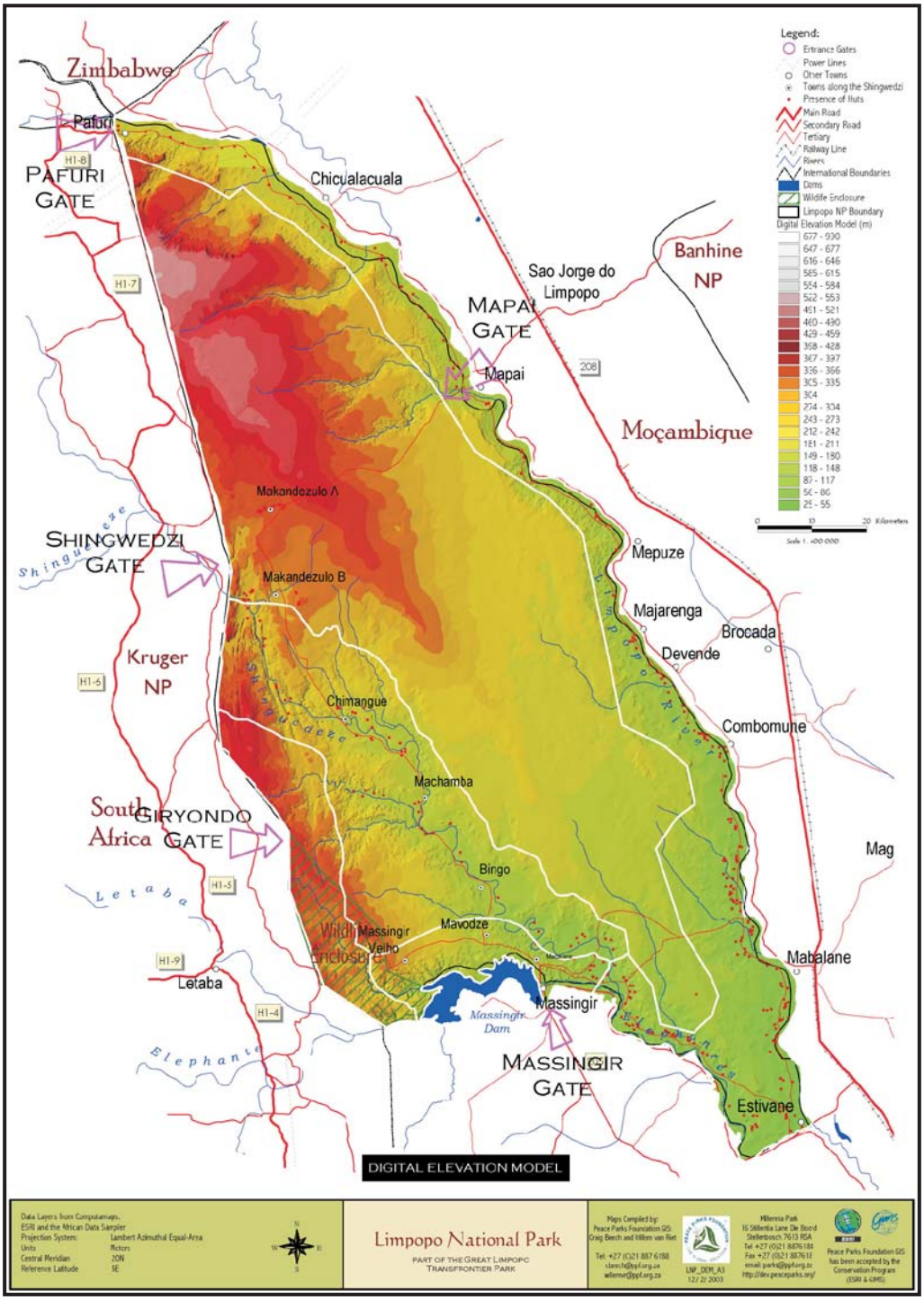
2.4.2. POPULATION DISTRIBUTION

The civil war in Mozambique resulted in major, social disruption, with large-scale movement of people out of the LNP. With peace prevailing people moved back into the rural area. In the district of Massingir, the population almost doubled between 1980 and 1996. Most people together with their livestock are concentrated in areas of arable alluvial soils along the Limpopo and Shingwedzi rivers.

Within the LNP, approximately 4 350 inhabitants[4] live along the Shingwedzi River with about 5 200 head of cattle. Population density decreases up the Shingwedzi River from Massingir and villages become smaller as the access to the city, markets and social services becomes more difficult. It is estimated that a further 20 000 people live along the Limpopo and Elefantes rivers, within the support zone of the Park.

(See Map 5: Demography of the Limpopo National Park)

[4] Socio-economic, demographic, land-use and attitudinal survey of the communities residing in the Shingwedzi Basin, Limpopo National Park, Gaza Province, Mozambique. Draft Interim Report. 2002. CREATE for SUNI LTD.



Map 5: *Demography of the Limpopo National Park.*

2.4.3. ECONOMIC ACTIVITY

The Mozambican per capita gross national product increased from around US$ 80 in 1995 to US$ 90 in 1997. The vast majority of Mozambicans live below the poverty line, and social indicators are among the lowest in Sub-Saharan Africa. More than 75% of the total population of around 19 million (07/1999) are engaged in subsistence agriculture, which has largely resumed since the end of the civil war. Population growth rate is estimated at around 2.5 % p.a. (1999). The minimum salary is US$ 50/month. Figures on income patterns in and around the LNP do not exist. However, people in rural and remote areas like the LNP belong to the most disadvantaged part of the society, due to weak infrastructure and social services, distance to markets and employment opportunities.

Infrastructure in and around LNP is very poor, contributing to the lack of economic development potential in the region. The main economic activity in the region is rain fed agriculture (e.g. maize, pumpkin and beans), complemented by raising of livestock. The area is in a semi-arid zone, typified by poor soils, except for alluvial soils along the rivers, and receives low and unpredictable rainfall. Therefore, the potential for economically viable and sustainable agriculture is low. In years of good harvest, surplus production is marketed in Maputo - a possibility reserved for the population which lives close to Massingir and has better access and transport to Maputo. Further upstream on the Shingwedzi, marketing becomes much more difficult. Prior to the war, Gaza was a major cattle-producing area and cattle numbers are increasing again, with animals such as chickens, ducks, goats and pigs also being maintained by many families.

During the dry season, local inhabitants collect roots and tubers, honey and wild fruits from plants and trees. Local and imported tree species not only provide fruit for eating and the brewing of traditional beverages, but are also an important source of wood fuel for household cooking, a source of local building material (poles and timber for houses, fencing, around yards) and are used to make charcoal for sale in towns and cities such as Maputo. Trees represent major economic potential for the household economy, since tree products can be sold as well as consumed directly. Constraints on tree production include shortages of seeds or saplings, poor land quality, drought, pests and insufficient land.

Game hunting for local consumption has traditionally been practiced by local people in the area, and bushmeat constitutes an important source of protein. Fishing is also an important economic activity for those communities living close to the rivers and to the Massingir Dam. The majority of the inhabitants in this area value the natural resource base highly and appreciate its importance for meeting their subsistence needs.

Employment of local people is in general very limited and there is little cash income in the region. Migration – permanent and seasonal – occurs, especially of younger men, in order to look for jobs in Maputo or in South Africa. As a consequence, a high percentage of households in the area are headed by women.

3. VISION

3.1. VISION

At the April 2002 planning workshop held in Maputo, the stakeholder groups produced the following vision statements, the purpose of which is to clarify and define the objectives and aspirations of the different stakeholders in the Park. NB. These are reproduced to reflect the participatory manner in which this management plan was produced.

COMMUNITIES
Effective management of the National Park and sustainable use of resources so as to improve levels of livelihoods and to guarantee conservation.

DONOR/TECHNICAL
Establishing LNP as an integral part of an ecologically functional Greater Limpopo Transfrontier Conservation Area leading to an improved livelihood of local communities.

This will be achieved through equity and an integrated land use planning approach using sustainable resource use and eco-tourism development compatible with the overall conservation objectives.

NGOS/CHURCH
To achieve the management of the diversity and conservation of the LNP for the benefit of the Mozambican people especially those living in and around the LNP through sustainable use of natural resources plus land use and through tourism, that includes eco-system and culture.

GOVERNMENT
The LNP will be developed by means of its biodiversity being maintained and improved and in a way to satisfy the needs of the local communities and of tourism.

JOINT VISION
Limpopo National Park forms part of a greater Transfrontier Conservation Area, in which ecological processes are effectively maintained and which contributes to the welfare of the people of Mozambique through sustainable eco-and cultural tourism development and resource use which is compatible with the conservation objectives of the Park.

3.2. PRIMARY OBJECTIVES OF THE LNP

- To maintain the current 'wilderness' (in the sense of natural or near-natural, largely un-transformed) character of LNP, and to manage it as a globally important conservation area within a framework of minimum management intervention, whilst ensuring the maintenance and natural evolution of ecosystem structure and function.

- To ensure the LNP's integration into the greater TFCA planning and development framework, thereby contributing to the judicious and sustainable natural resource management of the region.

- To ensure the participation of local communities in the development and management of the LNP, and to ensure an equitable flow of benefits to these communities. Such benefits should include equity-sharing in tourism developments and operations, human resource development and capacity building, employment creation, the development of SMME opportunities and improved natural resource management leading to improved livelihoods.

- To manage and develop the LNP in the interests of the people of Mozambique, both with respect to biodiversity conservation and with respect to making a contribution to the sustainable socio-economic development of the region and the country.

- To promote responsible tourism as a means of generating income for the LNP and as a means of driving sustainable socio-economic development in and around the Park.

4. ZONATION

4.1. PURPOSE OF ZONATION

Zoning is a management tool that delineates the Park into different areas (zones) where different types and scales of development are allowed and where the levels of resource use and conservation inputs that may be required vary. Zones are determined by landscape and ecosystem features, the Park's vision and objectives, as well as its socio-economic environment and other external factors.

Different landscapes (and ecosystems) may lend themselves to different land uses and each landscape varies in its capacity to fulfil and absorb the demand for a particular activity. Land uses may also be mutually incompatible: some effectively reducing the quality of experience associated with others. This friction must be managed. As the impacts of activities are considered in the zoning phase of planning, the intention is to minimise their potential and likely environmental impacts during this phase.

Zonation boundaries may be determined by biophysical characteristics, by administrative requirements or even by external factors. Depending on the nature and purpose of the zone, the most suitable boundaries should be selected to meet the objectives of creating that zone.

Certain fundamental objectives, such as maintenance of ecological processes, are obviously common to several zones.

4.2. ZONATION CATEGORIES

4.2.1. SPECIAL PROTECTION ZONE

RATIONALE:
Such an area may be set aside in recognition of an important site, which deserves the highest conservation priority and special protection measures. This type of area may include breeding sites of rare species, extremely sensitive or endangered ecosystems or their components, important archaeological and historical sites, sites for long-term monitoring or research, and so on. Special zones could form sub-zones within any of the other zones, though obviously the measures needed to protect or secure such an area would be greater in higher use zones.

OBJECTIVES:

- Protection of specific natural or cultural features.

ACTIVITIES / INFRASTRUCTURE:

- Depending on the specific nature of the feature that is being protected, activities will be limited, so as to minimise impact on that feature and ensure its protection.

BOUNDARIES / LOCATION:
Although no areas falling into this category have yet been pinpointed, it is most likely that such areas will be identified as knowledge of the LNP increases. For this reason, this category is included.

AREA COVERED:
Not yet defined.

4.2.2. WILDERNESS ZONE

RATIONALE:
The reasons for creating a wilderness zone are to ensure compatibility with KNP's zonation, as agreed to in the Joint Management Guidelines for the GLTP, to ensure that a sense of 'untouched' wilderness is retained in the Lebombos, also furthering the biodiversity conservation objective of the Park in this biodiversity-rich area through minimising anthropogenic impact on this area.

OBJECTIVES:

- Wilderness protection.
- Scientific research.
- Preservation of species, genetic and landscape diversity.
- Maintenance of ecological processes and environmental services.

ACTIVITIES/INFRASTRUCTURE:

- Scientific research.
- No tourist camps or personnel accommodation may be constructed.
- Service tracks only where necessary. Off-road driving is prohibited except under special circumstances.
- Where necessary, existing boundary fences will be maintained but no other fences will be constructed.
- Only guided hiking will be permitted.

BOUNDARIES/LOCATION:
The wilderness zone is located on the western side of the Park, bordering the KNP and including the Lebombos, stretching from the south-western corner of the Park to where the Shingwedzi River crosses into Mozambique.

(See Map 6: Zonation Limpopo National Park)

AREA COVERED:
838 square kilometres (7.5% of Park).

4.2.3. MEDIUM TO HIGH DENSITY TOURISM ZONE

RATIONALE:
A zone needs to be demarcated that is suitable for denser development, where infrastructure is readily available or can be provided with the least impact to the Park and where Park Headquarters and management related facilities can be situated. It is logical to site this zone in proximity to Massingir Dam because of the level of transformation that has already occurred in this area, the fact that the dam provides a logical focal point for tourism and recreation in the Park, and because of its access to infrastructure.

OBJECTIVES:

- To facilitate medium to high-density tourism development and recreation opportunities catering to a broad range of market sectors in the vicinity of the Massingir Dam.
- To provide a suitable location for Park headquarters and management related facilities.
- Education (visitors and local communities).
- Maintenance of environmental services.

ACTIVITIES / INFRASTRUCTURE:
The following forms of tourism are most appropriate:

- Water-based recreational activities on the dam (type and use zones to be specified).
- Game viewing from private vehicles along certain specified routes/ in a specified area in the enclosure.
- Guided walks or trails.
- Air tours in fixed-wing aircraft.
- Overnight accommodation in lodges, rest camps, campsites and resorts.

Other activities/infrastructure may include:

- Museum/interpretation and information centre/facilities for school tours and educational programmes.
- Park management headquarters.
- Field offices and staff housing.
- Tarred and gravel roads for tourism and management purposes.
- Fences e.g. around tourism facilities.
- Wildlife viewing hides.
- Light aircraft landing facilities.

BOUNDARIES/LOCATION:
This zone is located on the northern side of the Massingir Dam.

(See Map 6: Zonation Limpopo National Park)

AREA COVERED:
363 square kilometres (3.2% of Park).

4.2.4. LOW DENSITY TOURISM ZONE

RATIONALE:

The Concept Tourism Development Plan for LNP identifies four mid to up-market development areas based on the concession-model that allows for private sector investment and operations. In order to attract private sector investment, these concessions require exclusive use areas and must be able to offer a suitable game viewing and 'wilderness' type experience. It is suggested that these be located in the Shingwedzi Valley. Furthermore, the presence of more sensitive riverine vegetation calls for lower impact activities. Clearing of the relatively fertile alluvial areas for cultivation will obviously impact negatively on wildlife as well as on the visitor experience. It is likely that this zone will also include or be adjacent to residential enclaves for local communities not wishing to move from the Park. It is important that a good understanding exists between local residents and Park management and that any potential conflicts are anticipated and resolved, with mutual benefits being promoted where possible.

OBJECTIVES:

- Low density, mid to up-market tourism and recreation.
- Scientific research.
- Preservation of species and genetic diversity.
- Maintenance of ecological processes and environmental services.
- Education (visitors and local communities).

ACTIVITIES / INFRASTRUCTURE:

- Lodge developments.
- Limited tarred and gravel road development for guided game-viewing and management purposes only.
- Walking trails.
- Fences only around lodges if deemed necessary.
- Wildlife viewing hides.
- Airstrip for light aircraft (less than 5700 kg) to service lodges in the zone.
- Boreholes (for water provision to lodges).
- No electricity – generators (limited) and solar power.
- Existing villages/enclaves (subsistence/cultural & tourism activities).

BOUNDARIES/LOCATION:

This zone is located in an area stretching from the Massingir Dam in a north-west direction along the western and eastern sides of the Shingwedzi River, until the border with KNP. Exclusive-Use Zones for lodges are possible in this zone once community issues have been clarified as per the voluntary resettlement programme. Exclusive Use Zones will be determined and agreed upon by Park management and the Board, in consultation with concessionaires.

(See Map 6: Zonation Limpopo National Park)

AREA COVERED:

1 596 square kilometres (14.2% of Park).

4.2.5. LOW INTENSITY USE ZONE

RATIONALE:
This zone incorporates the vast sandveld interior of the Park. The area tends to be aesthetically monotonous and will only support low densities of game, making it more suited for wilderness or 'roughing-it' type tourism experiences. It would not make sense to develop any but the most rudimentary infrastructure in this zone, also preserving its wilderness character. Rare and endemic species are found in this area and appropriate measures should be taken to protect them.

OBJECTIVES:

- Scientific research.
- Preservation of species and genetic diversity.
- Maintenance of ecological processes and environmental services.
- Low intensity tourism and recreation.
- Education (visitors).

ACTIVITIES/INFRASTRUCTURE:

- Rustic camps/campsites.
- Limited gravel road development for game-viewing, 4X4, overland touring, and management purposes only. Ultimately for self-drive (5-10 years).
- Walking trails.
- Fences only around camps if deemed necessary.
- Wildlife viewing hides.
- Boreholes (for tourist infrastructure).

BOUNDARIES/LOCATION:
This zone would be the biggest, incorporating the sand plateau, a region with little surface water and a remnant of the old geological landform.

(See Map 6: Zonation Limpopo National Park)

AREA COVERED:
5 976 square kilometres (53% of Park)

4.2.6. RESOURCE UTILISATION ZONE

RATIONALE:

This zone is an area of important cultural or spiritual significance where the harmonious interaction between nature and cultural or spiritual activities would be encouraged through the continuation of traditional activities, customs and beliefs (non-residential), where these are sustainable and in keeping with the objective of biodiversity conservation. The area would continue to contribute to the welfare of the local community through the provision of natural products and services without detriment to its overall long-term natural values and biodiversity.

OBJECTIVES:

- Sustainable resource utilisation by local communities.
- Cultural and spiritual practices.
- Scientific research.
- Preservation of species and genetic diversity.
- Maintenance of environmental services.
- Tourism and recreation.
- Education (visitors and local communities).

ACTIVITIES/INFRASTRUCTURE:

- Rustic camps/campsites.
- Limited gravel road development for game-viewing, 4X4, overland touring, and management purposes only.
- Walking trails.
- Fences only around camps if deemed necessary.
- Wildlife viewing hides.
- Boreholes (for tourist infrastructure and activities).
- Sustainable harvesting of magico-medicinal plants.
- Sustainable harvesting of thatch grass.

BOUNDARIES/LOCATION:

This zone will extend in from the support zone, giving local communities access to resources within the Park on a sustainable basis. The areas will be identified during the boundary realignment initiative. There may also be a need for resource utilisation zones around village enclaves within other zones of the Park.

(See Map 6: Zonation Limpopo National Park)

AREA COVERED:

To be determined during the participatory boundary realignment initiative and the voluntary resettlement programme.

4.2.7. SUPPORT ZONE

RATIONALE:
This zone will continue to support existing traditional subsistence livelihoods including crop and stock agriculture. It will also provide opportunities for Community Based Tourism (to be actively facilitated by PIU/GOM) and will be an area that provides support for the Park whilst benefiting directly and indirectly from the Park. As a boundary fence will not be erected at this stage, some of the villages may need to be fenced in for protection. The communities will have access to the Resource Utilisation Zone from the Support Zone.

OBJECTIVES:

- Residential
- Agriculture
- Conservancies
- Community based tourism
- Education
- Sustainable resource utilisation

ACTIVITIES / INFRASTRUCTURE:

- Activities and infrastructure development as necessary and appropriate and without detriment to the biodiversity conservation objectives of the Park.

BOUNDARIES/LOCATION:
This zone extends westwards from the Limpopo River for a minimum of 5 km including settlements and agricultural lands (crop and stock). It also includes the land north of the confluence of the Limpopo and the Olifants Rivers and between Massingir and Mabelane (approximately) as this area is very densely settled and utilised. The exact area will be identified during the boundary realignment initiative.

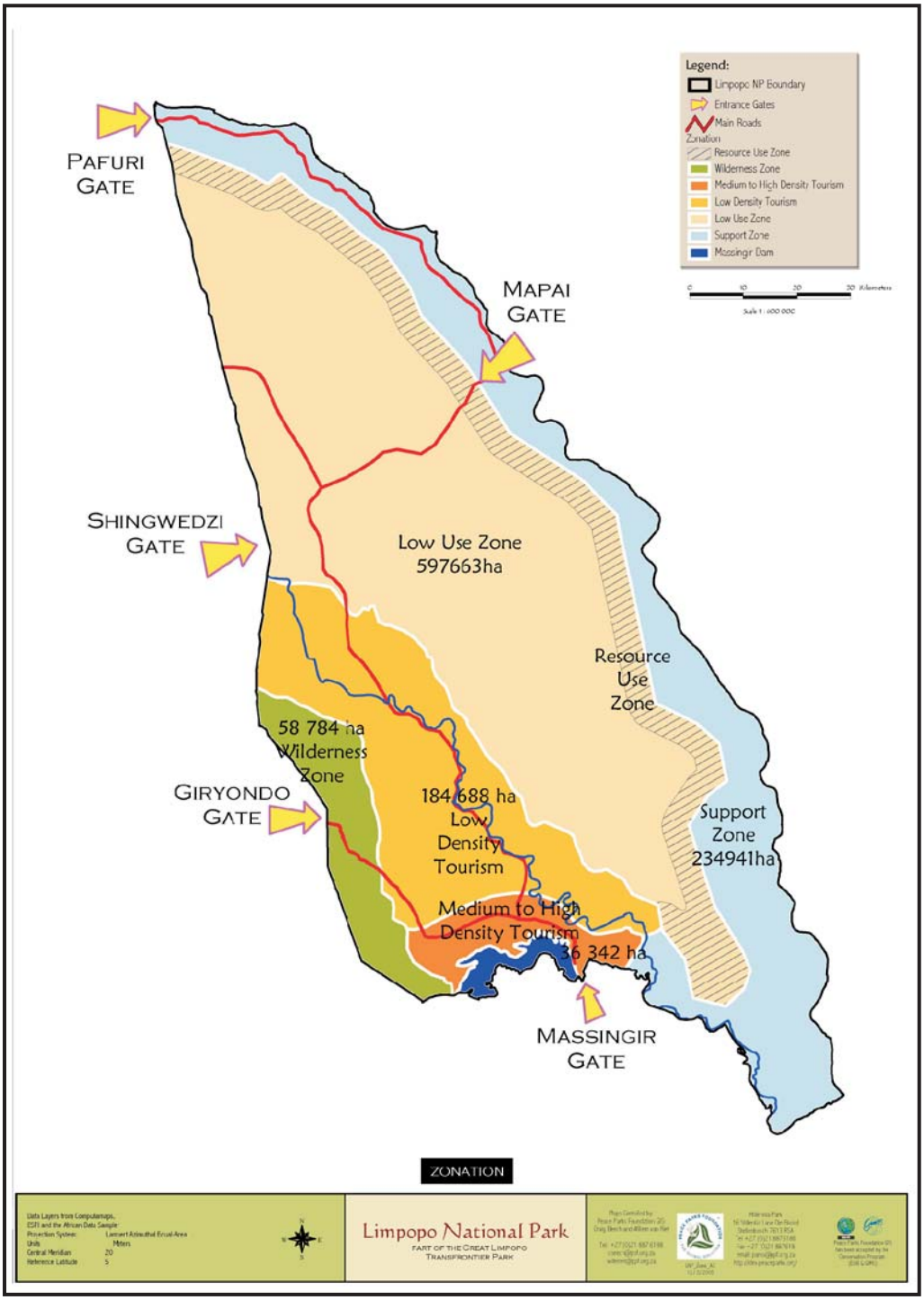
(See Map 6: Zonation Limpopo National Park)

AREA COVERED:
2 349 square kilometres (20.9% of Park).

4.2.8. MASSINGIR DAM

It is envisaged that Massingir Dam will be zoned in a participatory manner by the PIU once the issues of jurisdiction and who controls access to surface rights have been resolved. It is anticipated that a number of user groups will be accommodated, including scientific services and water management bodies, tourism and recreation and subsistence fishermen.

AREA COVERED:
108 square kilometres (1% of Park).



Map 6: *Zonation of the Limpopo National Park.*

5 ECOLOGICAL PROGRAMME

5.1 VEGETATION MANAGEMENT

It is acknowledged that vegetation in this savanna region changes in response to driving forces, which include:

- Variability in timing and distribution of rainfall, both in the short term as well as longer term cyclical patterns.
- Periodic eruptions in herbivore population density, including the full spectrum from invertebrates to mega-herbivores.
- Periodic fires of high intensity, particularly when fuel loads are high.
- Lingering effects of human habitation, including village sites, kraal sites and old fields.

At any given time, the state of the vegetation reflects past and current driving forces. Transitions from one state to another will occur in response to changes in prevailing driving forces. In many instances, these are either beyond the control of the manager (e.g. rainfall timing and distribution), or in response to changes in the system components (e.g. increase in elephant populations once the fence is dropped). In the latter case, it is to be expected that localised impact on especially woody vegetation will occur. In certain areas, for example, there are high densities (groves) of *Sclerocarya birrea*. In all probability, these will be severely impacted, being a favoured species of elephant. However, neither local nor widespread extinction of the species is likely, so this does not indicate the need to reduce elephant numbers or protect individual trees.

5.1.1. GUIDING PRINCIPLES

- Plant biodiversity resources must be conserved at community and species levels in the long term, working within the 'State and Transition' paradigm, and the reduction of population levels of individual species, or the extinction of any species, by human activity must be prevented.
- Adequate management attention must be given to maintaining the status of endemic, rare or threatened plant species.
- The introduction into the Park of all plants or plant materials must be regulated.
- The plant biodiversity resources of the Park must be protected from theft and unsustainable use.
- An adaptive management, minimum intervention approach will be followed.

5.1.2. THREATS

Potential threats to plant biodiversity within the Park must be accounted for in Park management and actively addressed wherever possible. These include:

- Unsustainable harvesting of wood for household use, sale or charcoal production (see Section 8.4).
- Unsustainable harvesting of plants for magico-medicinal use (see Section 8.4).
- Spatially homogeneous impact of herbivory at sufficiently large time scales that disrupt (positively or negatively) recruitment and growth of individual plant species and communities.
- Impacts of tourism activities e.g. 4x4 trails, off-road driving (see Table 1 below, Appendix D - Codes of Conduct).
- Frequent wildfires of high intensity (see Section 5.6).
- Spatio-temporally homogeneous fire patterns that homogenize plant community structure (see Section 5.6).
- Alien and invasive plant invasions (see Section 5.4).
- Theft of rare or endangered species (see Section 5.3).

5.1.3. OBJECTIVES FOR VEGETATION MANAGEMENT

OBJECTIVES	ACTIVITIES	OVI's	RESPONSIBILITY	PRIORITY
1.1 Allow natural processes to operate unhindered.	**1.1.1** Monitor and ensure limited or no interference to ecosystem drivers and parameters (i.e. minimum active intervention with processes per se, rather monitoring to pre-empt interference).	Natural processes proceed unhindered.	Eco-Programme Co-ordinator R&M Officer	Ongoing
1.2 Ensure protection of sensitive habitats, including Lebombo slopes, gorges emanating from Lebombo range and Shingwedzi riverine vegetation.	**1.2.1** Minimise impact of human activities on such areas through exclusion or careful planning and placement of Park infrastructure and visitor activity (e.g. hiking trails).	Status quo or baseline maintained in short term, improvement in long term.	Eco-Programme Co-ordinator R&M Officer	Medium to High
	1.2.2 Monitor and contain, through suitable structures/actions, erosion and negative impact resulting from any essential infrastructure (e.g. management tracks; hiking trails).	Adequate erosion and impact control.	Eco-Programme Co-ordinator R&M Officer	Ongoing

TABLE 1: *Vegetation Management Objectives and Activities.*

5.2. WILDLIFE MANAGEMENT

5.2.1. GUIDING PRINCIPLES

- A laissez-faire or minimum intervention approach to be adopted allowing natura processes of immigration, emigration, predation and mortality to proceed.
- An adaptive management approach will be followed.
- Hunting is not permitted in the Park but controlled hunting is permitted in the Support Zone in line with the sustainable resource use policy.
- The movement of animals through the greater transfrontier park area should be facilitated though this needs to be accompanied by the necessary actions to ensure their welfare.

5.2.2. THREATS TO WILDLIFE

Possible anthropogenic threats to wildlife include:

- Habitat destruction (see Section 8.4)
- Poaching (see Section 8.4 and 11.3)
- Conflict with humans (see Section 8.4 and 11.3)
- Transmission of diseases from livestock (see Section 5.2.4 below)

5.2.3. POLICIES APPLICABLE TO THE RE-INTRODUCTION OF WILDLIFE

Given the current human population densities in parts of the Park, the absence of permanent water in much of the Park, the vast tracts of sandveld with inherently low carrying capacity, and the fact that the eastern boundary will not be fenced, the following policies will apply (subject to review once all issues relating to community presence have been satisfactorily resolved):

- The maintenance of a fully functional ecosystem is required.
- Allow large game and mobile species to recolonise the LNP naturally once fences have been dropped, with the proviso that fences are only dropped after fully participatory decision making by LNP Authority, SANP and local community structures.
- Active restocking of highly territorial species and relatively immobile species such as impala, bushbuck, waterbuck, as well as browsers such as giraffe etc. is permissible with the same proviso as the above point.
- Relocation only permitted if authentic historical verifiable proof exists of a specie's historic permanent presence in the area and that the extinction is directly due to anthropogenic activities and not due to natural causes.
- Extreme attention must be paid to genetic considerations such as the ecotype.

- Re-introductions are subject to the availability of suitable habitats.
- Re-introduction must be accompanied by all reasonable measures that can support the relocation success.
- Precautions must be taken to ensure alien disease or socio-economically unacceptable species are not imported.
- Master permits must be obtained for park-to-park translocations of wildlife within the GLTP issued by the three national governments.
- Minimum conditions must be adopted for the transport of animals through GLTP as listed in the South African Bureau of Standards (SABS) Code 0331 and other relevant authorities in the GLTP countries.

See Appendix A for a complete mammalian species list of KNP, animals which will move into the LNP once fences are dropped or which may be suitable for active reintroduction into LNP (in accordance with guidelines above).

5.2.4. WILDLIFE AND LIVESTOCK GUIDELINES

Wild animals play a role as reservoirs and carriers of infectious agents. While in South Africa disease transmission between wild and domestic animals has been controlled by fences and strict regulation on animal movement, the same controls are not in place in Mozambique. With the development of LNP and the fact that a fence will not at this stage be erected on the eastern boundary of the Park, the incidence of transmission of disease from wildlife to domestic animals is expected to rise. Cattle numbers in the Limpopo Valley have been steadily rising and Gaza Province now carries over 40% of the national herd. Cattle are exported from the area to Chokwe or Maputo, or are purchased in-situ by traders. Due to their socio-economic and epidemiological importance, several diseases pose a potential hazard and deserve mention. These are Foot and Mouth Disease, Tuberculosis, Corridor Disease, East Coast Fever, Bovine Malignant Cattarrh, Rabies, African Swine Fever, Anthrax and Nagana (Trypanosomiasis).

The study and evaluation of these as well as their control requires the development of a stream of capacities and activities in DNAC/DNFFB and co-ordination with counterparts in South Africa. There is a critical need for the co-ordination of activities related to the re-introduction of wildlife and their contact with domestic animals in and around the Park and the greater TFCA; control of livestock movements; and control of disease in domestic and wild animals. This requires interaction between the National Directorate of Livestock, the Veterinary Research Institute, the Veterinary Faculty, VetAid and DNAC/DNFFB and the PIU.

The following guidelines are therefore recommended:

- Proactively minimise potential conflict arising from passive and active interactions between wildlife and livestock by whatever means possible and appropriate.
- Discourage the enlargement of the existing livestock herds in the Tourism Zones and encourage the gradual removal of livestock from LNP once alternative livelihood options have been established.
- Restrict the transit of livestock through LNP, other than on the road between Mapai and Chiredzi.
- Ensure the vaccination of resident cattle annually against foot-and-mouth disease, Bovine-TB and Anthrax.
- Report unexplained deaths of livestock within GLTP to the Park Management.
- Control the movement of unprocessed products derived from cloven hoofed animals.
- Ensure that no parasites or diseases foreign to the GLTP are introduced with reintroduced animals.
- Involve the civil society (private sector, NGOs, educational and research institutions and others) in research and management of veterinary issues. Draft policy for their participation and coordinate the activities.
- Train rangers to recognize early warning signs of diseases and to report these to the appropriate person/body.
- Form GLTP Veterinary Committee as sub-committee of the Joint Management Board, responsible for the coordination and reporting of veterinary issues wit in the GLTP. The Veterinary Committees report to each nation's State Veterinary Department on a regular basis or immediately that an unforeseen problem arises.
- Where possible, maintain and provide data for the existing animal disease database for GLTP at Skukuza where it will be accessible and available to the public, the Park managements and veterinary authorities of each country.

5.2.5. OBJECTIVES FOR WILDLIFE MANAGEMENT

Refer Table 2.

OBJECTIVES	ACTIVITIES	OVI's	RESPONSIBILITY	PRIORITY
2.1 Restore (according to guidelines and policies above) and maintain the viability of wildlife populations in LNP.	**2.1.1** Once community issues are resolved, and security systems adequate, remove fence and allow natural immigration and recolonisation.	Community and security issues resolved, fence dropped.	Eco-Programme Co-ordinator	Likely to take several years.
	2.1.2 Determine the periodic abundance and distribution of existing populations of large mammals using appropriate census tecniques (see Section 6.7.4).	Records of census data.	R&M Officer	Begin in Year 3 if animal numbers seen from ground warrant this
2.2 Harmonise the management of species such as elephant within the GLTP.	**2.2.1** Draft a joint management plan for meta-populations of elephants within the TFCA, bearing in mind LNP policy of minimum intervention.	JMB to ensure that plans are formulated and carried out.	Eco-Programme Co-ordinator R&M Officer	Year 2
2.3 Prevent the introduction of and minimise the spread of diseases between livestock and wildlife. (NB. The Park is likely to face backlash if it is not proactive in this matter).	**2.3.1** Liaise and co-ordinate activity with the provincial veterinary authority and VetAid to ensure that a livestock vaccination programme is developed and implemented and other necessary measures taken. Vaccination should include TB, and foot and mouth. If needs be, the Park vet must vaccinate cattle within the Park boundary with the full range of usual vaccinations.	Vaccination programme carried out, other action taken as needed.	Veterinarian	High priority Year 1
	2.3.2 Promote the vaccination of dogs against rabies if and when this is deemed necessary.	Vaccination programme in place.	Veterinarian	Medium priority

Table 2: *Wildlife Management Objectives and Activities*

5.3. CONSERVATION OF RARE, ENDANGERED AND ENDEMIC SPECIES

5.3.1. GUIDING PRINCIPLES

- Adequate management attention must be given to maintaining or improving the status of endemic, rare or threatened species of fauna and flora.

5.3.2. THREATS

- Illegal commercial exploitation of fauna and flora, e.g. hardwood timber, cycads and bird species (see Table 3 below and Section 8.4 and 11.3).
- Over-use of magico-medicinal plants and animals (see Section 8.4 and 11.3).

5.3.3. OBJECTIVES FOR CONSERVATION OF RARE, ENDANGERED AND ENDEMIC SPECIES MANAGEMENT

Refer Table 3

OBJECTIVES	ACTIVITIES	OVI's	RESPONSIBILITY	PRIORITY
3.1 Ensure the protection of endemic, rare and endangered species of fauna and flora.	**3.1.1** Take necessary actions to ensure that these species are not inadvertently or actively destroyed, over-utilised or illegally removed from the Park.	Species adequately protected, numbers stabilised or increasing.	Eco-Programme Co-ordinator R&M Officer	High priority
3.2 Ensure the conservation of endemic, rare and endangered species of fauna and flora and rare or threatened vegetation types.	**3.2.1** Identify rare, endangered and endemic species of fauna and flora and rare or threatened vegetation types.	Reports on the status of rare, endangered and endemic species and vegetation types, species lists updated.	R&M Officer	Medium priority
	3.2.2 Estimate population size and distribution of rare, endangered and endemic species.	Surveys done, data captured in Information System (IS).	R&M Officer	Medium priority
	3.2.3 Record the sighting of priority animals and plant species.	Data captured in IS.	R&M Officer	Medium priority
	3.1.4 Re-introduction, translocation or indirect population augmentation of rare, endangered and endemic species when appropriate and necessary according to guidelines.	Viable populations of rare, endangered and endemic species exist.	Eco-Programme Co-ordinator R&M Officer	Medium priority

Table 3: *Rare, Endangered and Endemic Species Management Objectives and Activities*

5.4. ALIEN AND INVASIVE SPECIES

5.4.1. GUIDING PRINCIPLES

- Maintain the integrity of local species biodiversity by prohibiting and as far as possible preventing, the introduction of species not naturally occurring in the LNP.
- Where feasible, aliens and invasives should be removed from the Park.
- The keeping of domestic animals is to be discouraged in the Park and all dogs and cats resident in the Park are to be sterilised.

5.4.2. OBJECTIVES ALIEN AND INVASIVE SPECIES MANAGEMENT

Refer Table 4

OBJECTIVES	ACTIVITIES	OVI's	RESPONSIBILITY	PRIORITY
4.1 As far as possible prevent the introduction of alien and invasive species into LNP.	**4.1.1** List present and potential alien and invasive fauna and flora (in KNP the following plants and animals are currently considered as aliens: *Lantana camara, Opuntia stricta, O. rosea, O. ficus-indica, Pistia stratioes, Azolla filiculoides, Eichhornia crassipes, Ricinus communis, Chromolaena odorata, Senna sp., Mimosa pigra, Caesalpinia decapetala, Nicotiana glauca, Argemone sp., Datura sp., Xanthium sp., Cardiospermum halicacabum, C. Grandiflorum, Sesbania punicea, Melia azedarach, Solanum mauritanium, S. Seaforthianum,* domestic cats, Cape honey bee, *Rattus rattus, Mus musculus, Oreochromis niloticus, Hypothalmichtys molitrix*.	List of undesirable fauna and flora available.	R&M Officer	High priority
	4.1.2 Prohibit the introduction of listed alien and invasive species for any purpose whatsoever.	Introduction of alien and invasive biota controlled.	Eco-Programme Co-ordinator R&M Officer	High priority
4.2 Encourage the elimination of alien and invasive species in the LNP with the exception of those which are useful to local community and compatible with the primary Park objective.	**4.2.1** Identify alien or invasive species that presently or potentially pose a direct and significant threat to the LNP. Species currently identified include *Sesbania* and *Nicotiana* along riverine regions, both species to be removed by uprooting and incineration under controlled conditions, and where appropriate, the use of biological control methods.	Species identified.	Eco-Programme Co-ordinator R&M Officer	Ongoing, to be included in ranger training process
	4.2.2 Detail a strategy for dealing with these species, involving relevant institutions and bodies and local communities where necessary.	Strategy defined and carried out.	Eco-Programme Co-ordinator R&M Officer Veterinarian	Medium to low priority
	4.2.4 Control the existing domestic animals, especially those which have run feral		Veterinarian	Medium to high priority
	4.2.5 Develop ways to ensure the control and removal/reduction of domestic animals together with the local communities.		Veterinarian	Medium to high priority

Table 4: *Alien and Invasive Species Management Objectives and Activities*

5.5. SUSTAINABLE RESOURCE UTILISATION

5.5.1. GUIDING PRINCIPLES

- Acknowledging local communities' reliance on natural resources for their survival, provide for the rational and sustainable consumptive use of natural resources in the support and natural resource use zones by local communities (and other stakeholders if and where appropriate) in so far as this does not conflict with the primary objective of maintaining and restoring the biological diversity of LNP and is compatible with Mozambican legislation.

- Sustainable resource use, including the possibility of establishing conservancies, should be integrated with the neighbouring greater TFCA.

N.B. Certain actions described below coincide with actions detailed in the Community/Support Zone section, please refer.

5.5.2. OBJECTIVES FOR SUSTAINABLE RESOURCE UTILISATION

Refer Table 5

OBJECTIVES	ACTIVITIES	OVI's	RESPONSIBILITY	PRIORITY
5.1 Facilitate the sustainable and rational consumptive use of natural resources (including plants and plant products) within the support and resource use zones and enclaves of the Park (refer Section 8.4).	**5.1.1** Using participatory mapping techniques, assess on an appropriate scale the current use of the Park's natural resources by local communities	Report on current use of Park's resources.	Eco-Programme Co-ordinator R&M Officer Community Liaison / Development Officer	High priority
	5.1.2 Identify opportunities for the ongoing sustainable use of the Park's natural resources (differentiating for different zones).	Opportunities identified and promoted.	Eco-Programme Co-ordinator R&M Officer Community Liaison / Development Officer	High priority

Table 5: *Sustainable Resource Utilisation Objectives and Activities (contd. page 45)*

OBJECTIVES	ACTIVITIES	OVI's	RESPONSIBILITY	PRIORITY
	5.1.3 Undertake detailed consultation with local communities (and other stake-holders where appropriate) on possible management strategies and guidelines for use, including solutions to problems of unsustainable and inappropriate use of the Park's resources and identifi-cation of alternatives where sustainable levels are exceeded.	Minutes of the meetings, management strategies, identification of cases where sustainability is threatened, identification of alternatives.	Eco-Programme Co-ordinator R&M Officer Community Liaison Officer	High priority
	5.1.4 Establish guidelines for the sustainable use of the Park's natural resources for people living in different zones of the Park (including species, quotas, timing, etc.).	Guidelines on resource use exist (norms, regulations, quotas, etc.).	R&M Officer Community Liaison Officer	High priority
	5.1.5 Establish joint monitoring and evaluation systems and reporting mechanisms and adapt system where necessary.	Functional monitoring system exists.	R&M Officer Community Liaison Officer	High priority
5.2 Facilitate the sustainable consumptive use of wildlife for traditional, subsistence and tourism purposes within the support zone, including the possibility of establishing formal conservancies (refer Section 8.4).	**5.2.1** Define norms and regulations for hunting in the support zone (including hunting methods, and through consultation taking local norms and regulations into account).	Efficient anti-poaching in place. Norms and regulations defined.	Eco-Programme Co-ordinator R&M Officer Community Liaison Officer	High priority
	5.2.2 Set annual quotas, defining species, location and time periods.	Written and signed agreements. Legal and sustainable use of the wildlife resources.	R&M Officer Community Liaison Officer	Medium priority
	5.2.3 Establish joint monitoring and evaluation systems and reporting mechanisms. Adapt system where necessary.	Functional M&E system exists.	R&M Officer Community Liaison Officer	Medium priority
	5.2.4 Identify and develop options for the creation of conservancies (including linkages to neighbouring TFCA) and other economic opportunities based on the sustainable utilisation of natural resources .	Integrated development plan with neighbouring TFCA, including conservancies.	Eco-Programme Co-ordinator R&M Officer Community Liaison Officer	High Priority

Table 5: *Sustainable Resource Utilisation Objectives and Activities (contd.)*

5.6. FIRE

5.6.1. GUIDING PRINCIPLES

- Until there is sufficient manpower, fire fighting equipment, logistical support, infrastructure, means of communication, etc. in place, a laissez-faire policy will be followed in the greater park (see next section for guidelines in settled areas).

- Park infrastructure, enclaves and boundaries to be secured by appropriate firebreaks as soon as resources are available.

- Once necessary resources are available, natural fires will be allowed to continue, based on the principle that fire is an age-old inherent part of the system. Fires, which threaten infrastructure and human habitation should obviously be fought where possible.

- With the assistance of experts, review the current fire policy after five years and assess whether a controlled burning programme is required or not.

5.6.2. GUIDELINES FOR CONTROLLED BURNING IN SUPPORT ZONE AND OTHER COMMUNITY USE AREAS

- Fire that is intended to create green flush can be burnt in any month of the year with the exception of dry years and periods of low biomass, and these should be applied so as to create or enhance the burnt/unburnt grassland mosaic.

- Fire that is intended to reduce woody plant encroachment should be burnt under warm dry conditions generally during the dry season prior to the spring rains.

- Protective measures such as effective firebreaks, well maintained on an annual basis, around infrastructure and boundaries should be implemented prior to controlled burning.

- The distribution and extent of each fire should be mapped using GPS and a composite map for each calendar year produced. This map is an essential tool for the planning of the following year's fire programme.

- Select ignition points considering the direction of the prevailing winds. Provided there is sufficient biomass, light controlled fires under the desired conditions throughout the year, starting in February/March with small, low intensity fires and ending in September/October with larger, higher intensity fires. Unless a controlled fire threatens infrastructure or an important community or species locality, leave it to determine its own extent.

5.6.3. OBJECTIVES FOR FIRE MANAGEMENT

Refer Table 6

OBJECTIVES	ACTIVITIES	OVI's	RESPONSIBILITY	PRIORITY
6.1 Map all fires and record time, extent, cause, prevailing weather in line with minimum intervention policy.	**6.1.1** Maintain data sets using GIS or hard copy maps. See Chapter 6.7 for Monitoring Programme.	Maps of fire history including specified details.	R&M Officer Technician	Immediate ongoing
	6.1.2 Initiate 'comparative' research between KNP and LNP in order to assess different outcomes from different management approaches in the past, in order to inform management decision in the future.	Report available and used to inform management programme.	Eco-Programme Co-ordinator R&M Officer	Immediate ongoing
	6.1.3 After 5 years, review current policy and assess need for controlled burning programme.	Fire review report.	Eco-Programme Co-ordinator R&M Officer	Year 5
	6.1.4 Identify current burning programmes in support and other zones, adapt where necessary in mutually acceptable manner (i.e. identify and negotiate change around potentially harmful practices such as annual burning in the same location and burning when biomass is low) Explain the reasons for adapting current burning plan to the community and adapt it to suit the communities needs where feasible.	Community agree on burning plans and participatory implementation of the plan.	R&M Officer Community Liaison Officer	Low priority
6.2 Reduce or avoid the spread of fires across Park borders.	**6.2.1** Inform neighbouring parks of the planned fire management measures for burning blocks within 10 km of the neighbouring park.	Neighbouring parks informed of the planned fire management measures.	R&M Officer	Dependent on the needs
	6.2.2 Inform in writing the neighbouring park of the intended firebreaks within 10 km of the neighbouring park.	Neighbouring parks informed of the intended firebreaks.	R&M Officer	Dependent on the needs
	6.2.3 Inform the appropriate officials (section ranger in KNP) from neighbouring parks of any runaway fires that might cross the border.	The neighbouring park informed by most appropriate staff of any runaway fires that might cross the border.	R&M Officer	Dependent on the needs

Table 6: *Fire Management Objectives and Activities.*

5.7 AQUATIC SYSTEMS

5.7.1. GUIDING PRINCIPLES

- The Limpopo, Shingwedzi and Olifants/Elefantes river systems have all been severely impacted by upstream activities such as impoundment, extraction, pollution, introduction of aliens, etc, and have 'stabilised' at current levels. These are to be maintained or improved by preventing any further negative impacts within the LNP and by asserting international rights as the 'end user' of these systems.

5.7.2. WATER POINT POLICY

- During the establishment phase, and until such time as community resettlement options, any fenced enclaves etc. have been finally resolved, no man-made water points for wildlife are to be introduced.

- Any future revision of this policy which proposes the introduction of such points for wildlife (for example, should access to the Limpopo be locally disrupted by enclave fencing) will require a detailed impact study.

- In terms of current agreements, no water points are permitted within 10 km of the boundary of a neighbouring park.

5.7.3. OBJECTIVES FOR AQUATIC SYSTEM MANAGEMENT

Refer Table 7.

OBJECTIVES	ACTIVITIES	OVI's	RESPONSIBILITY	PRIORITY
7.1 Maintain and where necessary, restore function and integrity of aquatic systems and the related biodiversity.	**7.1.1** Use existing KNP guidelines for monitoring and management processes for each river system.	Monitoring and management guidelines exist.	Eco-Programme Co-ordinator R&M Officer	Medium / Low priority
	7.1.2 Minimize or eliminate impact of aliens on aquatic systems by following or adapting KNP aquatic alien controls.	Reduced impact of alien biota on aquatic systems.	Eco-Programme Co-ordinator R&M Officer	Medium priority
	7.1.3 Provide adequate protection to plant communities, soils, etc. important for the maintenance of critical hydrological processes.	Hydrological regime functional.	Eco-Programme Co-ordinator R&M Officer	High priority
	7.1.4 Monitor the hydrological situation of the Park and take appropriate remedial measures	Annual reports available.	R&M Officer	Medium priority

Table 7: *Aquatic System Management Objectives and Activities*

5.8. LANDSCAPE

5.8.1. GUIDING PRINCIPLES

BIO-GEO-CHEMICAL CYCLES

The movement of elements and inorganic compounds that are essential to the functioning of the ecosystem is referred to as the nutrient cycle. These elements and compounds tend to circulate in ecosystems in characteristic pathways called biogeochemical cycles that can be characterised into sedimentary and gaseous types. The rate of exchange is the important parameter that ensures the appropriate functioning of the ecosystem.

- Organic vegetative material will be allowed to accumulate without any being collected or removed from the core zones of the Park.
- No foreign material will be transported into any sensitive habitats.
- Recycling pathways will be recognised at all times. These include the pathways via primary animal excretion, via microbial decomposition of detritus and the direct cycling via symbiotic micro-organisms.

GEO-FLUVIAL PROCESSES

- Geo-fluvial processes refer to the processes of weathering, erosion, transportation and sedimentation with the resultant impact on geomorphology.
- The extensive geomorphological complexes in the area are the result of these processes.
- Erosion is a natural process and this important process should not be interrupted unless the cause thereof is anthropomorphic.
- Accelerated erosion due to man-induced factors will be limited in accordance to the objectives for the area.
- Maintain all buildings, roads, tracks and trails in a state in which accelerated erosion is minimised, so as to minimise negative impacts on stream flow, accelerated soil losses, and on the biota.
- Identify man-induced eroded areas within the Park, and prepare and implement a restoration programme with the object of minimising further soil losses.

5.8.2. OBJECTIVES FOR LANDSCAPE MANAGEMENT

Refer Table 8

OBJECTIVES	ACTIVITIES	OVI's	RESPONSIBILITY	PRIORITY
8.1 Maintain intact, large areas of natural habitat and landscape areas, which have rare and aesthetic value.	**8.1.1** Identify landscapes and areas e.g. with rare plant species, and ensure appropriate zonation and management (first zonation has identified gorges along Lebombo, successive refinements to identify further areas as knowledge increases).	List of sites (with description) and condition of sites. Maps of the areas. Sites protected by zonation and other appropriate measures.	Eco-Programme Co-ordinator R&M Officer Technician	High priority
	8.1.2 Ensure the effective protection and control of these areas through law enforcement and other appropriate measures.	Effective protection and law enforcement in place for the important areas.	Eco-Programme Co-ordinator Protection	High priority

Table 8: *Landscape Management Objectives and Activities*

5.9 CULTURAL RESOURCE MANAGEMENT

N.B. At this stage, little research has been conducted on the cultural significance of the Limpopo National Park. An archaeological assessment of the Park is recommended, as is an expert assessment of other cultural resources in the area with recommendations as to the management of these resources. As the de facto managing agent of the Park and its assets, the PIU and Management Board must assume responsibility for ensuring that this happens and that cultural resources are adequately protected and equitably used for the greatest benefit. It is likely that some of the required management actions will be contracted out or will fall under the line function of another government department, however, the Park should still assume primary responsibility for ensuring that this happens.

5.9.1. DEFINITION OF CULTURAL RESOURCES AND CULTURAL RESOURCE MANAGEMENT[6]

"Cultural resource" is a broad generic term meaning any physical and spiritual property associated with past and present human use or occupation of the environment, cultural activities, and history. The term includes sites, structures, places, natural features and fauna and flora of palaeontological, archaeological, historical, aesthetic, scientific, architectural, religious, symbolic or traditional importance to specified groups. Cultural resources also include traditional systems of cultural practice, belief or social interaction. These can, but need not necessarily, be identified with demarcated locations.

Cultural resource management is defined as those practices that ensure that cultural resources are taken into account in any actions that might affect them. Cultural resource management is founded on principles and implemented in a way that integrates professional, technical and administrative activities.

Cultural Resource Management endeavours to ensure the effective and efficient protection and sustainable development and utilisation of cultural resources for the benefit of all. Cultural Resource Management encompasses the presentation, use and preservation of cultural resources.

5.9.2. GUIDING PRINCIPLES

- Acknowledgement of the area's diverse cultural heritage and a commitment to ensuring the safeguarding of this heritage in the area under the jurisdiction of the proclaimed National Park.
- The acceptance of responsibility for ensuring that the effective protection, preservation and sustainable utilisation of cultural resources is integrated into the process of environmental management of the Park.
- That the cultural resource management policy establish the trusteeship for both the natural and cultural heritage components, that cultural assets be taken into account in development projects and that the needs and values of especially local and neighbouring communities are honoured in this respect.

[6] Adapted from *Preliminary Management Plan for Limpopo.Vhembe Dongola National Park.* Compiled by L.J. Maphasa & Prof. A. Bester. June 2001

5.9.3. PRIORITIES FOR MANAGEMENT OF CULTURAL RESOURCES

- The integration of natural and cultural resource management
- The assessment of significance and setting priorities for cultural resources management
- The development of procedures for management of specific sites and problems, including rehabilitation and protection
- The development of a monitoring regime and disaster planning
- Visitor management
- Interaction with local people and stakeholders

5.9.4. OBJECTIVES FOR CULTURAL RESOURCE MANAGEMENT

Refer Table 9

N.B. The following activities need to be conducted in a step-wise manner, firstly establishing exactly what cultural resources need to be managed and/or protected, then assessing and prioritising what needs to be done from there (more or less than suggested below), and by whom. Whilst final responsibility for ensuring that cultural resources are appropriately protected and managed rests with the LNP. It might be preferable to outsource part or all of the work to an appropriate institution(s). In the same way, alternative funding sources may need to be sought, or institutions with access to funding chosen to do the work. This component of the management plan should not be overlooked as cultural and historical aspects of the Park and surrounds may add a unique element to the Park's tourism attraction (as well as having other intrinsic values).

OBJECTIVES	ACTIVITIES	OVI's	RESPONSIBILITY	PRIORITY
9.1 Establish and manage a cultural resource database that will comprise an inventory of all cultural resources in the LNP (this should include a database for collections of heritage objects and artifacts derived from the Park and collection of oral histories and traditional practices within the core and support zones and neighbouring regions) relevant documentation and status reports with management priorities.	**9.1.1** Conduct a cultural resource survey, including an archaeological survey of the Park at the appropriate level of detail (may need to be phased).	Survey report.	Eco-Programme Co-ordinator to appoint contractor	High
	9.1.2 Develop management principles and priorities.	Report completed.	Contractor	High
	9.1.3 Compile and manage a database that will assist in recording, conserving and managing the Park's cultural assets on an ongoing basis.	Database established.	Contractor	Low
9.2 Develop a cultural resource management plan for the LNP, including a policy on what should be funded by the Park and where funding assistance should be sought.	**9.2.1** Develop a cultural resource management plan and funding policy.	Management Plan and funding policy in place.	Contract / Outsource	Medium
9.3 As per policy guidelines, budget effectively to channel adequate funding to cultural resource management.	**9.3.1** Seek funding where necessary and appropriate in order to implement management plan.	Funds available.	Contract / Outsource	Medium
	9.3.2 Ensure appropriate budget allocations are made in order that the Park can fulfil its primary cultural resource management obligations.	Resources managed.	Contract / Outsource	Medium
9.4 Develop general, project-based and site-specific strategies and business plans, including research needs and priorities, for the short, medium and long-term management of the cultural resources in the LNP.	**9.4.1** Develop strategies and business plans as prescribed.	Business plans drawn up.	Contract / Outsource	Medium
	9.5.2 Detail a research agenda or programme that can be co-ordinated by the Park or delegated to a suitable institution for implementation.	Research programme in place.	Contract / Outsource	Low

Table 9: *Cultural Resource Management Objectives and Activities (contd. p 54)*

OBJECTIVES	ACTIVITIES	OVI'S	RESPONSIBILITY	PRIORITY
9.5 Develop and implement a tourism and visitor information plan in consultation with trained guides, tourism stake-holders, Park officials, local communities and researchers.	**9.5.1** Develop information material in consultation with IAPs.	Information material available.	Contract / Outsource Awareness Officer(s)	Low
	9.5.2 Disseminate material and ensure inclusion in Information Centres.	Information material in Information Centres	Contract / Outsource Awareness Officer(s)	Low
9.6 Optimise the role and value of cultural resources in improving relationships with local, district and provincial authorities, land owners, neighbouring communities and other stakeholders.	**9.6.1** Take action where and how appropriate.	Relationship improved through constructive engagement	Contract / Outsource Awareness Officer(s)	Low
9.7 Optimise the role and value of cultural resources in promoting tourism in the LNP, both at an official Park level and at a CBT level.	**9.7.1** Ensure cultural tourism resources form a core component of tourism product development and promotion in the Park.	Cultural Tourism responsibly promoted with tangible benefits.	Contract / Outsource Tourism Programme Co-ordinator	Medium

Table 9: *Cultural Resource Management Objectives and Activities (contd.)*

6. RESEARCH AND MONITORING PROGRAMME

N.B.: During the start up phase of the Park, it is unrealistic to expect that research and monitoring will enjoy high priority. That said, there is a unique, 'window of opportunity' that exists for research that should not be missed. At present, there is probably a large differential between KNP and LNP because of differences in land use and past practices. This differential could quickly be lost. Research should thus be more intensive in the short term in this regard e.g. plant community structure and composition along the border (fire-herbivory interaction) and following the pattern of dispersal and re-colonisation by ungulates where it happens naturally. In this section, guidelines for the development of a research and monitoring programme are presented. These will allow park management to make use of and manage external outside research inputs as well as well as managing critical minimum research and monitoring activities. Minimum data requirements, including weather and patrol based data are feasible during the early stages of park development and implementation, but depend on the establishment of a suitable data and information management system. Data are otherwise destined for the 'data graveyard'!

6.1. GUIDING PRINCIPLES

- Management should facilitate research being conducted in the LNP, establishing MOUs with appropriate national and international research institutions.
- Priority should be given to cost-effective, applied, management-oriented research (this includes inventory work) that contributes to a better understanding of the Park's biodiversity, ecological functioning, socio-economic situation and sustainable use of natural resources.
- All research and monitoring (ecological and socio-economic) that is conducted in the Park must be ethical in design and implementation and must be conducted according to international best practice in this regard.
- Research and monitoring activities should increase during first years as the development and rehabilitation of the Park progresses and as critical information gaps and research needs become clearer. Initially, monitoring should be confined to indicators regarding ecosystem integrity and management efficacy and costly surveys should be avoided.
- Networking and co-operation should be promoted with local and international universities, NGOs, other conservation areas and bodies, as well as with potential funding agencies to obtain assistance, to share research results and avoid duplication.

- In the long term, co-ordinated research programmes rather than small independent projects should be established.
- The intellectual property rights and copyrights of all work done in the Park will rest with the Park unless otherwise agreed.
- Intellectual property of local people is to be recognized in appropriate manners.
- International research initiatives should be linked to capacity building of Mozambican scientists.
- Data collection in the absence of an effective database and data management system is futile.

6.2. PRIMARY OBJECTIVES

The primary objectives for research and monitoring in the LNP are:

- To encourage and facilitate appropriate ecological and socio-economic research and monitoring that is necessary for the effective management of the LNP.
- To ensure that all data and information gathered either from a formal research or monitoring programme, or that result from historical enquiry, are properly archived and stored in a form that is easily accessible for future use by all interested and affected parties (e.g. via the internet).

6.3. INFORMATION SYSTEM

The efficacy with which complex biological systems can be managed is, to a large extent, limited by our knowledge of these systems and others like them. This knowledge however is in most cases far from complete and yet, management must continue. In most instances, an adaptive management approach is attempted. Here a goal is set, a management decision taken based on the best information available, the results of the management action monitored and the management subsequently adapted to 'optimise' goal achievement. This system falls down however when the knowledge gained from earlier experiences is lost with the inevitable result that instead of gaining understanding and adaptively improving management, management actions occur in cycles. The foundation of the adaptive management approach, is an effective means of storing and recalling data on past conditions and management impacts. Without a well-organised and run information system, knowledge of the structure and dynamics of the LNP will not grow in a structured way, and as a consequence, management of the LNP will not advance as it should.

The primary purpose of the LNP's information system is to:

- Securely store all forms of data and information collected in the LNP and surrounding environs, in a manner that it can be easily retrieved and made available to facilitate management decision making and further the understanding of the dynamics of the system.

This is expanded to include the following more explicit objectives:

- Archive natural resource and socio-economic data and accompanying documentation to ensure long-term preservation.
- Provide a method of access to these data and documentation.
- Encourage analysis of these data sets with the aim of obtaining a long-term understanding of the biological and social dynamics of the region.

The data collected by research and monitoring programmes and all other data such as the bibliography, map collection, aerial and orthophotos, and all other databases, forms the LNP's information system.

6.4. LNP BIBLIOGRAPHY

The LNP bibliography should comprise the formalised record of published and unpublished literature on the Park and its environs. Accessible past literature is an essential research tool and is relevant to managers who wish to familiarise themselves with a historical overview of the ecological and social dynamics of the region.

OBJECTIVES:

- Maintain a database of published and unpublished literature of the LNP and a library containing a bound hard copy of each document.

To achieve the objective, the following priorities are relevant:

- Allocate the task of bibliographic management to a member of staff.
- Acquire and/or allocate suitable storage facilities, hardware and software.
- Develop and implement an appropriate document management strategy.
- Update the printed bibliography at regular intervals and make this available to staff, researchers, consultants and other interested parties.

6.5 LNP DATABASES

Apart from the published and unpublished literature on the Park, the best and probably the most important data will be collected, stored and maintained by the staff of the LNP. From the research perspective, these data will form the basis of the quantitative description of the LNP, and the understanding of the dynamics of its major biological components.

OBJECTIVES:

- Develop and maintain databases on appropriate physical, biological and human attributes of the LNP and make this information available in a manner that will further the management of the LNP and interaction with associated local communities.

PRIORITIES (some are further detailed in Monitoring Sub-Programme):

The following attribute databases are priority for development and maintenance:

- Climate, including rainfall and temperature.
- Vegetation, vegetation monitoring data (initially fixed point photographs, especially in riverine vegetation, once community issues have been resolved) and the need for starting a herbarium collection should be assessed.
- Animal sightings and management, including, distribution sightings of 'rare' species and occurrences, the distribution and extent of major insect 'out breaks' and defoliation events, large mammal management data including introductions, mortality, removals (both dead and alive) and population estimates. Where animals are hunted (in the Support Zone), it is important that appropriate data are maintained on trophy size and hunting effort.
- Law enforcement or illegal incidence database aimed at tracking the frequency and distribution of human incursions and poaching incidences in the LNP. Geo-referenced data is important (see Protection Programme-use of GPS by field rangers).
- An integral part of the LNP's database is the spatial data or GIS. The spatial database requires careful planning and management and each data set needs to be collected and documented to a certain standard, and as with the non spatial databases, each GIS coverage must be registered in the metadata base (database about databases). This service may initially have to be contracted out to, or implemented in collaboration with, an appropriate agency or institution (e.g. Eduardo Mondlane University or KNP as they already have a comprehensive GIS system). The following GIS coverages are important for development and maintenance in the medium to long term:

- LNP boundary and zonation (1:50 000).
- Digital elevation model (1:25 000).
- Ephemeral pans and an associated database indicating the duration of water in each (1:50 000).
- Rainfall distribution (1:100 000).
- Soils (1:50 000).
- Vegetation communities (1:50 000).
- Annual coverage on the distribution of fire and an associated attribute database (1:50 000).
- Distribution of important (endemic, rare and endangered) plant species (1:25 000).
- Distribution of and movement patterns of selected important animal species.
- Park infrastructure e.g. roads, buildings, power and pipe lines, camps and other service infrastructure.

6.6 RESEARCH SUB-PROGRAMME

6.6.1 RESEARCH OPPORTUNITIES

Research priorities will change depending on the status of the basic geophysical and biological inventory of the LNP and the nature of management questions being asked by park management. For this reason, research priorities need to be reviewed regularly. Internal review should be undertaken on an annual basis, while a formal external review should be undertaken every three years.

All research undertaken in the Park must be done with the approval and knowledge of the Park Director/PIU/LNP Management Board.

6.6.2. RESEARCH PROPOSALS

Prior to an agreement being reached between management and a prospective researcher, to undertake research in the LNP, the researcher must submit and have approved a research proposal.

The objectives for developing and reviewing research proposals are to ensure that:

- The proposed research is appropriate in addressing the LNPs information needs.

- The proposed research has a clear set of objectives, which are both scientifically and practically achievable within the time proposed, and with the resources available to the researcher.

- The objectives of the research and their achievement will not conflict with other priority objectives of the LNP.

- The support being requested from LNP management by the researcher is clearly specified, realistic and affordable prior to an agreement.

- Requests by other institutions, to undertake other research, i.e. without direct relevance to Park management priorities, will be considered provided they are self-funded and inputs are not required from Park Management

Most institutions have project proposal formats that they have adopted for their researchers. The purpose of the project proposal format (Appendix B), is not to replace the latter, but to ensure that the LNP's requirements for the proposal are met.

6.6.3. RESEARCH REPORTS AND PAPERS

Research and consultant reports and papers will form a valuable part of the knowledge base of the LNP. In addition, published papers act to publicise the project within the research community. The primary objectives for compiling research reports and papers are to:

- Make a statement about the current state of knowledge of a particular subject from research undertaken in the LNP.

- Inform the research community of research undertaken in the LNP.

- All reports and papers are to be evaluated for their management implications and catalogued and stored in the LNP's bibliography.

- All results and reports must be presented in two copies, for the Park library and DNFFB/DNAC.

- Upon departure from the country, a draft report must be presented by researchers who are non-Mozambican residents.

6.7. MONITORING SUB-PROGRAMME

6.7.1. CLIMATE

Long term climatic data, in particular rainfall, are important for management and research. In addition, an appreciation of the spatial variation in the distribution of rainfall is required. To this end, a number of rainfall stations should be established at the main administrative centre and in the field. It is essential that whatever climatic data are collected, they are captured and kept current in the LNP's database (refer to the section on data storage).

The following are recommended:

- Daily rainfall is read at the administrative headquarters and at a minimum of three field gauges.

- Weekly or where this is not possible, monthly rainfall records are read at a selection of at least three rainfall stations distributed evenly throughout the LNP (located at field ranger stations — see Protection Programme).

- Daily maximum and minimum temperatures, relative humidity, wind and cloud cover are read at the administrative headquarters.

- All instruments are installed and read according to weather bureau standards.

- All climatic data are kept current in a single spreadsheet file on the LNP's primary data storage machine at headquarters (see data storage section).

6.7.2. VEGETATION

Vegetation research falls into three primary, not necessarily mutually exclusive, areas namely inventory, monitoring and that aimed specifically at gaining an understanding and explanation of dynamics. In the long term, some inventory information can act as valuable baseline data for coarse monitoring of vegetation such as physiognomy and species composition changes. While the activities of primary concern for managers fall primarily into the area of inventory and monitoring, the data emanating from results of these activities could be valuable in developing a fundamental understanding of vegetation dynamics in the area if this is accounted for in the sample design.

Important points to bear in mind when setting up the system are:

- The amount of effort that can be expended on the monitoring system must be sustainable in the long term.

- It is important to implement the monitoring system at the outset of the project so that changes can be tracked from the beginning, and not when managers become concerned with casually observed changes.

- The information emanating from the monitoring will eventually be used to guide management with short-term and medium term decision making..

With respect to monitoring vegetation, the actual data collected and the effort expended in collecting such data can vary markedly depending on the purpose of the monitoring. The following are recommended:

- Fixed point photography every four years for general vegetation trends, including riverine sites.

- Detailed ground truthing of the initial vegetation map as per Stalmans' recommendations (see report on plant communities, available on request and vegetation map 'Landscapes of the LNP' - p18).
- Recording presence and extent of aliens and invasive species during field patrols, primarily to detect new infestations especially of the dangerous *Chromolaena* sp.

- Integration into the broader regional River Monitoring Programme (in this regard it is logical to slot into KNP programme (Scientific Services staff in KNP to be approached).

6.7.3. FIRE

Fire will probably form a major source of disturbance to the vegetation in the long term. As a result, it is recommended that detailed records of fire incidence and distribution be kept. A basic fire incidence, record form is included in the Appendix C. In addition, the extent of each fire should be mapped and stored as fire coverage for that year.

6.7.4. ANIMALS

As with the vegetation-related research, it is important that whatever research related activities are undertaken, these are the most appropriate and are cost effective. Once again, these activities may be divided into the not necessarily mutually exclusive activities of monitoring and fundamental research. The activities recommended here revolve primarily around the monitoring of large mammal herbivore populations.

Mammalian monitoring falls into six primary areas namely introductions, mortality, removals, sightings, population estimates, disease and aquatic systems. These are dealt with under sub-headings below.

INTRODUCTIONS

It is important to maintain a running record of all animals introduced to the Park and the source population. A recommended introductions record form is included in Appendix C.

MORTALITY

It is proposed that all Park personnel record mortalities of all large herbivores that are discovered. To avoid duplicate recording, the lower jaw should be removed from the carcass and aged if the time is available. A recommended mortality record form is included in Appendix C.

REMOVALS

A proposed removals record form is included in Appendix C. An important component of this data table is the standardised recording of trophy size (hunting in the support zone).

SIGHTINGS

Individual sightings of large herbivores or herbivore groups particularly the rarer ones can form an important source of data for a known group estimate of the population during the early phase of Park development. A proposed sightings record form is included in Appendix C.

POPULATION SIZE

For the immediate future, we recommend that patrol and other sightings, ideally geo-referenced, be collated monthly using field ranger reports (done by district rangers and sent to Park Warden). Once community issues have been resolved and re-colonisation is occurring, annual aerial censuses can be considered using standard techniques available from KNP. The possibility of combined surveys with KNP should be explored, on a cost-sharing basis.

DISEASE
It is recommended that the outbreak of all disease in the Park, including mortalities, distribution and likely cause of infection are recorded.

AQUATIC SYSTEMS
The distribution of water in the Park will form one of the primary reasons for animal movement and distribution through the Park, especially where water dependant species are concerned. It is therefore suggested that the location and extent of all perennial and seasonal water bodies in the Park be recorded on a bi-annual basis, once during the wet season and again during the dry season.

This to be part of ranger patrol data.

6.7.5. INFRASTRUCTURE

ROADS AND PATHS
Quarterly inspections of all road and path infrastructure in the Park must be conducted and where there are signs of erosion, prevention and maintenance work must be carried out to address the problem. Where roads are driven or walked on a regular basis, monitoring and maintenance can be ongoing.

TOURISM FEATURES (sites of cultural or ecological interest, lookout points, etc)
Bi-annual inspections must be conducted of all features in the Park that are visited by tourists and where there are signs of erosion, prevention and maintenance work must be carried out to remedy the problem. Where paths are walked on a regular basis, monitoring and maintenance can be ongoing.

LODGES, CAMPS AND CAMPSITES
Bi-annual inspections of lodges, camps and campsites should be carried out to ensure that the impact of such facilities on the environment is being properly mitigated and managed according to their respective environmental management plans. This would include factors such as erosion, waste disposal, sewage, diesel storage and health and safety. Regular monitoring during the construction phase of all development is also critical to ensure compliance with environmental management plans.

HEADQUARTERS, RANGER QUARTERS AND OTHER PARK INFRASTRUCTURE
Bi-annual inspections of park headquarters, ranger quarters and other Park infrastructure should be carried out to ensure that the impact of such facilities on the environment is being properly mitigated and managed according to their respective environmental management plans. This would include factors such as erosion, waste disposal (including litter), sewage treatment and disposal, diesel storage and health and safety. Regular monitoring during the construction phase of all development is also critical to ensure compliance with environmental management plans.

6.7.6. SUPPORT ZONE AND NATURAL RESOURCE ZONE

PERCEPTION AND ATTITUDE

It is important that information is gathered on a regular basis with respect to people's attitude towards the Park. In part, this type of information will feedback through the formal structures and committees, but it is nevertheless important to keep in touch with people's perceptions, attitudes and concerns with respect to the Park.

HUNTING

All hunting in the support zone should be monitored and recorded including species, location, reason (commercial or subsistence) and community/hunter involved. Any problems or contravention of rules & regulations needs to be recorded with a follow up recommendation to management where action is required.

NATURAL RESOURCE HARVESTING

The harvesting of natural resources within the Park, including magico-medicinal plants, wood and thatch must be monitored and recorded including species/resource type, who it is harvested by, location and quantity.

7. TOURISM PROGRAMME

7.1. INTRODUCTION

The Concept Tourism Development Plan, accepted during a workshop in Maputo on 4th June 2002, is available on request. The report identifies the Shingwedzi area as the prime, wildlife tourism area, suitable for the phased development of mid to upmarket tourism facilities. A range of different developments are proposed for the shores of Massingir Dam. Rustic, low-density activities are proposed for the vast sandveld area, and the possibility of longer term tourism developments in the support zone along the Limpopo River are described. In this chapter, guiding principles and objectives are listed and procedures for tourism development and concessioning are presented. In order to implement the tourism programme, it is necessary firstly to resolve community issues (see Chapter 8, Community Programme) and secondly to appoint a Transaction Manager (see below).

7.2. REGIONAL TOURISM CONTEXT

A comprehensive situational analysis which offers insight into tourism development and potential within the Great Limpopo Transfrontier Park was conducted by KPMG in 2001.

7.3. GUIDING PRINCIPLES

- Tourism development in and around the Park will be underpinned by sustainable environmental practices and the maintenance of the ecological integrity of the Park.
- Tourism will be used specifically as a development tool for the empowerment and financial benefit of local communities through equity sharing, job creation and business opportunities, as well as for the socio-economic benefit of Mozambique in general.
- Tourism development in the Park will be market driven and private-sector based.
- Commercial concessions and leasing provisions will be made available to the private sector by means of a transparent tender process, this includes the 'Sanctuary'.
- Development opportunities and activities will be based on the natural strengths and attributes of the LNP (rather than facing stiff competition by offering marginal products, which feature strongly elsewhere).
- Tourist spillover from the KNP will be achieved by creating direct access through the common border.
- Present residents and their activities will be accommodated as far as possible, including equity in concessions, within the constraints of a national park whilst recognizing the Shingwedzi Valley as the key to a viable wildlife-based product.

- Where possible, tourism developments will be concentrated in the peripheral zone (with due realization that the high settlement densities and agricultural activities prevent a true wildlife product being developed along the Limpopo).
- Socio-economic benefits will be maximised by means of complementary developments and activities that address a wide spectrum of interest and income groups.
- Ensure phasing-in of development opportunities in step with the biological restoration of the Park in order to create a competitive product in the market.
- Tourism development will be integrated into developments within the greater TFCA.

7.4. OBJECTIVES

The broad tourism objectives of the Park are:

- To provide excellent nature and culture based tourism and recreation opportunities within the Park.
- To encourage the conservation and sustainable use of tourism resources.
- To promote and facilitate Community Based Tourism and SMME initiatives in and around the Park.
- To generate socio-economic development and sustainable employment opportunities for local communities.
- To generate income that can directly contribute to the maintenance and running costs of the Park and the upkeep of the conservation estate.
- To develop tourism with dignity, encouraging mutual respect for all cultures and to monitor and minimise potential adverse social impacts of tourism.
- To encourage appropriate tourism education, training, awareness and capacity building programmes using tourism as a catalyst for human development.
- To promote knowledge about the historical and cultural aspects of the people as well as the natural environment.
- To establish a monitoring and evaluation system aimed at ensuring the sustainability of tourism operations and maintaining the condition of visitor services and facilities within the Park.

7.5. PRIVATE SECTOR INVOLVEMENT

7.5.1. PROCESS

Private sector involvement is envisaged in:

- The planning, design, financing, construction and/or renovation of tourism facilities and related infrastructure.
- The subsequent operation and maintenance of the improvements and associated commercial activities.

A transaction manager will be appointed by the Park in order to manage:

- The call for proposals.
- The evaluation process in respect of the proposals.
- The adjudication of the bids received.
- The ongoing relationship with the private sector partners.

For the purpose of securing private sector involvement in the development of the LNP, the Park will set up a Bid Evaluation Committee. Bids will be promoted and adjudicated by the Bid Evaluation Committee acting as a duly authorised agent of the Park. The bid evaluation committee will be constituted so as to ensure the most appropriate representation of interests between local communities, the Park, government and private sector.

Screening criteria will include but not be limited to:

- Financial Proposals (including project viability, financial security of bidder, cash flows, payment of lease fees, equity holding of bidding company).
- Community Involvement (equity/partnership arrangements, employment and training programme and policy).
- Empowerment of local partners (in the case of foreign bids).
- Compliance with Environmental Procedures and Guidelines.

The first three criteria may be weighted, the last criterion is absolute, i.e. full compliance is a pre-requisite for qualification.

7.5.2. LEASE OR PARTNERSHIP AGREEMENTS

One of the guiding principles for tourism development in the Park is the use of tourism as a development tool for the empowerment and financial benefit of the local communities. In line with this principle, the concession rights for land in the Park will be shared between the community and the Park. In law, ownership in and to the improvements on the land will therefore also be held and shared between the community and the Park. A suitable institutional mechanism will have to be found to facilitate this.

To give effect to the above (in addition to employment, training, SMME development, etc.), the following actions will be required in the case of the Shingwedzi area zoned for tourism concessions:

- Participatory identification and definition of affected communities (essentially the villages in the vicinity of Shingwedzi River).
- Establishment of a legal entity (e.g. a trust) to receive and disburse money derived from tourism income.
- Negotiation and agreement of a percentage of concession fees and any other possible income sources (e.g. endowment funds as part of compensation package) to be paid into the trust (bearing in mind the need of LNP to contribute towards its own financial sustainability and the limited income levels in the early phases of tourism development, as well as any other compensation which people receive as part of a voluntary removal package).
- Definition of role and responsibilities of trustees and mechanisms to ensure equitable disbursement (e.g. to each household should people move to separate areas through voluntary resettlement).

In terms of actual concession agreements, the GOM, through the Management Board of LNP, will act as 'landlord' and enter into contractual agreements with any private sector concessionaires, as well as facilitating the establishment of the community fund.

In the case of communities along the Limpopo and Elefantes Rivers, essentially in the support zone, similar trusts can be discussed and established over time as tourism concessions develop. These trusts may also provide a suitable mechanism for the collection and disbursement or allocation of other funds accruing e.g. a percentage of gate fees.

Where the private sector is invited to undertake or operate developments, secure tenure to land, with sufficient opportunity to realise a fair and reasonable return from the investment, will be built into the agreements.

The notion of BUILD/RENOVATE – OPERATE – TRANSFER (BOT) will apply to projects where the private sector undertake and finance developments. BOT/ROT implies that the project developer will acquire access to the land under a secure tenure arrangement, build and/or renovate whatever improvements are required for the project, and maintain such improvements for the duration of the project. At the end of the occupation period, the project developer/ operator will deliver possession of the land and buildings to the relevant institution (as owners thereof in law). Where the Park builds and/or renovates the improvements itself, the joint venture partners will be invited to operate and maintain the facilities. At the end of the agreed period, the project operator will deliver possession of the project facilities to the Park Authority as described above. This arrangement will be known as an OPERATE – MAINTAIN – TRANSFER agreement (MOT).

In some instances, shared capital input and short term concessions e.g. tented camps may be permissible, for a maximum of 5 years NOT FORECLOSING OTHER OPTIONS, NO PERMANENT FOOTPRINT.

Roles and responsibilities

A close working relationship is envisaged between all the participants in the tourism development of the Park.

The Limpopo National Park:

The Park (acting through the Management Board) will be responsible for providing the framework to ensure that the project has every prospect of success. This will inter alia involve:

- Making the land available under a secure tenure arrangement for a period commensurate with a reasonable and fair return on investment.
- Facilitating compliance with all planning, zoning and environmental requirements and legislation to enable the project developer to undertake the development necessary to implement the project.
- Facilitating the removal of all administrative encumbrances on the land to ensure unhindered access to the land for the purposes of the proposed development.
- Performing a regulatory function that will deter any activities that will have a negative effect on the environment.
- Acting as the facilitator and catalyst to ensure that the tourism projects mee the objectives of the programme.
- Responding to appropriate needs for infrastructural improvements that w raise the status of the destination.
- Developing and financing the tourism projects where appropriate.

The project developer:

The private sector role in the projects is that of developer, and/or operator and/or investor in tourism ventures. The sector will secure these opportunities by way of BOT/ROT or MOT agreements as discussed above. The agreements will be finalised by negotiation between the parties and will be based on a clear understanding of, inter alia, the land areas allocated to the projects (including the extent, if any, of exclusive use zones), the limitations of the developments, the periods of the projects and all other rights and obligations to be conferred on developers, operators and/or investors.

The responsibilities of the private sector will complement the responsibilities listed above and additionally will include:

- Designing, planning, constructing and implementing the developments envisaged for the Park to their final complete and usable state.
- Managing and administering the resultant developments as commercial enterprises within the parameters set by the agreements with the Park.

- Establishing tourism and tourism related activities that confirm the Park as a key contributor to the socio-economic growth of the community and region.
- Conducting their affairs in accordance with recognised and reasonable environmental principles and embracing environmental best practice in so far as possible.
- Marketing and managing the projects in a manner that not only ensures income sustainability, but also provides for wealth creation in the greater region.
- Offering employment to persons from local communities.
- Providing contracts to local SMMEs for services, opportunities and produce.
- Setting up appropriate capacity building and training programmes.
- Maintaining facilities and infrastructure for the period of the projects.

7.6. TOURISM INFRASTRUCTURE

Tourism related infrastructure will obviously have to be developed by the Park as well as by private sector. This will include facilities such as entrance gates, a main reception, ablutions, a shop, etc. The details of what is proposed are included in Appendix G on Proposed Infrastructure.

7.7 INTEGRATED ENVIRONMENTAL MANAGEMENT OF TOURISM DEVELOPMENT

The potential and actual impact of tourism related activities needs to be carefully mitigated, minimised and managed if tourism development in the Park is to be sustainable. These issues are comprehensively dealt with in Chapter 10 and associated appendices on Environmental Management.

Furthermore, Chapter 6 on Research and Monitoring contains a section dealing with the monitoring and evaluation of tourism development and activity in the Park.

Appendix D contains Codes of Conduct of relevance to visitors to the Park as well as tourism operators in the Park.

Environmental and Architectural Guidelines for Infrastructure and Tourism Development are contained in Appendix E.

8. COMMUNITY PROGRAMME

NB. The long-term success of the LNP is dependent on developing a constructive, mutually beneficial relationship between the Park and communities resident in the Park. Certain issues require immediate and concerted action to resolve, whilst other issues may arise over time. Suitable structures and mechanisms need to be put in place to deal with all of these and to facilitate the desired working relationship.

8.1. GUIDING PRINCIPLES

- Promote a strong sense of ownership and empowerment amongst resident people and communities and ensure a strong supporting institutional base.
- Legal and common law rights of people to be recognized and respected.
- Optimise socio-economic and other benefits for local communities and ensure a strong supporting institutional base.
- Enhance the livelihoods systems of local communities.
- Ensure that local participation is representative and inclusive of all community based interest groups and ensure a strong institutional basis to support this.
- Establish effective communication and liaison structures.
- Create effective networks of co-operation.
- Respect local decision-making.
- Minimise social dislocation and maximise social integration.
- Initiate and promote mechanisms for trust building and conflict resolution.
- Ensure that field rangers are provided the necessary training to enable them to interact with local people in a constructive manner (Refer to Protection Programme, Chapter 11).

8.2. OBJECTIVES

- To develop a framework and implementation program for the voluntary resettlement of people currently resident within the boundaries of the LNP.
- To develop a framework and support programme for residents who choose to remain in the LNP.
- To develop a framework and implementation program for sustainable resource utilisation within the resource use and support zones of the LNP.

- To develop a framework (including institutional) and implementation programme for effective community empowerment and participation in the planning, management and development of the LNP.

- To develop a framework (including institutional) and implementation programme for the optimal participation of local communities in the sustainable economic development of the LNP and surrounds and to ensure an optimal flow of associated benefits to these communities.

- To facilitate the planning and sustainable development of the support zone and its integration into the planning and development of the region and the greater TFCA.

8.3. SOCIO-ECONOMIC CONSIDERATIONS

A number of socio-economic issues are fundamental to achieving the above objectives, particularly in relation to CBNRM and community participation and beneficiation. These include inter alia:

- The population in and around LNP depends on the use of the natural resources for survival. Most important perhaps is the agricultural use of the soils along the rivers. Subsistence hunting of wildlife also occurs.

- Food security needs to be guaranteed through the development of viable agricultural and economic activity in the area. Drought and famine occur periodically resulting in malnutrition, starvation and an increase in the incidence or severity of diseases.

- The area faces water shortages and the lack of reliable and hygienic water supplies.

- Health, education, transport and communication sectors are poor or absent.

- Credit and other financial facilities are lacking in the area, therefore constraining SMME development and economic activity.

- Security in the area needs to be improved through the removal of landmines and addressing the issue of crime and armed attacks that occur periodically.

- Demobilised soldiers that fought in the war need to be re-integrated into society and provided with skills training in a way that does not cause tensions within the community.

- Traditional structures need to be recognised and integrated into administrative structures.

8.4 COMMUNITY ACTION PLAN

Objective 1:

To develop a framework and implementation programme for the voluntary resettlement of people currently residing within the boundaries of the Limpopo National Park.

NB. This objective, identified by the Steering Committee in consultation with other stakeholders, will remain relevant until at least the first planned revision of the management plan and is therefore included up front rather than being placed in an appendix.

ACTIVITY	OVI / RESPONSIBILITY
1.1 Identify legal and "best practice" requirements for the implementation of the voluntary relocation programme.	Best Practice Guidelines available. Resettlement Team Leader / Consultant
1.2 Confirm compensation and voluntary resettlement cost implications and options.	Comprehensive report assessing options, costs, social dynamics, environmental and other implications. Resettlement Team Leader / Consultant
1.3 Compile a compensation and voluntary resettlement policy framework document. Ensure broad acceptance of the plan amongst the host communities, PIU, GOM and support agencies	Policy available and widely supported. Resettlement Team Leader / Consultant
1.4 PIU to thoroughly brief the support group representatives of the Shingwedzi communities on the work plan, the chosen approach and process prior to any field visit by the resettlement working group. Once accepted by GOM, present the options identified in the policy framework to residents in village-based meetings.	Support Groups and communities thoroughly briefed. Resettlement Team
1.5 Conduct negotiations with individual families in accordance with accepted policy framework for resettlement. Families wanting to re-locate have to be better off than before. Compile asset inventories, ID current land and resource use rights for each family, and ID preferred sites for potential relocation.	Baseline report accepted by PIU, KfW and GOM. Resettlement Team
1.6 Develop a participation-based Monitoring and Evaluation programme to measure the acceptability and sustainability of the resettlement programme. Furthermore, a participatory conflict impact assessment (PCIA) should be done, to monitor and assess the impact of resettlement and conflict on the general implementation of project activities.	M&E report available. M&E Consultant

ACTIVITY	OVI / RESPONSIBILITY
1.7 Re-present options to residents in a second round of village-based meetings. Actively solicit discussion and respond to questions.	Resettlement Team
1.8 Conduct structured house-to-house interviews to establish household decisions.	Documented household decisions, certified by M&E agency. Resettlement Team
1.9 Arrange logistics for the first removal.	Logistics report accepted by PIU, GOM and KFW. Resettlement Team
1.10 Facilitate move of first group of resettlement volunteers.	Successful removal documented by support agencies. Resettlement Team
1.11 Provide post-removal support to resettled volunteers and host communities.	Successful resettlement support documented by support agencies and confirmed by M&E agency using participatory research. Resettlement Team
1.12 Conduct further village-based interviews to re-assess attitudes and offer second phase removal to new volunteers.	Report documenting second-round household decisions.
1.13 Develop second phase RAIDP and RCMIP based on second-round decisions. Use of exchange visits between those who have resettled on a voluntary basis and people, who prefer to stay in the Park to be considered.	Phase two RAIDP and RCMIP accepted by PIU, GOM, KfW and host communities. Host community acceptance certified by M&E agency.
1.14 Arrange logistics for the second removal.	Logistics report accepted by PIU, GOM and KfW.
1.15 Remove second group of resettlement volunteers*	Successful removal documented by support agencies and certified by M&E agency.
1.16 Provide post-removal support to resettled volunteers and host communities.	Successful resettlement support documented by support agencies and confirmed by M&E agency.

* Further rounds of resettlement may be considered based on the experience gained and the attitudes of people remaining within the core areas of the LNP.

OBJECTIVE 2:

To develop a framework and support programme for residents who choose to remain in the Limpopo National Park.

ACTIVITY	OVI / RESPONSIBILITY
2.1 Further to steps presented in Objective 1, for families that prefer to remain at their current location, a participatory social rural mapping of livelihood strategies must be conducted, including cropping, grazing and resource harvesting. The long-term sustainability of the livelihood strategies of residents choosing to remain in the LNP should be assessed, taking into account Park objectives and the conceptual tourism development plan. The resettlement team, as well as the field rangers should be trained in conflict resolution, as there is a strong possibility that various negotiations may become contentious.	Livelihoods report including strategies accepted by PIU, GOM and KfW. Park Resettlement Team / Community Programme Leader
2.3 Conduct a participatory rural communication programme to negotiate the concentration of remaining residents into enclaves along the Shingwedzi River and Massingir Dam.	Successful communication programme documented by support agencies. M&E report confirming residents understand major issues related to the LNP and its impacts on the support zone. Park Resettlement Team / Community Programme Leader
2.4 Prepare Integrated Development Plans for the proposed enclaves based on the outcomes of the above process. The IDPs should address basic elements such as fencing, infrastructure provisioning, service delivery, linkages with the LNP, training, institutional development, etc.	Draft Integrated Development Plan Park Resettlement Team / Community Programme Leader
2.5 Prepare a basic support programme for residents who choose to remain outside the enclaves.	Draft support programme. Park Resettlement Team / Community Programme Leader
2.6 Develop broad support for the IDPs and basic support programme amongst residents, the PIU, the GOM and support agencies.	IDPs accepted by PIU, GOM, support agencies, support zone residents and volunteer settlers. Park Resettlement Team / Community Programme Leader
2.7 Prepare an implementation plan and secure funding for the IDPs and basic support programme.	Implementation plan accepted by PIU, GOM and KfW. Funding secured. Park Resettlement Team / Community Programme Leader
2.8 Commence implementation of the IDPs and basic support programme.	Community Programme Leader

OBJECTIVE 3:

To develop a framework and implementation programme for sustainable resource utilisation within the resource use and support zones of the LNP.

ACTIVITY	OVI / RESPONSIBILITY
3.1. Refer Chapter 5, Section 5.5 and Table 5.	Community Programme Leader / Park Ecologist
3.2 If the assessment is that current and planned livelihood strategies in the support and resource use zones are not sustainable, the following options may be considered: ■ Securing alternative resource use areas outside the LNP for residents of the support zone (ensure permanent co-operation in this respect with the GTZ Project); ■ Securing funding from "funds for biodiversity conservation" sources (eg PPF, GEF).	Community Programme Leader / Park Ecologist

OBJECTIVE 4:

To develop a framework and implementation programme for effective community empowerment and participation in the planning, management and development of the LNP.
Activity

ACTIVITY	OVI / RESPONSIBILITY
4.1 Develop guidelines for effective community participation in all phases and aspects of the project cycle (use of project cycle management approach where appropriate). The guidelines should take a bottom-up approach, viewing villages as the basic building blocks for participative planning and development. They should stress the need for a representative and inclusive approach as well as adequate support and training for participative structures. Develop broad support for the community participation guidelines amongst the PIU, GOM and support agencies.	Comprehensive guidelines developed and broadly accepted. Community Programme Leader
4.2 Establish Community Information Centres. These centres are envisaged as points where local people are able to obtain information regarding policy, legislation, proposed developments etc, i.e. basic information regarding Park Management and development. They should also facilitate a flow of information from the people to the Park, e.g. a place where people can come to raise issues of potential conflict or express certain needs or uncertainties, and should assist in building trust between the Park and the people. They are seen as being integral parts of proposed Park Infrastructure, manned by the personnel of the Community/Support Zone Programme (see Organogram in Section 12.1.1).	Community Information Centres established, staffed and operating effectively. Community Programme Leader

ACTIVITY	OVI / RESPONSIBILITY
4.3 Establish inclusive and representative village-level Steering Committees (based on the principles articulated in the community participation guidelines). Support regular meetings from village-level Steering Committees in the Community Information Centres. Provide basic support to the Steering Committees. This should include strategic and logistical support as well as skills and awareness training to ensure that they are empowered to participate effectively in all relevant matters relating to the Park.	Steering Committees established, trained and operating effectively. Community Programme Leader
4.4 Ensure adequate and appropriate Community representation on the LNP Management Board. This will consist of two representatives from each district, as elected by and from the various Steering Committees. These representatives need to be trained and empowered to participate fully in all dealings of the LNP Board and if necessary should be able to request technical assistance from relevant experts or institutions. Furthermore, it must be ensured that there is an effective mechanism for feedback from the LNP Board to the Steering Committees and community at large.	LNP Board includes elected community reps with mechanisms for feedback to broader community in place. Community Programme Leader
4.5 Conduct a participatory rural communication programme to build awareness and understanding of the LNP and its potential benefits and impacts, including resettlement plans, amongst residents of the Park and the support zone, and to discuss concerns and potential conflicts. As this matures its focus could shift to other relevant issues such as building awareness around tourists and tourism. NB. The field rangers are those Park staff that will most exposed to and in contact with local communities and as such must be aware of the importance of their role and must be well trained to interact in a professional, respectful and constructive manner with local people.	Community awareness programme in operation. Community Programme Leader

* Some of these actions are complete or underway

OBJECTIVE 5:

To develop a framework and implementation programme for the optimal participation of local communities in the sustainable economic development of the LNP and surrounds and to ensure an optimal flow of associated benefits to these communities.

ACTIVITY	OVI / RESPONSIBILITY
5.1 Develop an economic participation or linkage plan for the LNP. This should be done in a participative fashion to ensure broad-based support and to ensure it takes on the ground realities into account. The plan should be designed to ensure optimal community participation in the economic opportunities created by the LNP, it must have a strong institutional basis and should involve support groups (NGOs) and the private sector where appropriate. It should be integrated with the planning and implementation of other objectives and should promote local interests along principal areas of linkage: ■ Equity or ownership participation in the productive assets of the LNP, in this case, largely tourism concession opportunities, the equity model based on long-standing residential rights, see 5.3 below; ■ Optimal employment participation in the development and management of the LNP and its commercial enterprises, by means of actively favouring local people and facilitating skills provision; ■ Secondary enterprise linkages between the economic activities of the LNP and suppliers of goods and services from the target community and other income generating projects.	Comprehensive Economic Participation Plan completed including clear guidelines to give effect to three areas of linkage and clear targets against which progress can be measured. Community Programme Leader / Consultant
5.2 Develop broad support for the economic participation plan amongst the PIU, GOM, support agencies and beneficiary communities.	Economic participation plan endorsed by PIU, GOM, support agencies and beneficiary communities. Community Programme Leader
5.3 Implement the equity participation sub-programme. This will involve, amongst other things, identifying use-rights for transfer to community entities, defining and establishing community legal entities e.g. a LNP Community Trust or registered company, building institutional capacity, defining models for community-public-private partnerships within the frameworks defined above, implementing appropriate CPP partnerships, etc.	Regular M&E reports measuring progress against targets set in the economic participation plan. Community Programme Leader / Consultant

ACTIVITY	OVI / RESPONSIBILITY
5.4 Implement the employment participation sub-programme. This will involve developing an intensive vocational training programme linked to the development of the LNP. It will also involve the development of an affirmative employment frame-work focused on the beneficiary communities, which should govern all enterprise in the Park.	Regular M&E reports measuring progress against targets set in the economic participation plan. Community Programme Leader
5.5 Implement the secondary enterprise programme. This will involve developing and implementing appropriate procurement and SMME support policies in close co-ordination with appropriate support agencies.	Regular M&E reports measuring progress against targets set in the economic participation plan. Community Programme Leader
5.6 Together with the community and other support agencies, investigate options for Community Based Tourism (CBT) developments (including the establishment of conservancies). Take the necessary steps to facilitate the establishment and success of these.	Opportunities for CBT identified. Implementation Plan developed together with necessary capacity building, financial and institutional support in place. M&E reports to measure progress. Community Programme Leader

OBJECTIVE 6:

To facilitate the planning and sustainable development of the support zone and its integration into the planning and development of the region and the greater TFCA.

ACTIVITY	OVI / RESPONSIBILITY
6.1 Ensure the participative preparation of an Integrated Development Plan (IDP) for the support zone based on the above assessments. The IDP should address basic elements such as infrastructure provisioning, service delivery e.g. health and education, agricultural intensification, linkages with the LNP as well as the greater TFCA, "conservancies", training, institutional development, etc and should be based on sustainable development principles. Special consideration will be given to opportunities offered in the support zone through the creation of conservancies, the corridor development project in cooperation with GTZ, and the planned irrigation project facilitated through Arazul in close cooperation with the PIU (i.e. it is expected that up to 80 000 ha high quality irrigated agricultural land will become available through upgrading the Massingir Dam within five years).	Integrated Development Plan participatively drafted. Community Programme Leader to co-ordinate
6.2 Establish an LNP Planning and Development Forum to give effect to 6.1 above. The Forum should include representatives from communities and the village-based Steering Committees (to ensure active community participation in the design and implementation of the IDP) as well as NGOs, GOM (appropriate provincial/national departments) and PIU. There must be clearly defined accountabilities and responsibilities (including financial) for the different parties.	Planning and Development Forum in place and functioning effectively. Community Programme Leader to co-ordinate with relevant government department(s).
6.3 Develop broad support for the IDP amongst residents of the support zone, volunteer settlers from the Park's core areas, the PIU, the GOM and support agencies (Community Information Centres can be used in this regard).	IDP accepted by PIU, GOM, support agencies, support zone residents and volunteer settlers. Community Programme Leader / PDF
6.4 Prepare an implementation plan and secure funding for the IDP.	Implementation plan accepted by PIU, GOM and KFW. Funding secured. Community Programme Leader / PDF
6.5 Commence implementation of the IDP.	Community Programme Leader / PDF / relevant institutions

9. TRANSBOUNDARY PROGRAMME

9.1. GUIDING PRINCIPLES FOR GLTP

Common principles agreed to by the component Parks include:

- An adaptive management approach will be followed.
- A process of Integrated Environmental Management will be adhered to.
- Sustainable utilisation is an accepted principle, although the degree to which it is implemented remains the prerogative of each Park.
- Community participation and capacity building aimed at improving the quality of life of people in and around the Parks.
- Private sector involvement in the development process, especially tourism.
- The development of an equitable framework for revenue sharing.

9.2. TRANSBOUNDARY OBJECTIVES FOR LNP

- To become an integrated component of the Greater Limpopo Transfrontier Conservation Area. This will include the collaborative identification of conservation corridors as well as the establishment of conserved areas in the interstitial zones (including game ranches, conservancies and such like) and the sustainable management and development of all areas.

9.3. GLTP JOINT MANAGEMENT BOARD

The Joint Management Board (JMB) ensures the appropriate handling of matters of mutual concern to the component parks and the harmonisation of policies and procedures. The SADC Protocol on Wildlife Conservation and Law Enforcement (1999) and the International Treaty provide the legal and political framework within which the JMB must function. The composition and responsibilities of the JMB are as follows:

Composition – 12 members:

- Two from each of the national implementing agencies of the Parties.
- One from the national institutions responsible for borderline control of the Parties.
- One appointed as deemed fit by each of the Parties.

Responsibilities:

- Periodic revision and implementation of the Joint Management Plan for the Transfrontier Park.
- Determine mechanisms for administering funds received specifically for the Transfrontier Park.
- Identifying financial needs and sourcing such funds as are required to achieve the effective implementation of the Joint Management Plan.
- Establish committees as may be necessary.
- Provide reports to the Ministerial Committee.

With reference to the establishment of committees, JMB must identify the joint concerns/issues requiring permanent or project Management Committees. They must identify members from their ranks to chair these and to ensure continuity and close liaison with the JMB. Country members of the various management committees will be responsible for conveying information to and from their committees. In addition to this the JMB must also look beyond the boundaries of the GLTP and ensure the integration of its aims and objectives into appropriate structures and institutions, particularly Water Catchment Authorities.

9.4. INTEGRATED REGIONAL DEVELOPMENT

The management and development of the LNP should not be done in isolation from the surrounding TFCA, and an integrated approach is essential. The PIU needs to be involved in the TFCA planning, especially as it relates to neighbouring interstitial areas. Obvious examples include tourism and related infrastructure development, including road linkages and airstrips, as well as the possible development of wildlife conservancies in which hunting, breeding and ecotourism ventures are initiated.

10. ENVIRONMENTAL MANAGEMENT

10.1. GENERAL PRINCIPLES

10.1.1 SUSTAINABILITY

- Renewable natural resources should be utilised at a rate within their capaci for renewal.
- Identify, develop and adopt alternative sources and technologies with lesser environmental impacts.
- Ensure that as far as possible the prices of goods and services accurately reflect the associated environmental costs.
- Ensure that all land-use activities have the least possible impact on the environment through such measures as minimised energy and natural resource consumption, minimised waste streams and minimised operating impacts.

10.1.2. FULL COST-BENEFIT ACCOUNTING

- Decisions must be based on assessment of the full social and environmental costs and benefits of policies, plans, programmes, projects and activities that impact on the environment.

10.1.3. POLLUTER PAYS

- The full costs of pollution should be paid by the person or organisation causing the pollution as should the costs of preventative measures to reduce or prevent further pollution and environmental damage.

10.1.4. PRECAUTIONARY PRINCIPLE

- A risk averse and cautious approach that recognises the limits of current knowledge about the environmental consequences of decisions or actions.
- The nature, source and scope of potentially significant impacts on the environment and on people's environmental rights must be identified.
- The potential risks arising from uncertainty should be identified and action should be taken to limit the risk.

10.1.5. PROJECT LIFETIME

- The impact of development from conceptualisation and planning through to iimplementation and completion must be accounted for.
- Secondary or associated impacts must also be taken into account.

10.1.6 WASTE MANAGEMENT

- The creation of waste must be minimised at source.
- Solid waste recycling, separation at source and safe disposal of unavoidabl waste must be a priority.
- Liquid waste disposal must be adequately planned for and the impact on the natural environment in general and on both surface and ground water resources in particular must minimised.

10.1.7 MAINTENANCE OF BIODIVERSITY

- Identify threats to the maintenance of biodiversity and mechanisms to delimit or remove these threats.
- Prevent the introduction of alien species and control and eradicate alien species which threaten ecosystems, habitats or species.
- Integrate biodiversity considerations into land-use planning procedures and environmental assessments.
- Promote and develop economic opportunities that are compatible with, and, which complement the conservation and sustainable use of biodiversity.

10.1.8. MAINTENANCE OF ECOSYSTEM INTEGRITY

- Ecosystem processes must be identified and maintained at appropriate spatial and temporal scales.

10.1.9. EFFECTIVE MONITORING AND EVALUATION

- Establish effective mechanisms for monitoring and evaluating the environmental impacts of development.
- Ensure the effective regulation and enforcement of environmental standards.

10.2 OBJECTIVES

- To ensure that any development, construction and activities that occur in the Park are environmentally (ecologically and socially) sustainable.

- To avoid, minimise, mitigate and manage the potential ecological and social impact of all development and activities that may occur in the Park.

10.3 GUIDELINES FOR TOURISM AND PARK INFRASTRUCTURE DEVELOPMENT

10.3.1. ENVIRONMENTAL ETHIC

The philosophy with respect to the environment and development is that environmental considerations should be fundamental to all aspects of project design and implementation. Potential negative environmental impacts should be negated or minimised in the preliminary conceptual and design phase (from construction to operation) through creative thinking and by promoting empathy with each particular environment. The need for environmentally responsible and sustainable development is strongly supported and this principle will be upheld at all times.

10.3.2 OBJECTIVES OF INTEGRATED ENVIRONMENTAL MANAGEMENT

The overall objectives for IEM of tourism and any other development projects in the Park are:

- To protect and conserve site resources (natural, man-made, sensory).
- To optimise the utilisation of site resources.
- To minimise the environmental impact during the construction and operation of any physical development.

10.3.3. SITE DEVELOPMENT PLANS

All developments in the Park will require Site Development Plans. The principles to be adhered to in preparing site development plans are as follows:

- The proposed developments must be so designed as to emphasise and aid the interpretation of the unique natural and other features of the Park.

- The developments will be so designed that negative impacts on these features will be minimised (this includes, for example any possible negative visual impacts of a development on the rest of the Park or neighbouring areas).

- The overall emphasis of the proposed developments will be focussed on contributing to achieving the management objectives for the Park.

The overall objectives for the development plans are:

- To achieve the sustainable utilisation of site resources through planning, construction and management according to sound conservation, ecological and economic principles.
- To provide high quality tourism facilities and infrastructure.
- To provide appropriate Park management / maintenance facilities and infrastructure.
- To involve and contribute to the upliftment of communities.

10.3.4. ENVIRONMENTAL IMPACT ASSESSMENTS

Environmental Impact Assessments are a legal prerequisite for many types of development. Appendix E contains all the relevant information in this regard.

10.3.5. DETAILED SITE SPECIFIC ENVIRONMENTAL MANAGEMENT PLANS

A site specific management plan must be prepared for each development site or node. These management plans are detailed and when finalised will form part of the contract between the developer and the contractor (builder) as well as the developer and the Park. The site plans must be flexible and must allow the developer to act on contingencies or new and unaccounted events, though this would be done in consultation with the Park Management.

Specific site and activity plans must be developed for all development sites and activities that will be undertaken. For example, plans or sub-plans must be prepared for view sites, trails and any activity or area that will be utilised by the tourist operator.

11. PROTECTION PROGRAMME

11.1 OBJECTIVES

The primary objective of this programme is to ensure the territorial integrity of LNP in order that:

- Ecosystem functioning can continue in as natural a manner as possible by minimizing all forms of interference.
- Eco-tourism can prosper within a secure protected area environment.

A high degree of territorial integrity can be achieved by:

- A visible presence of professional, well trained and highly motivated field rangers.
- Having a strong community outreach programme.
- Securing the reserve's boundaries.
- Effecting proper access control.
- Maintaining high level of internal security.
- Maintaining high level of ecological security.

All aspects of security will be handled by a field ranger/security ranger component. This programme deals with all facets of protection, including the recruitment, selection, training, deployment and management of the field ranger corps. All logistical and infra-structural requirements pertaining to the above are also addressed. (For full logistical details see the Protection Programme and Field Ranger Manual, available on request).

11.2. FIELD RANGER CORPS

See manual for field ranger profiles; recruitment, selection and training; field ranger presence, boundary control, internal and ecological security and community outreach.

11.2.1. COMMAND STRUCTURE

A regional ranger will be in charge of each of the three regions within which the Park is divided. It is recommended that each region be divided into three sections with equal responsibility. Each section will be responsible for ± 100 000 ha with approximately 12 field rangers.

OBJECTIVES FOR SECTION RANGERS:

- To ensure the territorial integrity of their section.
- To liaise with support zone staff with regard to community outreach programmes in the section.
- To oversee the ecological management of the section.

STRATEGY:
Each section ranger's responsibilities will entail the following:

- To attend to the well-being of the field ranger force in his section.
- To manage and co-ordinate all field ranger patrols and actions in the section.
- Attend to field ranger in–service training.
- Implement community outreach programmmes in section.
- Carry out all routine biological monitoring functions in collaboration with the research and monitoring co-ordinator (e.g. veld condition assessment, ecological aerial census).
- Co-ordinate all field ranger biological observation using palm pilots and GPS.
- Capture and assimilate all biological data captured in this fashion.
- Institute management programmes in collaboration with regional ranger and the research and monitoring co-ordinator and actions based on the interpretation of these data.

REGIONAL RANGERS:
There should be three Regional Rangers based at regional Headquarters at:

- Pafuri
- Massingir
- At a point south of the Shingwedzi River (Makandazulu / Kostini).

THE OBJECTIVES OF THE REGIONAL RANGERS ARE AS FOLLOWS:

- To maintain the territorial integrity of their region.
- To liaise with support zone co-ordinator with regard to co-ordination of community outreach programmes in the region.
- To oversee the ecological management of the region.

STRATEGY:

- Establish regional HQ with Anti Poaching Unit (APU).
- Regional HQ to consist of Regional Ranger with administrative backup and APU made up of 1 x corporal, 2 x patrol leaders, 6 x field rangers.

PRIMARY FUNCTIONS OF REGIONAL RANGERS:

- Overseeing section rangers responsible to him.
- Servicing pickets by attending to their logistical needs along the length of the Limpopo River as far as Combomune.
- Co-ordinating all ecological management programmes within his region.
- Liaise closely with the support zone co-ordinator with regard to the identification, implementation and co-ordination of community outreach programmes within his region.
- Processing all captured biological observation data from the sections.

PRIMARY FUNCTIONS OF FIELD RANGERS:

- Carrying out daily security patrols in the form of bicycle and foot patrols with the objective of detecting and following up on any incursions into the protected area outside of spheres of influence of all pickets.
- Gathering of biological data by means of palm pilots and GPS, as determined from time to time by management, that can be used in the management of the area.
- Interacting with communities during the course of their patrols in a professional manner, cordially, decisively and fairly, attempting to enlighten them at all times. Field rangers need to be more directly involved in outreach programmes such as environmental education programmes.
- Re-inforcing pickets, if and when, a security situation arises.
- Checking on picket efficiency by conducting patrols into their spheres of influence.

11.3. ACCESS CONTROL

11.3.1. GUIDING PRINCIPLES

Access control measures can vary considerably at each of the entrance gates but there are broad principles applicable to all:

- Because access control is so critical to overall security within the Park, management must have a direct input into this and it must be handled by a section or regional ranger. He will be responsible for training and re-training. This ensures the maintenance of a high security standard.

- Staff manning the entrance gates should have a sound working knowledge of the Park – informed security personnel are good for the Park's image.

- Staff manning the gates should have a strong conservation and paramilitary background – they need to be professional, efficient and loyal to the organisation and the conservation cause.

- Gate staff are the security showpiece of Park and the image of the field ranger is conveyed to all visitors by the few individuals manning these gates.

- To achieve the above, there should be interchangeability between gate staff and field rangers. This, inter alia, broadens experience, improves knowledge, relieves boredom and allows for more flexibility with regard to relief staff.

11.3.2. MEASURES

- Access to and exit from the Park by all staff governed by display of staff security card. All permanent employees and their spouses are required to carry a security card on their person. This card also serves as an exit permit.

- No pedestrians through the Park.

- Goods leaving the Park must be accompanied by a letter and official stamp from management

- All firearms are to be declared at the gate.

- Contractors (Government workers and builders) must acquire a visitor card for period of contract work and must exit the reserve daily (unless permission is otherwise granted by Park Management). An exit permit is required on leaving.

- Visitors to employees must make prior arrangement with management. They require an entrance permit/ visitor's card and an exit permit on departure.

- Duty roster should ensure, apart from staff on duty at the gate, there is at least one standby staff member in the quarters, in case of emergency.

11.3.3. ACCESS POINTS

- Pafuri
- Massingir
- Mapai

11.3.4. GENERAL

The staff complement at each gate will be determined by tourist volumes. The rank structure should consist of one sergeant and one corporal and the rest non-ranked gate guards.

12. ADMINISTRATION PROGRAMME

12.1 PARK MANAGEMENT

12.1.1. MANAGEMENT STRUCTURES

The Park will be headed by the Park Director and the PIU Director (for the duration of the project). This will be supported by a management structure as indicated in the organogram overleaf.

12.1.2. LIMPOPO NATIONAL PARK MANAGEMENT BOARD

- The Board will be administratively and financially autonomous.
- The Board is responsible for overseeing the management and development of the Park. It will ensure that the latter, including tourism and commercial activities, meet the provisions of the Management Plan and other relevant legislation.
- Chairmanship of the Board will rotate annually.
- Decision making is by consensus and a series of deadlock breaking mechanisms (such as mediation and arbitration) should be agreed to and defined in its operational procedures.
- The final constitution of the LNP Management Board will be decided by the Minister under the recommendation of the Steering Committee but will include at least the following:
    - Park Director
    - PIU Director
    - Six community representatives (two from each district, to be chosen from the Community Steering Committees). Provision must also be made for the participation of technical advisors to the community board members (without any vote).

Further members may include but are not restricted to representatives from:

- Provincial government
- Local government
- Tourism Sector

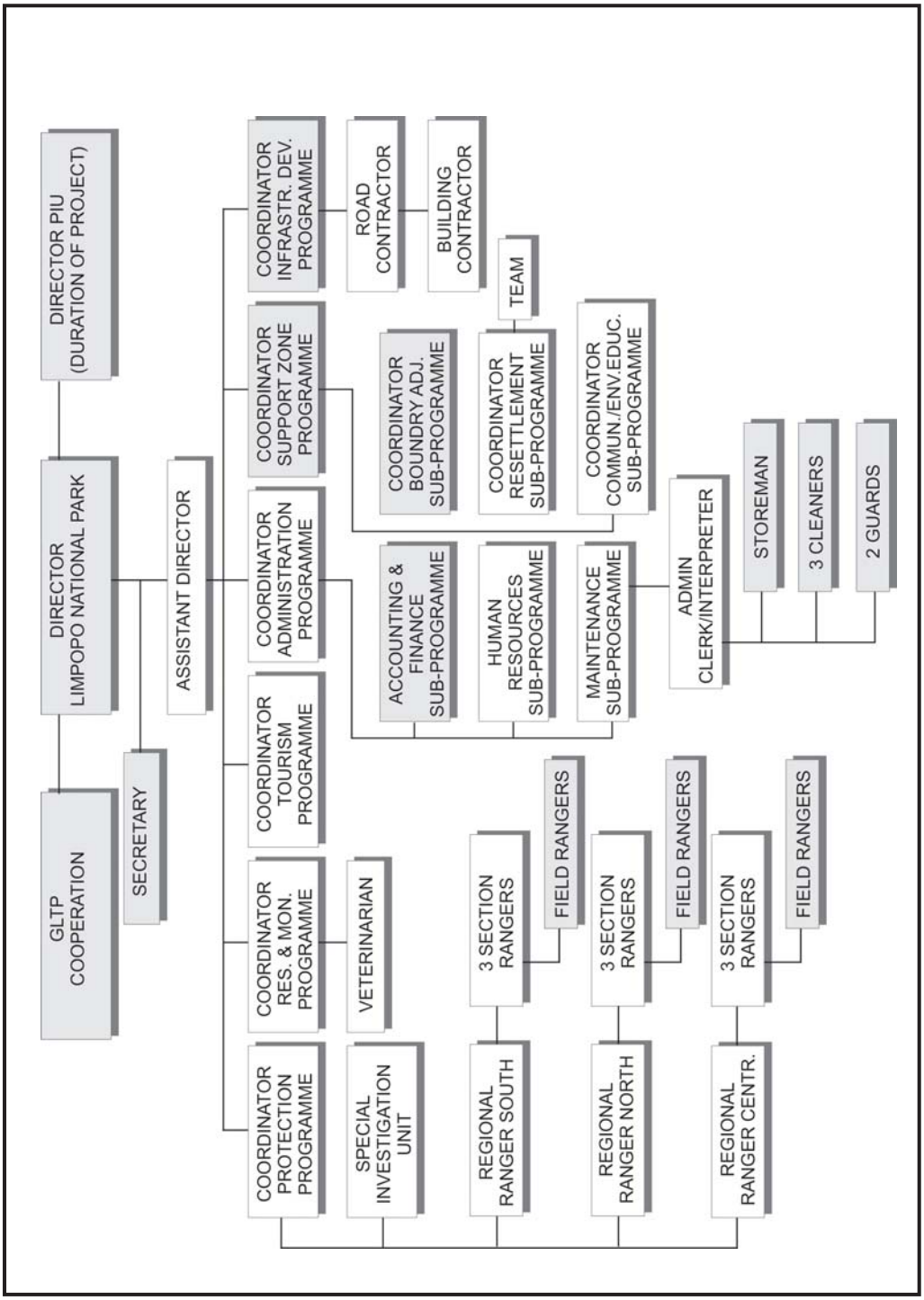


Figure 3: *Management Structure of the Limpopo National Park. Posts filled are shaded grey.*

12.1.3. CO-MANAGEMENT WITH THE COMMUNITY

It is important that the concept of co-management be given adequate attention. Whilst there is provision made for community representation on the LNP Management Board, it is possible that their opinions and interests could be overshadowed by other parties. In the interests of ensuring ongoing, good relations with local communities, ensuring their support for the Park and its successful establishment and operation, and benefiting from their insight and knowledge, it is important that this issue not be overlooked. Furthermore, it is suggested that the Park work closely with the people at all levels and not just at a Board level (See Chapter 8).

This is particularly important as the community will be the de facto managers of the Support Zone and custodians of the Park at a ground level.

12.2 HUMAN RESOURCES MANAGEMENT

NB. The Human Resources Manual is available on request.

12.2.1. GUIDING PRINCIPLES

- A vibrant and enthusiastic working spirit will be striven for and encouraged and a healthy working environment will be maintained.
- The LNP Staff Code should be observed by all staff at all times.
- Equitable employment opportunities will be offered.

12.2.2. OBJECTIVES

- To establish and maintain a transparent and equitable personnel management system.
- To ensure the promotion of optimal personal growth potential for each staff member.
- To foster a sense of belonging and to promote *esprit de corps*.
- To provide appropriate training opportunities to staff members.
- To ensure that personal performance is focussed towards the achievement of the objectives for the reserve.

12.2.3. STAFF TRAINING AND CAPACITY BUILDING REQUIREMENTS AND PROGRAMME

- Each member of staff will receive the necessary in-service or specialised external training to equip him/her to cope with the task at hand.
- In-service training will apply to all members of staff.
- The training programme will be monitored and evaluated at least biennially by the appropriate person.
- Where a member of staff cannot be adequately trained by means of the in-service training programme, full use will be made of external training facilities and opportunities wherever possible.

12.3. FINANCIAL MANAGEMENT

NB. The financial management procedures are available on request.

12.3.1. BACKGROUND

It is critical that sound financial management should not only be seen as the accurate recording of the financial implications of past activities, but also that of directing future activities in order to obtain the maximum benefit whilst striving simultaneously towards achieving the objectives of the Park.

The scope of financial management includes the effective execution of three decisions, namely the investment decision, the financing decision and the profit (operational benefit) decision.

In the context of the Park, financial management will be seen as:

- The accurate recording of the financial implications of past activities.
- Control over the financial aspects of the Park.
- Guidelines according to General Accepted Accounting Practises for recording, control and planning purposes.
- Reporting on the operational activities of the Park.
- Reporting on the assets and liabilities of the Park.

12.3.2. GUIDING PRINCIPLE

It is accepted that financial management aspects of the reserve should be executed according to the General Accepted Accounting Practices (GAAP), as formulated by the accounting profession. The financial process will be subject to departmental auditing.

12.3.3. OBJECTIVES

- The most effective deployment of the available capital/cash resources.
- Optimisation of income/operational benefit.
- Continuous striving towards attainment of the Park objectives.
- Efficient planning of future activities/developments.
- Effective control over the financial aspects of the Park.
- Financial accounting according to general accepted accounting practices.

12.3.4. MANAGEMENT ACTIONS

- Establishment of an operational plan containing guidelines and procedures for the financial management function.
- Ensuring that all officials are acquainted with the guidelines and procedures.
- Ensuring that the financial management is executed according to the guidelines and procedures.

12.3.5. BUDGETING PROCESS

The Park Director and PIU Director will be responsible for compiling the annual budget, with assistance from the various Programme Co-ordinators. The budget should be divided into two sections, namely a capital budget and an operational budget.

Once approved, the budget should form the guideline for all expenditure. The Park Director and PIU Director, together with the Accountant should be responsible for budget control. Variances from budgeted expenditure should be well controlled and documented.

It is suggested that a zero base budgeting system is followed where all expenditure has to be motivated from scratch every year, abandoning the old approach of only adjusting previous years' figures to arrive at a new budget.

12.3.6. FINANCIAL PROCEDURES

N. B. The financial management procedures are available on request.

12.4 INFRASTRUCTURE MANAGEMENT

See Appendix G – Infrastructure Development.

12.4.1. GUIDING PRINCIPLES

- Infrastructure management includes the planning, construction, maintnance, replacement, control and monitoring of all fixed structures, equipment and other movable assets;
- Infrastructure management, including inspections and stock control, will be done in accordance with generally accepted norms, standards and practices, as prescribed in the Procedures Manual.

12.4.2. OBJECTIVES

The overall objectives of the infrastructure management system will be as follows:

- To ensure that all infrastructure is used and/or stored and/or maintained in a responsible manner.
- To delegate responsibility for specific infrastructure to individual members of staff.
- To prevent mistreatment of infrastructure.

- To indicate the need for maintenance and/or replacement of specific infrastructure.
- To ensure that the maximum service life of infrastructure is realised.
- To assist with the compilation of infrastructure budgets.

12.4.3. INFRASTRUCTURE DEVELOPMENT

All proposed infrastructure development is listed in Appendix G. Environmental Guidelines for such development are contained in Chapter 10 on Environmental Management and Appendix D.

APPENDICES

APPENDIX 1

SPECIES LIST FOR NEIGHBOURING KNP

* introduced species

CHECKLIST OF MAMMALS

SCIENTIFIC NAME	PORTUGUESE NAME	ENGLISH NAME	SHANGANE NAME
INSECTIVORA: SORICIDAE			
Crocidura cyanea (Wagner, 1841)	Musaranho-almiscardo-cinzento-avermelhado	Reddish-grey musk shrew	
Crocidura fuscomurina Bocage, 1889	Musaranho-almiscardo-anão	Tiny musk shrew	
Crocidura hirta Peters, 1852	Musaranho-almiscardo-vermelho	Lesser red musk shrew	
Crocidura mariquensis (A. Smith, 1844)	Musaranho-almiscardo-preto	Swamp musk shrew	
Crocidura silacea Thomas, 1895	Musaranho-almiscardo-cinzento-castanho	Peters' musk shrew	
Suncus lixus (Thomas & Schwann, 1907)	Maior Musaranho-anão	Greater dwarf shrew	
ERINACEIDAE			
Atelerix frontalis (A. Smith, 1831)	Ouriço sul-africano (no records for Mozambique)	South African hedgehog	
CHRYSOCHLORIDAE			
Calcochloris obtrusirostris (Roberts, 1946)	Toupeira-amarelo-dourado	Yellow golden mole	
Amblysomus julianae Meester, 1972	Toupeira-Hottentot	Juliana's golden mole	
CHIROPTERA: Megachiroptera: PTEROPODIDAE			
Epomophorus gambianus (Ogilby, 1835) (=*E. crypturus crypturus* (Peters, 1852)	Morcego frugívoro de Peters	Peters' epauletted fruit bat	

Epomophorus wahlbergi(Sundevall, 1846)	Morcego frugívoro de Wahlberg	Wahlberg's epauletted fruit bat	Mangadgane
Rousettus aegyptiacus(A. Smith, 1829)	Morcego frugívoro de Egipto	Egyptian fruit bat	
Microchiroptera: EMBALLONURIDAE			
Taphozous mauritianus (E. Geoffroy, 1818)	Morcego das sepulturas sul-africanas	Tomb bat	
NYCTERIDAE			
Nycteris thebaica A. Smith, 1829	Morcego orelhudo de Egipto	Common slit-faced bat	
Nycteris woodi K. Andersen, 1914	Morcego orelhudo de Wood (no records for Mozambique but existence possible)	Wood's slit-faced bat	
RHINOLOPHIDAE			
Rhinolophus blasii K. Andersen, 1904	Morcego ferradura de nariz de sela	Peak-saddle horseshoe bat	
Rhinolophus clivosus K. Andersen, 1904	Morcego ferradura gigante	Geoffroy's horseshoe bat	
Rhinolophus darlingi K. Andersen, 1905	Morcego ferradura de Darling	Darling's horseshoe bat	
Rhinolophus fumigatus Peters, 1869	Morcego ferradura de Damaralândia	Rüppell's horseshoe bat	
Rhinolophus hildebrandtii Peters, 1878	Morcego ferradura de Hildebarandt	Hildebrandt's horseshoe bat	
Rhinolophus landeri Peters, 1852	Morcego ferradura de Lander	Lander's horseshoe bat	
Rhinolophus simulator K. Andersen, 1904	Morcego ferradura das savanas	Bushveld horseshoe bat	
Rhinolophus swinnyi Gough, 1908	Morcego ferradura de Swinny	Swinny's horseshoe bat	
HIPPOSIDERIDAE			
Hipposideros caffer(Sundevall, 1846)	Morcego de nariz enfolhado da Cafraria	Sundevall's leaf-nosed bat	
Hipposideros commersoni(Noack, 1887)	Morcego de nariz enfolhado de Commerson	Commerson's leaf-nosed bat	
VESPERTILIONIDAE			
Miniopterus schreibersi(A. Smith, 1883)	Morcego de Schreiber	Schreibers' long-fingered bat	
Myotis bocagei(Peters, 1870)	Morcego lanudo de Bocage	Rufous hairy bat	
Myotis tricolor(Temminck, 1832)	Morcego lanudo do Cabo	Temminck's hairy bat	
Myotis welwitschii(Gray, 1866)	Morcego lanudo de Welwitsch	Welwitsch's hairy bat	
Pipistrellus anchietai(Seabra, 1900)	(no records for Mozambique)	Anchieta's bat	
Pipistrellus kuhlii(Kuhl, 1819)	Morcego de anão de Kuhl	Kuhl's bat	

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Pipistrellus nanus (Peters, 1852)	Morcego de bananeiras	Banana bat	
Pipistrellus rueppellii (Fischer, 1829)	(no records for Mozambique)	Rüppell's bat	
Pipistrellus rusticus (Tomes, 1861)	(no records for Mozambique)	Rusty bat	
Chalinolobus variegatus (Tomes, 1861) (=*Glauconycteris variegata*)	Morcego borboleta	Butterfly bat	
Laephotis botswanae Setzer, 1971	(no records for Mozambique but existence possible)	Botswana long-eared bat	
Eptesicus capensis (A. Smith, 1829)	Morcego caseiro do Cabo	Cape serotine bat	
Eptesicus hottentotus Roberts, 1946	Morcego caseiro Hottentot	Long-tailed serotine bat	
Eptesicus melckorum Roberts, 1919	Morcego caseiro de cauda comprida	Melck's serotine bat	
Eptesicus somalicus zuluensis Roberts, 1924 (=*E. zuluensis*)	Morcego caseiro de Somalia	Somali serotine bat	
Scotophilus borbonicus (Peters, 1852) (=*S. viridis*)	Morcego amarelo pequeno	Lesser yellow house bat	
Scotophilus dinganii (A. Smith, 1833) (=*S. nigrita*)	Morcego caseiro amarelo	Yellow house bat	
Nycticeius schlieffenii (Thomas & Wroughton, 1908)	Morcego de Schlieffens	Schlieffen's bat	
Kerivoula argentata Tomes, 1861	Morcego lanoso de Damaralândia	Damara woolly bat	
Kerivoula lanosa Hinton, 1920	Morcego lanoso pequeno (no records for Mozambique)	Lesser woolly bat	
MOLOSSIDAE			
Chaerephon ansorgei (Thomas, 1913) (=*Tadarida ansorgei*)	Morcego de cauda livre de Ansorge	Ansorge's free-tailed bat	
Chaerephon pumila (Cretzschmar, 1830-1831) (=*Tadarida pumila*)	Morcego pequeno de cauda livre	Little free-tailed bat	
Mops condylus (A. Smith, 1833) (=*Tadarida condylura*)	Morcego Angolano de cauda livre	Angola free-tailed bat	
Mops midas (Sundevall, 1843) (=*Tadarida midas*)	Morcego de Midas	Midas free-tailed bat	
Tadarida aegyptiaca aegyptiaca (E. Geoffroy, 1818)	Morcego de cauda livre do Egipto	Egyptian free-tailed bat	

Tadarida fulminans (Thomas, 1903) (=*Nyctinomus masterson*i)	Morcego de cauda livre de Masterson	Madagascar large free-tailed bat	
PRIMATES: LORISIDAE			
Otolemur crassicaudatus (E. Geoffroy, 1812) (=*Galago crassicaudatus*)	Jagra grande, Jagra gigante	Thick-tailed bushbaby	Chiêmhvana/Bila
Galago moholi A. Smith, 1836	Jagra do Senegal, Jagra pequena	South African lesser bushbaby	Chivetsetse/Bila
CERCOPITHECIDAE			
Papio hamadryas (Linnaeus, 1758) (=*Papio ursinus orientalis*)	Macaco-cão cinzento	Chacma Baboon	Fene/Habo
Chlorocebus aethiops (Linnaeus, 1858) (=*Cercopithecus aethiops*)	Macaco de cara preta, Macaco azul	Vervet monkey	
Cercopithecus mitis erythrarchus Peters, 1852	Macaco simango	Samango monkey	Simango
CARNIVORA:CANIDAE			
Otocyon megalotis (Desmarest, 1822)	Raposa orelhuda	Bat-eared fox	Kanga/Buana
Lycaon pictus (Temminck, 1820)	Mabeco, Cão do mato	Wild dog	Manganane
Canis adustus Sundevall, 1846	Chacal listrado, Chacal raiado	Side-striped jackal	Puugucha
Canis mesomelas Schreber, 1775	Chacal de costas pretas, Chacal de Sela	Black-backed jackal	Puugucha
MUSTELIDAE			
Aonyx capensis (Schinz, 1821)	Lontra-do-Cabo	Cape clawless otter	Tine
Mellivora capensis (Schreber, 1776)	Ratel	Honey badger	Chidzidzi
Ictonyx striatus (Perry, 1810)	Maritacaca, Doninha-de-cheiro	Striped polecat	S'tacatira
VIVERRIDAE			
Civettictis civetta (Lundholm, 1955)	Civeta	African civet	Fungué
Genetta genetta Matschie, 1902	Geneta-de-malhas-pequenas	Small-spotted genet	Simba
Genetta tigrina Pucheran, 1855	Geneta-de-malhas-grandes	Large-spotted genet	Simba
HERPESTIDAE			
Paracynictis selousi (De Winton, 1896)	Manguço-de-Selous	Selous' mongoose	Mangovo
Herpestes ichneumon (Gmelin, 1788)	Manguço-gigante-cinzento	Large grey mongoose	
Galerella sanguinea (Rüppell, 1836)	Manguço-vermelho	Slender mongoose	Mongovo
Rhynchogale melleri Roberts, 1938	Manguço-de-Meller	Meller's mongoose	

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Ichneumia albicauda (Thomas, 1890)	Manguço-de-cauda-branca	White-tailed mongoose	Chochlota
Atilax paludinosus (G. Cuvier, 1829)	Manguço-d'água	Water mongoose	
Mungos mungo (A. Smith, 1834)	Manguço-listrado	Banded mongoose	Cala
Helogale parvula (Sundevall, 1846)	Manguo-anão	Dwarf mongoose	
HYAENIDAE			
Proteles cristatus cristatus (Sparrman, 1783)	Protelo	Aardwolf	
Hyaena brunnea Thunberg, 1820	Hiena castanha	Brown hyaena	Misse
Crocuta crocuta (Erxleben, 1777)	Hiena malhada	Spotted hyaena	Misse
FELIDAE			
Acinonyx jubatus (Schreber, 1775)	Chita	Cheetah	Chicancanca
Panthera pardus (Günther, 1885)	Leopardo	Leopard	Ingué
Panthera leo (Linnaeus, 1758)	Leão	Lion	Ngonhama, Ingala
Caracal caracal Schreber, 1776 (=*Felis caracal*)	Caracal	Caracal	
Felis silvestris Schreber, 1775 (=*F. lybica*)	Gato bravo africano	African wild cat	
Leptailurus serval Schreber, 1776 (=*Felis serval*)	Serval, Gato serval	Serval	G'lhóti
PROBOSCIDEA: ELEPHANTIDAE			
Loxodonta africana (Blumenbach, 1797)	Elefante	Elephant	N'dlhopho
PERISSODACTYLA: RHINOCEROTIDAE			
Ceratotherium simum (Burchell, 1817)	Rinoceronte de lábio direito, R. de lábio quadrado	White rhinoceros	Chibedjana
Diceros bicornis (Drummond, 1876)	Rinoceronte de lábio preensil	Black rhinoceros	
EQUIDAE			
Equus burchelli (H. Smith, 1841)	Zebra de Burchell	Burchell's zebra	Duga
HYRACOIDEA: PROCAVIIDAE			
Procavia capensis (Pallas, 1766)	Hirax das rochas	Rock dassie	Chi-hulula
Heterohyrax brucei (Wroughton, 1910)	Hirax de malha amarela	Yellow-spotted rock dassie	Chi-hulula

TUBULIDENTATA: ORYCTEROPODIDAE			
Orycteropus afer (Pallas, 1766)	Urso formigueiro	Aardvark	Sambene/Chisambane
ARTIODACTYLA: SUIDAE			
Phacochoerus aethiopicus Lönnberg, 1908	Facocero, Javali africano	Warthog	Danane
Potamochoerus porcus (Desmoulins, 1831)	Porco bravo	Bushpig	Cumba
HIPPOPOTAMIDAE			
Hippopotamus amphibius Desmoulins, 1825	Hipopótamo	Hippopotamus	Phuvo, Boma
GIRAFFIDAE			
Giraffa camelopardalis (Lesson, 1842)	Girafa	Giraffe	Hulho/Uschlho
BOVIDAE			
Connochaetes taurinus (Burchell, 1823)	Boi-cavalo, Cocone	Blue wildebeest	Ongonhe
Sigmoceros lichtensteinii (Peters, 1849)	Gondonga, Nameriga, Ecoce	Lichtenstein's hartebeest	D'zongonge
Damaliscus lunatus (Burchell, 1823)	Mezanzi, Estacatira	Tsessebe	
Cephalophus natalensis A. Smith, 1834	Mangul, Cabrito vermelho	Red duiker	Chinguengué
Sylvicapra grimmia Fitzinger, 1869	Cabrito cinzento	Common duiker	Munti/Chipea
Oreotragus oreotragus Roberts, 1917	Cabrito das pedras, Cabrito saltador	Klipspringer	
Ourebia ourebi (Zimmermann, 1783)	Oribi	Oribi	Inhametave
Raphicerus campestris (Thunberg, 1811)	Chipene, Xipene	Steenbok	
Raphicerus sharpei Thomas & Schwann, 1906	Chipene grisalho, Xipene grisalho	Sharpe's grysbok	Chipene/Chipuitipuitzi
Neotragus moschatus (Thomas, 1898)	Changane	Suni	
Aepyceros melampus (Lichtenstein, 1812)	Impala	Impala	Imhala
Pelea capreolus (Forster, 1790)	(no records for Mozambique)	Grey rhebok	Imalamala
Hippotragus equinus (Desmarest, 1804)	Palapala cinzenta, Matagaíça	Roan	Angacaia
Hippotragus niger (Harris, 1838)	Palapala negra	Sable	Palapala, Malamala
Syncerus caffer (Sparrman, 1779)	Búfalo	Buffalo	Nhari
Tragelaphus angasii Gray, 1849	Inhala	Nyala	Inhala
Tragelaphus scriptus (Gray, 1852)	Imbabala	Bushbuck	M'babala
Tragelaphus strepsiceros (Pallas, 1766)	Cudo	Kudu	Nongo
Taurotragus oryx (Pallas, 1766)	Elande	Eland	Mofô

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Redunca arundinum(Boddaert, 1785)	Chango	Reedbuck	Xlhango
Redunca fulvorufula(Afzelius, 1815)	Chango da montanha	Mountain reedbuck	
Kobus ellipsiprymnus(Ogilby, 1833)	Piva, Inhacoso, Namedouro	Waterbuck	Piva
PHOLIDOTA: MANIDAE			
*Manis temminckii*Smuts, 1832	Pangolim, Alacavuma	Pangolin	Alacavuma
RODENTIA: SCIURIDAE			
Paraxerus cepapi(A. Smith, 1836)	Esquilo da savana	Tree squirrel	Mathindane
PEDETIDAE			
Pedetes capensis(Forster, 1778)	Lebre saltadora, Majengo	Springhaas	Phundlha, Majengo
HYSTRICIDAE			
*Hystris africaeaustralis*Peters, 1852	Porco-espinho do Cabo	Cape porcupine	Nungo
THRYONOMYIDAE			
Thryonomys swinderianus(Temminck, 1827)	Rato-grande-das-canas	Greater canerat	Vondo
BATHYERGIDAE			
Cryptomys hottentotus(Roberts, 1913)	Rato-toupeira-Hottentot	Common molerat	
MURIDAE/CRICETIDAE			
*Otomys angoniensis*Roberts, 1929	Rato-Angone-das-lezírias	Angoni vlei rat	
Tatera leucogaster(Peters, 1852)	Gerboa-de-Peters	Bushveld gerbil	
*Cricetomys gambianus*Thomas, 1904	Rato-gigante	Giant rat	
*Saccostomus campestris*Peters, 1846	Rato-bochechudo	Pouched mouse	
*Dendromus melanotis*Thomas, 1916	Rato-trepador-cinzento	Grey climbing mouse	
*Dendromus mystacalis*Wroughton, 1909	Rato-trepador-anão	Chestnut climbing mouse	
*Steatomys pratensis*Roberts, 1929	Rato-gorducho	Fat mouse	Massengane
Acomys spinosissimus(Peters, 1852)	Rato-espinhoso	Spiny mouse	
Lemniscomys rosalia (Thomas, 1916) (=*L. griselda*)	Rato-uniraiado	Single-striped mouse	
Dasymys incomtus(Sundevall, 1847)	Rato-d'água	Water rat	
Grammomys dolichurus (Thomas & Wroughton, 1908)	Rato-comum-da-floresta	Woodland mouse	
* *Mus musculus* Linnaeus, 1758	Rato-da-casa	House mouse	

Mus minutoides (Thomas, 1910)	Rato-pigmeu	Pygmy mouse	
Mastomys natalensis (A. Smith, 1834)	Rato-multimamilado-de-Natal	Natal multimammate mouse	
Mastomys coucha (A. Smith, 1836)	Rato-multimamilado	Multimammate mouse	
Thallomys paedulcus (Sundevall, 1846)	Rato-arbóreo-da-savana	Tree rat	
Aethomys chrysophilus (de Winton, 1897)	Rato-vermelho-da-savana	Red veld rat	
Aethomys namaquensis (A. Smith, 1834)	Rato-da-Namaqua-das-rochas	Namaqua rock mouse	
* *Rattus rattus* (Linnaeus, 1758)	Rato-urbano	House rat	
GLIRIDAE			
Graphiurus murinus (Desmarest, 1822)	Arganáz-arbóreo	Woodland dormouse	
LAGOMORPHA: LEPORIDAE			
Lepus capensis Linnaeus, 1758	Lebre-de-nuca-cinzenta	Cape hare	Fundlha
Lepus saxatilis F. Cuvier, 1823	Lebre-de-nuca-dourada	Scrub hare	Fundlha
Pronolagus crassicaudatus Thomas & Schwann, 1905	Lebre vermelha das rochas	Natal red rock rabbit	Fundlha
MACROSCELIDEA: MACROSCELIDIDAE			
Petrodromus tetradactylus Roberts, 1913	Musaranho-elefante-de-quatro-dedos	Four-toed elephant-shrew	
Elephantulus brachyrhynchus (A. Smith, 1836)	Musaranho-elefante-de-focinho-curto	Short-shouted elephant-shrew	
Elephantulus myurus Thomas & Schwann, 1906	Musaranho-elefante-das-rochas	Rock elephant-shrew	

CHECKLIST OF REPTILES			
TESTUDINIDAE			
Geochelone pardalis (Bell, 1828) (=*G. pardalis babcocki* (Loveridge)	Tartaruga leopardo	Leopard tortoise	
Kinixys spekii Gray, 1863 (=*K. belliana spekii* Gray 1863)		Speke's hinged-back tortoise	
Kinixys natalensis Hewitt, 1935		Natal hinged tortoise	

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PELOMEDUSIDAE			
Pelomedusa subrufa Lacépède, 1788		Cape terrapin	
Pelusios sinuatus (A. Smith, 1838)		Serrated hinged terrapin	
Pelusios subniger (Lacépède, 1789)		Pan hinged terrapin	
CROCODYLIDAE			
Crocodylus niloticus Laurenti, 1768	Crocodilo do Nilo	Nile crocodile	
GEKKONIDAE			
Afroedura transvaalica transvaalica (Hewitt, 1925)		Transvaal flat gecko	
Afroedura langi langi (FitzSimons, 1930) (=*A. pondolia langi* (FitzSimons 1930)		Olifants river flat gecko	
Afroedura sp. nov. (=*A. langi* ssp. nov.)		Pafuri flat gecko	
Afroedura pondolia marleyi (FitzSimons ,1943)		Lebombo flat gecko	
Afroedura haackei Onderstall, 1984 (=*A. multiporis haackei* Onderstall, 1984) (=*A. pondolia haackei* Onderstall,1984)		Haacke's flat gecko	
Lygodactylus stevensoni Hewitt, 1926		Khami dwarf gecko	
Lygodactylus capensis capensis (A. Smith, 1849)		Common dwarf gecko	
Homopholis wahlbergii (A. Smith, 1849)		Wahlberg's velvety gecko	
Hemidactylus mabouia mabouia (Moreau de Jonnes, 1818)		Tropical house gecko	
Pachydactylus bibronii A. Smith, 1846		Bibron's thick-toed gecko	
Pachydactylus vansoni FitzSimons 1933 (=*P. capensis vansoni* FitzSimons 1933)		Van Son's thick-toed gecko	
Pachydactylus punctatus punctatus Peters, 1854		Spotted thick-toed gecko	
Pachydactylus affinis Boulenger, 1896 (=*P. capensis affinis* Boulenger, 1896)		Transvaal thick-toed gecko	
AGAMIDAE			
Agama atricollis A. Smith, 1849		Tree agama	
Agama aculeata distanti Boulenger, 1902		Distant's spiny agama	
Agama armata Peters, 1854 (=*A. aculeata armata* Peters, 1854)		Tropical spiny agama	

CHAMAELEONIDAE	Cameleão		
Chamaeleo dilepis dilepis Leach, 1819		Flap-necked chameleon	
SCINCIDAE	Lagatricha		
Scelotes limpopoensis limpopoensis FitzSimons, 1930 (=*S. limpopoensis* FitzSimons 1930)		Limpopo burrowing skink	
Scelotes bidigittatus FitzSimons, 1930		Two-toed burrowing skink	
Scelotes mossambicus (Peters) 1882 (=*S. brevipes* Hewitt, 1923)		Short-footed burrowing skink	
Mabuya homalocephala depressa (Peters, 1854)		Peter's flat skink	
Mabuya quinquetaeniata margaritifer (Peters, 1854)		Rainbow rock skink	
Mabuya varia (Peters, 1867) (=*M. varia varia* (Peters) 1978)		Common variable skink	
Mabuya striata striata (Peters, 1844)		Common striped skink	
Lygosoma sundevallii sundevallii (A. Smith, 1849)		Sundevall's writhing skink	
Panaspis wahlbergii (A. Smith, 1849)		Wahlberg's snake-eyed skink	
Panaspis sp. nov.		Dwarf snake-eyed skink	
Acontias plumbeus Bianconi, 1849		Giant legless skink	
Typhlosaurus aurantiacus fitzsimonsi Broadley, 1968		Golden blind skink	
Typhlosaurus cregoi cregoi Boulenger, 1903		Cregoi's blind skink	
CORDYLIDAE	Lagarto		
Gerrhosaurus validus validus A. Smith, 1849		Giant plated lizard	
Gerrhosaurus major major Duméril, 1851		Tawny plated lizard	
Gerrhosaurus nigrolineatus Hallowell, 1857		Black-lined plated lizard	
Gerrhosaurus flavigularis Wiegmann, 1828		Yellow-throated plated lizard	
Cordylus vandami (FitzSimons, 1930) (=*C. warreni vandami* FitzSimons)		Van Dam's girdled lizard	
Cordylus tropidosternum jonesii (Boulenger, 1891)		Jones' girdled lizard	

Cordylus warreni depressus(FitzSimons, 1930) (=*C. warreni laevigatus*(FitzSimons, 1930)		Rough-scaled girdled lizard	
Cordylus warreni warreni(Boulenger, 1908)		Lebombo girdled lizard	
Cordylus warreni barbertonensis(Van Dam, 1921)		Barberton girdled lizard	
Cordylus vittifer vittifer(Riechenow, 1887)		Transvaal girdled lizard	
*Platysaurus intermedius wilhelmi*Hewitt, 1909		Greater flat lizard	
*Platysaurus intermedius intermedius*Matschie, 1890		Transvaal flat lizard	
*Platysaurus intermedius rhodesianus*FitzSimons, 1941		Limpopo flat lizard	
LACERTIDAE			
Nucras ornata(Gray, 1864) (=*N. taeniolata ornata*(part) Gray, 1864)		Ornate scrub lizard	
Nucras holubi(Steindachner 1882) (=*N. taeniolata holubi*(Steindachner 1882) (=*N. taeniolata ornata*(part) Gray, 1864)		Holub's long-tailed lizard	
*Nucras caesicaudata*Broadley, 1972		Blue-tailed scrub lizard	
Nucras intertexta(A. Smith, 1838)		Spotted scrub lizard	
Heliobolus lugubris(A. Smith) 1838 (=*Eremias (Lampreremias) lugubris*A. Smith, 1838)		Black and yellow sand lizard	
*Ichnotropis squamulosa*Peters, 1854		Rough-scaled sand lizard	
VARANIDAE			
Varanus niloticus niloticus(Linnaeus, 1762)	Varano do Nilo	Nile monitor	
Varanus albigularis albigularis(Daudin, 1802) (=*V. exanthematicus albigularis*Daudin, 1802)	Varano terrestre	Rock leguaan	
AMPHISBAENIDAE			
Zygaspis quadrifrons(Peters, 1862)		Kalahari round-snouted amphisbaenian	
Zygaspis violacea(Peters, 1854)		Violet round-snouted amphisbaenian	

Chirindia langi langi FitzSimons, 1939 (=*C. langi* FitzSimons 1939)		Lang's round-snouted amphisbaenian	
Monopeltis leonhardi Werner, 1910		Kalahari wedge-snouted amphisbaenian	
Monopeltis capensis A. Smith, 1848		Cape wedge-snouted amphisbaenian	
Monopeltis sphenorhynchus sphenorhynchus Peters, 1879		Slender wedge-snouted amphisbaenian	
SERPENTES TYPHLOPIDAE			
Typhlops lalandei Schlegel, 1844		Delalande's blind snake	
Typhlops schlegelii schlegelii Bianconi, 1850		Giant blind snake	
Leptotyphlops longicaudus (Peters, 1854)		Long-tailed worm snake	
Leptotyphlops conjunctus incognitus Broadley & Watson, 1976		Lesser worm snake	
Leptotyphlops scutifrons scutifrons (Peters, 1854)		Glossy worm snake	
Leptotyphlops distanti (Boulenger, 1892)		Transvaal worm snake	
BOIDAE			
Python sebae natalensis A. Smith, 1840	Giboia, Pitão	Common african python	
COLUBRIDAE			
Lycodonomorphus rufulus (Lichtenstein, 1823)		Brown water snake	
Lycodonomorphus whytii obscuriventris FitzSimons, 1964		White-lipped water snake	
Lamprophis guttatus (A. Smith) 1843		Spotted house snake	
Lamprophis fuliginosus (Boie), 1827 (=*L. fuliginosus fuliginosus* (Boie), 1827)		Brown house snake	
Lycophidion variegatum Broadley, 1969		Variegated wolf snake	
Lycophidion capense capense (A. Smith, 1831)		Cape wolf snake	
Mehelya capensis capensis (A. Smith, 1847)		Cape file snake	
Mehelya nyassae (Günther, 1888)		Nyasa file snake	
Duberria lutrix lutrix (Linnaeus, 1758)		Common slug-eater	

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Pseudaspis cana (Linnaeus, 1754)		Common mole snake	
Hemirhagerrhis nototaenia nototaenia (Günther, 1864)		Mopane snake	
Psammophylax tritaeniatus (Günther, 1868)		Three-lined grass snake	
Rhamphiophis oxyrhynchus rostratus Peters, 1854		Rufous beaked snake	
Psammophis leightoni trinasalis Werner, 1902		Fork-marked sand snake	
Psammophis subtaeniatus subtaeniatus Peters, 1882		Western stripe-bellied sand snake	
Psammophis phillipsii (Hallowell), 1844		Olive grass snake	
Psammophis angolensis (Bocage, 1872)		Dwarf sand snake	
Amblyodipsas concolor (A. Smith, 1849)		Natal purple-glossed snake	
Amblyodipsas microphthalma microphthalma (Bianconi, 1850) (=*A. microphthalma* (Bianconi)		Eastern white-lipped snake	
Amblyodipsas microphthalma nigra Jacobsen, 1986. (=*A. microphthalma* (not Bianconi, (part.)		Black-lipped snake	
Amblyodipsas polylepis polylepis (Bocage), 1873		Purple-glossed snake	
Xenocalamus bicolor lineatus Roux, 1907		Slender quill-nosed snake	
Atractaspis bibronii A. Smith, 1849		Bibrons stiletto snake	
Aparallactus lunulatus lunulatus (Peters, 1854)		Blotched centipede-eater	
Aparallactus capensis A. Smith, 1849		Black-headed centipede-eater	
Prosymna sundevallii lineata (Peters, 1871)		Sundevall's streaky shovel-snout	
Prosymna bivittata Werner, 1903		Twin-striped shovel-snout	
Prosymna ambigua stuhlmannii (Pfeffer, 1893)		Spotted shovel-snout	
Meizodon semiornatus semiornatus (Peters, 1854)		Semiornate snake	
Philothamnus hoplogaster (Günther, 1863b)		South-eastern green snake	
Philothamnus natalensis natalensis (A. Smith, 1848)		Eastern Natal green snake	
Philothamnus semivariegatus semivariegatus (A. Smith, 1840)		Variegated bush snake	

Dipsadoboa aulica (Günther, 1864)		Marbled tree snake	
Crotaphopeltis hotamboeia (Laurenti), 1768		Red-lipped snake	
Telescopus semiannulatus semiannulatus A. Smith, 1849		Eastern tiger snake	
Dispholidus typus typus (A. Smith, 1829)		Tree-snake	
Thelotornis capensis capensis A. Smith, 1849		Southern vine snake	
Dasypeltis scabra (Linnaeus, 1758)		Common egg-eater	
ELAPIDAE			
Elapsoidea semiannulata boulengeri Boettger, 1895		Half-banded garter snake	
Elapsoidea sundevallii longicauda Broadley, 1971		Long-tailed garter snake	
Aspidelaps scutatus intermedius Broadley, 1968	Cuspideira	Lebombo shield snake	
Naja annulifera Peters, 1854 (=*Naja haje annulfera* Peters, 1854)	Cuspideira moçambicana	Snouted cobra	
Naja mossambica Peters, 1854	Manba preta	Mfesi	Mfesi
Dendroaspis polylepis (Günther, 1864)		Black mamba	
VIPERIDAE	Víbora		
Causus defilippii (Jan, 1862)		Snouted night adder	
Bitis caudalis (A. Smith, 1839)		Horned adder	
Bitis arietans arietans (Merrem, 1820)	Víbora commum	Common puff adder	

CHECKLIST OF AMPHIBIANS

PIPIDAE			
Xenopus laevis laevis (Daudin, 1802)		Common platanna	
Xenopus muelleri (Peters,1844)		Tropical platanna	
BUFONIDAE	**Sapos**		
Bufo gutturalis Power, 1927 (=*B. regularis* (not Reuss))	Sapo gutural	Guttural toad	
Bufo maculatus Hallowell, 1854 (=*B. pusillus* Mertens)		Flat-backed toad	
Bufo garmani Meek, 1897		Olive toad	
Bufo rangeri Hewitt, 1935		Raucous toad	
Bufo fenoulheti Hewitt & Methuen, 1913 (=*B. vertebralis fenoulheti* Hewitt & Methuen.)		Northern pygmy toad	
Schismaderma areens Smith, 1848 (=*Bufo areens* Smith, 1848)		Red toad	
MICROHYLIDAE			
Breviceps adspersus adspersus Peters, 1882		Bushveld rain frog	
Breviceps mossambicus Peters, 1854		Mozambique rain frog	
Phrynomantis bifasciatus bifasciatus (Smith) 1847 (=*Phynomerus bifasciatus bifasciatus* Smith, 1947) (=*Brachymerus bifasciatus*)		Banded rubber frog	
RANIDAE	**Rã**		
Pyxicephalus edulis Peters,1854 (=*P. adspersus edulis* Peters, 1854)		African bullfrog	
Tomopterna cryptotis (Boulenger, 1907) (=*T. delalandii cryptotis* (Boulenger)		Tremolo pyxie	
Tomopterna krugerensis Passmore & Carruthers, 1975		Knocking sand frog	

Tomopterna marmorata (Peters, 1854)		Russet-backed sand frog	
Tomopterna natalensis (Smith, 1849)		Natal sand frog	
Rana angolensis Bocage, 1866		Common river frog	
Strongylopus fasciatus (Smith, 1849) (=*Rana fasciata fasciata* Smith 1849)		Striped stream frog	
Hildebrandtia ornata ornata (Peters, 1878)		Ornate frog	
Ptychadena oxyrhynchus (Smith, 1849)		Sharp-nosed grass frog	
Ptychadena anchietae (Bocage, 1867)		Plain grass frog	
Ptychadena mossambica (Peters, 1854)		Broad-banded grass frog	
Phrynobatrachus natalensis (Smith, 1849)		Snoring puddle frog	
Phrynobatrachus mababiensis FitzSimons, 1932		Dwarf puddle frog	
Cacosternum boettgeri (Boulenger, 1882)		Common caco	
RHACOPHORIDAE			
Chiromantis xerampelina Peters, 1854		Foam nest frog	
ARTHROLEPTIDAE			
Arthroleptis stenodactylus Pfeffer, 1893		Shovel-footed squeaker	
HEMISIDAE			
Hemisus marmoratus marmoratus (Peters, 1854)		Mottled shovel-nosed frog	
HYPEROLIIDAE			
Leptopelis mossambicus Poynton, 1985		Brown-backed tree frog	
Kassina maculata (Duméril, 1853)		Red-legged kassina	
Kassina senegalensis (Duméril & Bibron, 1841)		Bubbling kassina	
Afrixalus aureus Pickersgill, 1984		Golden leaf-folding frog	
Hyperolius pusillus (Cope, 1862)		Water-lily frog	
Hyperolius tuberilinguis Smith 1849		Tinker reed frog	
Hyperolius marmoratus Peters, 1854 (=*H. viridiflavus* Duméril & Bibron)		Painted reed frog	

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CYPRINODONTIFORMES			
APLOCHEILIDAE			
Nothobranchius orthonotus(Peters, 1844) (=*Fundulus mkuziensis*Fowler, 1934)		Spotted killifish	
*Nothobranchius rachovii*Ahl, 1926 (=*N. rachovii*)		Rainbow killifish	
CYPRINODONTIDAE			
Aplocheilichthys johnstoni(Günther, 1893) (=*A. chobensis* Fowler, 1935)		Slender topminnow	
PERCIFORMES			
CICHLIDAE			
Pseudocrenilabrus philander(Weber, 1897) (=*Hemihaplochromis philander*(M. Weber), 1899)		Southern mouthbrooder	
Chetia brevis Jubb, 1968		Orange-fringed largemouth	
*Serranochromis meridianus*Jubb, 1967		Lowveld largemouth	
*Tilapia sparrmanii*A. Smith, 1840 (=*T. deschauenseei* Fowler, 1931)	Tilápia listrado	Banded tilapia	
Tilapia rendalli (Boulenger, 1896) (=*T. rendalli swierstrae* Gilchrist & Thompson, 1917)	Tilápia do pecto vermelho	Redbreast tilapia	
Oreochromis mossambicus(Peters, 1852) (=*Sarotherodon mossambicus*(Peters), 1852)	Tilápia moçambicano	Mozambique tilapia	
* *Oreochromis niloticus*(Linnaeus, 1758)	Tilápia do Nilo	Nile tilapia	
SPARIDAE			
Acanthopagrus berda(Forsskål, 1775)	Sargo Picnic	Riverbream	
GOBIIDAE			
Awaous aeneofuscus (Peters, 1852) (=*Platygobius aeneofuscus*(Peters), 1852)		Freshwater goby	
*Glossogobius callidus*Smith, 1937		River goby	
Glossogobius giuris(Hamilton-Buchanan, 1822) (=*Gobius giuris* Barnard)		Tank goby	
CARCHARHINIFORMES			
CARCHARHINIDAE			
Carcharhinus leucas (Valenciennes, 1839) (=*C. zambezensis* (Peters))	Marracho touro	Bull shark	

Barbus annectens Gilchrist & Thompson, 1917	Barbo	Broadstriped barb	
Barbus unitaeniatus Günther, 1866 (=*B. labialis* Gilchrist & Thompson, 1913)		Longbeard barb	
Barbus viviparus Weber, 1897		Bowstripe barb	
Barbus toppini Boulenger, 1916 (=*B. umbeluziensis* Groenewald, 1958)		East-coast barb	
Barbus radiatus Peters, 1853 (=*B. (Bierabarbus) palustris* Herr, 1936)		Beira barb	
Barbus trimaculatus Peters, 1952		Threespot barb	
Barbus eutaenia Boulenger, 1904 (=*B. kerstenii* non Peters)		Orangefin barb	
Barbus argenteus Günther, 1868 (=*B. crocodilensis* Fowler, 1934)		Rosefin barb	
Barbus paludinosus Peters, 1852 (=*B. longicauda* Blgr., 1905)		Straightfin barb	
Barbus mattozi Guimaraes, 1884 (=*B. rapax* Steindachner, 1894)		Papermouth	
Barbus afrohamiltoni Crass, 1960 (=*B. hamiltoni* Gilchrist & Thompson, 1913)		Plump barb	
Labeobarbus marequensis (Smith 1841) (=*B. marequensis* A. Smith, 1841) (=*B. brucii* Boulenger, 1907)		Largescale yellowfish	
Labeo rosae Steindachner, 1894 (=*L. hamiltoni* Gilchrist & Thompson, 1917)		Rednose labeo	
Labeo ruddi Boulenger, 1907 (=*L. tenuirostris* non Steindachner)		Silver labeo	
Labeo congoro Peters, 1852 (=*L. rubropunctatus* Gilchrist & Thompson, 1913)		Purple labeo	

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Labeo cylindricus Peters, 1852 (=*L. parvulus* Gilchrist & Thompson, 1913)		Redeye labeo	
Labeo molybdinus Du Plessis, 1963		Leaden labeo	
* *Cyprinus carpio* Linnaeus, 1758	Carpa	Carp	
* *Hypophthalmichthys molitrix* (Valenciennes, 1844)	Carpa prateada	Silver carp	
CHARACIDAE			
Brycinus imberi (Peters, 1852) (=*Alestes imberi* Peters, 1852)		Imberi	
Micralestes acutidens (Peters, 1852) (=*M. humilis* non Boulenger)		Silver robber	
Hydrocynus vittatus Castelnau, 1861 (=*H. forskahlii* Cuvier, 1819)		Tigerfish	
SILURIFORMES			
AMPHILIIDAE			
Amphilius uranoscopus (Pfeffer, 1889) (=*A. platychir* Günther, 1864)		Stargazer mountain catfish	
SCHILBEIDAE			
Schilbe intermedius Rüppell, 1832 (=*Eutropius depressirostris* (Peters), 1852)	Siluro prateado	Silver catfish	
CLARIIDAE			
Clarias gariepinus (Burchell, 1822) (=*C. capensis* Cuvier & Valenciennes, 1840)		Sharptooth catfish	
MOCHOKIDAE			
Chiloglanis anoterus Crass, 1960		Pennant-tailed suckermouth	
Chiloglanis paratus Crass, 1960		Sawfin suckermouth	
Chiloglanis pretoriae Van der Horst, 1931		Shortspine suckermouth	
Chiloglanis swierstrai Van der Horst, 1931 (=*C. engiops* Crass, 1960)		Lowveld suckermouth	
Synodontis zambezensis Peters, 1852		Brown squeaker	

CYPRINODONTIFORMES			
APLOCHEILIDAE			
Nothobranchius orthonotus(Peters, 1844) (=*Fundulus mkuziensis* Fowler, 1934)		Spotted killifish	
Nothobranchius rachovii Ahl, 1926 (=*N. rachovii*)		Rainbow killifish	
CYPRINODONTIDAE			
Aplocheilichthys johnstoni(Günther, 1893) (=*A. chobensis* Fowler, 1935)		Slender topminnow	
PERCIFORMES			
CICHLIDAE			
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Chetia brevis Jubb, 1968		Orange-fringed largemouth	
Serranochromis meridianus Jubb, 1967		Lowveld largemouth	
Tilapia sparrmanii A. Smith, 1840 (=*T. deschauenseei* Fowler, 1931)	Tilápia listrado	Banded tilapia	
Tilapia rendalli (Boulenger, 1896) (=*T. rendalli swierstrae* Gilchrist & Thompson, 1917)	Tilápia do pecto vermelho	Redbreast tilapia	
Oreochromis mossambicus(Peters, 1852) (=*Sarotherodon mossambicus*(Peters), 1852)	Tilápia moçambicano	Mozambique tilapia	
* *Oreochromis niloticus*(Linnaeus, 1758)	Tilápia do Nilo	Nile tilapia	
SPARIDAE			
Acanthopagrus berda(Forsskål, 1775)	Sargo Picnic	Riverbream	
GOBIIDAE			
Awaous aeneofuscus (Peters, 1852) (=*Platygobius aeneofuscus*(Peters), 1852)		Freshwater goby	
Glossogobius callidus Smith, 1937		River goby	
Glossogobius giuris(Hamilton-Buchanan, 1822) (=*Gobius giuris* Barnard)		Tank goby	
CARCHARHINIFORMES			
CARCHARHINIDAE			
Carcharhinus leucas(Valenciennes, 1839) (=*C. zambezensis* (Peters))	Marracho touro	Bull shark	

CHECKLIST OF BIRDS

STRUTHIONIDAE			
Struthio camelus Linnaeus, 1758	Avestruz	Ostrich	
PODICIPEDIDAE			
Trachybaptus ruficollis (Pallas), 1764 (=*Colymbus ruficollis* Pallas, 1764)	Mergulhão-pequeno	Dabchick, Little Grebe	
PELECANIDAE			
Pelecanus onocrotalus Linnaeus, 1758	Pelicano-branco	White Pelican	
Pelecanus rufescens Gmelin, 1789	Pelicano-cinnzento	Pinkbacked Pelican	
PHALACROCORACIDAE			
Phalacrocorax carbo (Linnaeus), 1758 (*Pelecanus carbo* Linnaeus, 1758)	Corvo-marinho-de-faces-brancas	Whitebreasted Cormorant, Great Cormorant	
Phalacrocorax africanus (Gmelin), 1789 (=*Pelecanus africanus* Gmelin, 1789)	Corvo-marinho-africano	Reed Cormorant, Long-tailed Cormorant	
ANHINGIDAE			
Anhinga melanogaster Pennant, 1769 (=*A. rufa* (Lacépède et Daudin), 1802)	Mergulhão-serpente	Darter	
ARDEIDAE			
Ardea cinerea Linnaeus, 1758		Grey Heron	
Ardea melanocephala Vigors & Children, 1826	Garça-real	Blackheaded Heron, Blacknecked Heron	
Ardea goliath Cretzschmar, 1826	Garça-gigante	Goliath Heron	
Ardea purpurea Linnaeus, 1766	Garça-vermelha	Purple Heron	
Egretta alba (Linnaeus), 1758(=*Casmerodius albus* (Linnaeus), 1758) (=*Ardea alba* Linnaeus, 1758)	Garça-branca-grande	Great White Egret, Great Egret	
Egretta garzetta (Linnaeus), 1766 (=*Ardea garzetta* Linnaeus, 1766)	Garça-branca-pequena	Little Egret	
Egretta intermedia (Wagler), 1829 (=*Ardea intermedia* Wagler, 1829	Garça-branca-intermédia	Yellowbilled Egret, Intermediate Egret	
Egretta ardesiaca (Wagler), 1827 (=*Ardea ardesiaca* Wagler, 1827)	Garça-preta	Black Egret, Black Heron	

Bubulcus ibis (Linnaeus), 1758 (=*Ardea ibis* Linnaeus, 1758)	Carraceira	Cattle Egret, Buff-backed Heron	
Ardeola ralloides (Scopoli), 1769 (=*Ardea ralloides* Scopoli, 1769)		Squacco Heron	
Butorides striatus (Linnaeus), 1758 (=*Ardea striatus* Linnaeus, 1758)	Garça-de-dorso-verde	Greenbacked Heron, Green Heron	
Butorides rufiventris (=*Ardeola rufiventris* (Sundevall), 1850) (=*Ardea rufiventris* Sundevall, 1851)	Garça-de-barriga-vermelha	Rufousbellied Heron	
Nycticorax nycticorax (Linnaeus), 1758 (=*Ardea nycticorax* Linnaeus, 1758)	Garça-nocturna	Blackcrowned Night Heron	
Gorsachius leuconotus (Wagler), 1827 (=*Ardea leuconotus* Wagler, 1827)	Garça-de-dorso-branco	Whitebacked Night Heron	
Ixobrychus minutus (Linnaeus), 1766 (=*Ardea minuta* Linnaeus, 1766)	Garcenho-pequeno	Little Bittern	
Ixobrychus sturmii (Wagler), 1827 (=*Ardeirallus sturmii* (Wagler), 1827) (=*Ardea sturmii* Wagler, 1827)	Garcenho-anão	Dwarf Bittern, Rail Heron	
Botaurus stellaris (Linnaeus), 1758 (=*Ardea stellaris* Linnaeus, 1758)	Abetouro-comum	Bittern	
SCOPIDAE			
Scopus umbretta Gmelin, 1789	Pássaro-martelo	Hamerkop	
CICONIIDAE			
Ciconia ciconia (Linnaeus), 1758 (=*Ardea ciconia* Linnaeus, 1758)	Cegonha-branca	White Stork	
Ciconia nigra (Linnaeus), 1758 (=*Ardea nigra* Linnaeus, 1758)	Cegonha-preta	Black Stork	
Ciconia abdimii (Lichtenstein), 1823	Cegonha-de-barriga-branca	Abdim's Stork, Whitebellied Stork	
Ciconia episcopus (Boddaert), 1783 (=*Ardea episcopus* Boddaert, 1783)	Cegonha-escopial	Woollynecked Stork	

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Anastomus lamelligerus Temminck, 1823	Bico-aberto	Openbilled Stork, Openbill	
Ephippiorhynchus senegalensis (Shaw), 1800 (=*Mycteria senegalensis* Shaw, 1800)	Jabiru	Saddlebilled Stork, Saddlebill	
Leptoptilos crumeniferus (Lesson), 1831 (=*Ciconia crumenifera* Lesson, 1831)	Marabu	Marabou Stork	
Mycteria ibis (Linnaeus), 1766 (=*Tantalus ibis* Linnaeus, 1766)	Cegonha-de-bico-	Yellowbilled Stork, Wood Ibis	
PLATALEIDAE			
Threskiornis aethiopicus (Latham), 1790 (=*Tantalus aethiopicus* Latham, 1790)	Ibis-sagrado	Sacred Ibis	
Plegadis falcinellus (Linnaeus), 1766 (=*Tantalus falcinellus* Linnaeus, 1766)	Ibis-preto	Glossy Ibis	
Bostrychia hagedash (Latham), 1790 (=*Hagedashia hagedash* (Latham), 1790) (=*Tantalus hagedash* Latham, 1790)	Singanga	Hadeda Ibis, Hadada, Ibis Hagadash	
Platalea alba Scopoli, 1786	Colheiro-africana	African Spoonbill	
PHOENICOPTERIDAE			
Phoenicopterus ruber Linnaeus, 1758	Flamingo-comum	Greater Flamingo	
Phoeniconaias minor (Geoffroy), 1798 (=*Phoenicopterus minor* Geoffroy, 1798)	Flamingo-pequeno	Lesser Flamingo	
ANATIDAE			
Dendrocygna viduata (Linnaeus), 1766 (=*Anas viduata* Linnaeus, 1766)	Pato-assobiador-de-faces-brancas	Whitefaced Duck, Whitefaced Whistling-Duck	
Dendrocygna bicolor (Vieillot), 1816 (=*Anas bicolor* Vieillot, 1816)	Pato-assobiador-arruivado	Fulvous Duck, Fulvous Whistling-Duck	
Thalassornis leuconotus Eyton, 1838	Pato-de-dorso-branco	Whitebacked Duck	
Alopochen aegyptiacus (Linnaeus), 1766 (=*Anas aegyptiaca* Linnaeus, 1766)	Ganso do Egipto	Egyptian Goose	
Anas undulata Dubois, 1839	Pato-de-bico-amarelo	Yellowbilled Duck	
Anas sparsa Eyton, 1838	Pato-preto-africano	African Black Duck	
Anas hottentota Eyton, 1838	Pato-hotentote	Hottentot Teal	

Anas erythrorhyncha Gmelin, 1789	Pato-de-bico-vermelho	Redbilled Teal, Redbilled Duck	
Anas smithii (Hartert), 1891 (=*Spatula smithii* Hartert, 1891)	Pato-trombeteiro	Cape Shoveller	
Netta erythrophthalma brunnea (Eyton), 1838 (= *Anas erythrophthalma* Wied, 1832)	Zarro-africano	Southern Pochard, Redeyed Pochard	
Nettapus auritus (Boddaert), 1783 (=*Anas aurita* Boddaert, 1783)	Pato-orelhudo	Pygmy Goose	
Sarkidiornis melanotos (Pennant), 1769 (=*Anser melanotos* Pennant, 1769)	Pato-de-carúncula	Knobbilled Duck, Comb Duck	
Plectropterus gambensis (Linnaeus), 1766 (=*Anas gambensis* Linnaeus, 1766)	Pato-ferrão	Spurwinged Goose	
Oxyura maccoa (Eyton), 1838 (=*Erismatura maccoa* Eyton, 1838)	(no records for Mozambique)	Maccoa Duck	
SAGITTARIIDAE			
Sagittarius serpentarius (Miller), 1779 (=*Falco serpentarius* J.F. Miller, 1779)	Secretário	Secretary Bird	
ACCIPITRIDAE			
Neophron percnopterus (Linnaeus), 1758 (=*Vultur perenopterus* [sic] Linnaeus, 1758)	Abutre de Egipto	Egyptian Vulture	
Necrosyrtes monachus (Temminck), 1823 (=*Cathartes monachus* Temminck, 1823)	Abutre-de-capuz	Hooded Vulture	
Gyps coprotheres (J. R. Forster), 1798 (=*Vultur coprotheres* J.R. Forster, 1798)	Abutre do Cabo	Cape Vulture	
Gyps africanus Salvadori, 1865	Abutre-de-dorso-branco	Whitebacked Vulture	
Torgos tracheliotus (Forster), 1791 (=*Aegypius tracheliotus* (J. R. Forster), 1791) (=*Vultur tracheliotus* J.R. Forster, 1791)	Abutre-real	Lappetfaced Vulture	
Trigonoceps occipitalis (Burchell), 1824 (=*Aegypius occipitalis* (Burchell), 1824) (=*Vultur occipitalis* Burchell, 1824)	Abutre-de-cabeça-branca	Whiteheaded Vulture	
Milvus migrans parasitus (Daudin) (=*Falco migrans* Boddaert, 1783)	Milhafre-preto	Yellowbilled Kite	
Milvus migrans migrans (Boddaert), 1783 (=*Falco migrans* Boddaert, 1783)	Milhafre-preto	Black Kite	

Elanus caeruleus (Desfontaines), 1789 (=*Falco caeruleus* Desfontaines, 1789)	Peneireiro-cinzento	Blackshouldered Kite	
Aviceda cuculoides Swainson, 1837	Falcão-cuco	Cuckoo Hawk, African Cuckoo Falcon	
Macheiramphus alcinus Westerman, 1851	Falcão-morcegueiro	Bat Hawk	
Pernis apivorus (Linnaeus), 1758 (=*Falco apivorus* Linnaeus, 1758)	Bútio-abelheiro	Honey Buzzard	
Aquila verreauxi Lesson, 1830	Águia-preta	Black Eagle, Verreaux's Eagle	
Aquila rapax (Temminck), 1828 (=*Falco rapax* Temminck, 1828)	Águia-fulvax	Tawny Eagle	
Aquila nipalensis (Hodgson), 1833	Águia-das-estepes	Steppe Eagle	
Aquila pomarina Brehm, 1831	Águia-pomarina	Lesser Spotted Eagle	
Aquila wahlbergi Sundevall, 1851	Águia de Wahlberg	Wahlberg's Eagle	
Hieraaetus pennatus (Gmelin), 1788 (=*Falco pennatus* Gmelin, 1788)	Águia-calçada	Booted Eagle	
Hieraaetus spilogaster (Bonaparte), 1850 (=*Hieraaetus fasciatus*) (=*Spizäetus spilogaster* DeBus de Gisignies = Bonaparte, 1850)	Águia-dominó	African Hawk Eagle	
Hieraaetus ayresii (=*Hieraaetus dubius* (A. Smith), 1830) (=*Morphinus dubius* A. Smith, 1830)	Águia de Ayres	Ayres' Eagle, Ayres' Hawk Eagle	
Lophaetus occipitalis (Daudin), 1800 (=*Falco occipitalis* Daudin, 1800)	Águia-de-penacho	Longcrested Eagle	
Polemaetus bellicosus (Daudin), 1800 (=*Falco bellicosus* Daudin, 1800)	Águia-marcial	Martial Eagle	
Stephanoaetus coronatus (Linnaeus), 1766 (=*Falco coronatus* Linnaeus, 1766)	Águia-coroado	Crowned Eagle	
Circaetus cinereus Vieillot, 1818	Águia-cobreira-castanha	Brown Snake Eagle	
Circaetus pectoralis A.Smith, 1829 (=*Circaetus gallicus* (Gmelin), 1788) (=*Falco gallicus* Gmelin, 1788)	Águia-cobreira-de-peito-preto	Blackbreasted Snake Eagle, European Snake Eagle	

Terathopius ecaudatus (Daudin), 1800 (=*Falco ecaudatus* Daudin, 1800)	Águia-nailarina	Bateleur	
Gypohierax angolensis (Gmelin), 1788 (=*Falco angolensis* Gmelin, 1788)	Abutre-das-palmeiras	Palmnut Vulture, Vulturine Fish Eagle	
Haliaeetus vocifer (Daudin), 1800 (=*Falco vocifer* Daudin, 1800)	Águia-pesqueira-africana	African Fish Eagle	
Buteo buteo (Linnaeus), 1758 (=*Falco buteo* Linnaeus, 1758)	Bútio-das-estepes	Steppe Buzzard, Common Buzzard	
Buteo rufofuscus (J. R. Forster), 1798 (=*Falco rufofuscus* J. R. Forster, 1798)	Bútio-de-cauda-vermelha	Jackal Buzzard, Augur Buzzard	
Kaupifalco monogrammicus (Temminck), 1824 (=*Falco monogrammicus* Temminck, 1824)	Gaivão-papa-lagartos	Lizard Buzzard	
Accipiter ovampensis Gurney, 1875	Gaivão do Ovambo	Ovambo Sparrowhawk	
Accipiter minullus (Daudin), 1800 (=*Falco minullus* Daudin, 1800)	Gaivão-pequeno	Little Sparrowhawk	
Accipiter melanoleucas A. Smith, 1830 (=*Accipiter melanoleues* [sic.] A. Smith, 1830)	Açor-preto	Black Sparrowhawk, Great Sparrowhawk	
Accipiter badius (Gmelin), 1788 (=*Falco badius* Gmelin, 1788)	Gaivão-shikra	Little Banded Goshawk, Shikra	
Accipiter tachiro (Daudin), 1800 (=*Falco tachiro* Daudin, 1800)	Açor-africano	African Goshawk	
Micronisus gabar (Daudin), 1800 (=*Falco gabar* Daudin, 1800)	Açor-palrador	Gabar Goshawk	
Melierax metabates Heuglin, 1861	Açor-cantor-escuro	Dark Chanting Goshawk	
Circus aeruginosus Linnaeus, 1758 (=*Falco aeruginosus* Linnaeus, 1758)	(no records for Mozambique)	European Marsh Harrier	
Circus ranivorus (Daudin), 1800 (=*Falco ranivorus* Daudin, 1800)	Tartaranhão-dos-pântanos	African Marsh Harrier	
Circus pygargus (Linnaeus), 1758 (=*Falco pygargus* Linnaeus, 1758)	Tartaranhão-caçador	Montagu's Harrier	
Circus macrourus (Gmelin), 1771 (=*Falco macrourus* S. G. Gmelin, 1770)	Tartaranhão-pálido	Pallid Harrier	
Polyboroides typus A. Smith, 1829	Secretário-pequeno	Gymnogene, African Harrier Hawk	

PANDIONIDAE			
Pandion haliaetus (Linnaeus), 1758 (=*Falco haliaetus* Linnaeus, 1758)	Águia-pesqueira	Osprey	
FALCONIDAE			
Falco peregrinus Tunstall, 1771	Falcão-peregrino	Peregrine Falcon	
Falco biarmicus Temminck, 1825	Falcão-alfaneque	Lanner Falcon	
Falco subbuteo Linnaeus, 1758	Falcão-tagarote	European Hobby Falcon	
Falco cuvieri A. Smith, 1830	Ógea-africano	African Hobby	
Falco concolor Temminck, 1825	Falcão-sombrio	Sooty Falcon	
Falco chicquera Daudin, 1800	Falcão-de-nuca-vermelha	Rednecked Falcon	
Falco vespertinus Linnaeus, 1766	Falcão-de-pés-vermelhos-ocidental	Western Redfooted Kestrel	
Falco amurensis Radde, 1863 (=*Falco vespertinus* var. *amurensis* Radde, 1863)	Falcão-de-pés-vermelhos-oriental	Eastern Redfooted Kestrel	
Falco tinnunculus Linnaeus, 1758	Peneireiro-vulgar	Rock Kestrel, Common Kestrel	
Falco rupicoloides A. Smith, 1830	Peneireiro-de-olho-branco	Greater Kestrel, White-eyed Kestrel	
Falco naumanni Fleischer, 1818	Peneireiro-das-torres	Lesser Kestrel	
Falco dickinsoni P. L. Sclater, 1864	Falcão de Dickinson	Dickinson's Kestrel	
Polihierax semitorquatus (A. Smith), 1836 (=*Falco simitorquata* [sic.] A. Smith, 1836)	(no records for Mozambique)	Pygmy Falcon	
PHASIANIDAE			
Francolinus coqui (A. Smith), 1836 (=*Perdix coqui* A. Smith, 1836)	Perdiz-das-pedras	Coqui Francolin	
Francolinus sephaena (A. Smith), 1836 (=*Perdix sephaena* A. Smith, 1836)	Perdiz-de-crista	Crested Francolin	
Francolinus shelleyi Ogilvie-Grant, 1890	Perdiz de Shelley	Shelley's Francolin	
Francolinus natalensis A. Smith, 1834	Perdiz do Natal	Natal Francolin	
Francolinus afer (P. L. S. Müller) (=*Pternistis afer* (Müller), 1776) (=*Tetrao afer* P. L. S. Müller, 1776)	Perdiz-de-gola-vermelha	Rednecked Francolin, Red-necked Spurfowl	
Francolinus swainsonii (Smith), 1836 (=*Pternistis swainsoni* (A. Smith), 1836) (=*Perdix swainsonii* A. Smith, 1836)	Perdiz de Swainson	Swainson's Francolin	

Coturnix coturnix (Linnaeus), 1758 (=*Tetrao coturnix* Linnaeus, 1758)	Codorniz-comum	Common Quail, African Quail	
Coturnix delegorguei Delegorgue, 1847	Codorniz-alequim	Harlequin Quail	
NUMIDIDAE			
Numida meleagris (Linnaeus), 1758 (= *Phasianus meleagris* Linnaeus, 1758)	Galinha-do-mato	Helmeted Guineafowl, Crowned Guineafowl	
Guttera pucherani (Hartlaub) 1860 (=*Guttera edouardi* (Hartlaub), 1867) (=*Numida pucherani* Hartlaub, 1860)	Galinha-do-mato-de-crista	Crested Guineafowl	
TURNICIDAE			
Turnix sylvatica (Desfontaines), 1787 (=*Guttera edouardi* (Hartlaub), 1867) (=*Numida pucherani* Hartlaub, 1860)	Toirão-comum	Kurrichane Buttonquail, Little Buttonquail	
Turnix hottentotta (Temminck), 1815	Toirão-hotentote	Blackrumped Buttonquail, Hottentot Buttonquail	
GRUIDAE			
Balearica regulorum (Bennett), 1833 (=*Anthropoides regulorum* Bennett, 1833)	Grou-corodao-austral	Crowned Crane, Grey Crowned Crane	
RALLIDAE			
Rallus caerulescens Gmelin, 1789	Frango-de-água-africano	African Rail, Water Rail	
Crex egregia (Peters), 1854 (=*Limnocorax flavirostris* (Swainson), 1837) (=*Gallinula flavirostra* Swainson, 1837)	Codornizão-africano	African Crake	
Amaurornis flavirostris (Swainson), 1837 (=*Limnocorax flavirostris* (Swainson), 1837) (=*Gallinula flavirostra* Swainson, 1837)	Franga-de-água-preta	Black Crake	
Porzana pusilla (Pallas), 1776 (=*Anthropoides regulorum* Bennett, 1833)	Franga-de-água-pequena	Baillon's Crake	
Aenigmatolomnas marginalis (Hartlaub), 1857 (=*Porzana marginalis* Hartlaub, 1857)	(no records for Mozambique)	Striped Crake	

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Sarothrura rufa (Vieillot), 1819 (=*Rallus rufus* Vieillot, 1819)	Franga-de-água-de-peito-vermelho	Redchested Flufftail	
Sarothrura elegans (A. Smith), 1839 (=*Gallinulla elegans* A. Smith, 1839)	Franga-de-água-elegante	Buffspotted Flufftail, Buff-spotted Crake	
Porphyrio porphyrio (Linnaeus), 1766 (=*Fulica porphyrio* Linnaeus, 1758)	Caimão-comum	Purple Gallinule, Purple Swamphen	
Porphyrio alleni Thompson, 1842	Caimão de Allen	Lesser Gallinule, Allen's Gallinule	
Gallinula chloropus (Linnaeus), 1758 (=*Fulica chloropus* Linnaeus, 1758)	Galinha-de-água	Moorhen, Common Gallinule	
Gallinula angulata Sundevall, 1850	Galinha-de-água-pequena	Lesser Moorhen	
Fulica cristata Gmelin, 1789	Galeirão-de-crista	Redknobbed Coot, Crested Coot	
HELIORNITHIDAE			
Podica senegalensis (Vieillot), 1817 (=*Heliopais senegalensis* Vieillot, 1817)	Pés-de-barbatanas	African Finfoot	
OTIDIDAE			
Ardeotis kori (Burchell), 1822) (=*Otis kori* Burchell, 1822)	Abetarda-gigante	Kori Bustard	
Neotis denhami (Children), 1826 (=*Otis denhami* Children, 1826)	Abetarda-real	Stanley's Bustard, Denham's Bustard	
Eupodotis ruficrista (A. Smith), 1836 (=*Otis ruficrista* Smith, 1836)	Abetarda-de-crista	Redcrested Korhaan, Crested Bustard, Crested Korhaan	
Eupodotis melanogaster (Rüppell), 1835 (=*Otis melanogaster* Rüppell, 1835)	Abetarda-de-barriga-preta	Blackbellied Korhaan, Blackbellied Bustard	
JACANIDAE			
Actophilornis africanus (Gmelin), 1789 (=*Otis melanogaster* Rüppell, 1835)	Jacana	African Jacana, Lily-trotter	
Microparra capensis (A. Smith), 1839 (=*Parra capensis* Smith, 1839)	Jacana-pequena	Lesser Jacana, Lesser Lily-trotter	

ROSTRATULIDAE			
Rostratula benghalensis (Linnaeus), 1758 (=*Ralllus benghalensis* Linnaeus, 1758)	Narceja-pintada	Painted Snipe, Greater Painted Snipe	
CHARADRIIDAE			
Charadrius hiaticula Linnaeus, 1758	Borrelho-grande-de-coleira	Ringed Plover	
Charadrius marginatus Vieillot, 1818	Borrelho-fe-fronte-branca	Whitefronted Plover, White-fronted Sand Plover	
Charadrius pallidus Strickland, 1852	Borrelho-de-colar-arruivado	Chestnutbanded Plover	
Charadrius pecuarius Temminck, 1823	Borrelho de Kittlitz	Kittlitz's Plover	
Charadrius tricollaris Vieillot, 1818	Borrelho-de-três-golas	Threebanded Plover	
Charadrius asiaticus Pallas, 1773	Borrelho do Cáspio	Caspian Plover	
Pluvialis squatarola (Linnaeus), 1758	Tarambola-cinzenta	Grey Plover	
Vanellus coronatus (Boddaert), 1783 (=*Charadrius coronatus* Boddaert, 1783) (=*Stephanibyx coronatus* (Boddaert), 1783)	Tarambola-coroada	Crowned Plover, Crowned Lapwing	
Vanellus lugubris (Lesson), 1826 (=*Charadrius lugubris* Lesson, 1826) (=*Stephanibyx lugubris* (Lesson), 1826)	Tarambola-de-asa-negra-pequena	Lesser Blackwinged Plover, Lesser Blackwinged Lapwing, Senegal Plover	
Vanellus armatus (Burchell), 1822 (=*Charadrius armatus* Burchell, 1822) (=*Hoplopterus armatus* (Burchell), 1822)	Tarambola-preta-e-branca	Blacksmith Plover, Blacksmith Lapwing	
Vanellus albiceps Gould, 1934 (=*Xiphidiopterus albiceps* (Gould) 1834)	Tarambola-de-coroa-branca	Whitecrowned Plover, White-headed Lapwing	
Vanellus sengallus (Linnaeus), 1766 (=*Parra senegalla* Linnaeus, 1766) (=*Xiphidiopterus senegallus* (Linnaeus), 1766)	Tarambola-carunculada	Wattled Plover, African Wattled Lapwing	
SCOLOPACIDAE			
Arenaria interpres (Linnaeus), 1758 (=*Parra senegalla* Linnaeus, 1766) (=*Xiphidiopterus senegallus* (Linnaeus), 1766)	Rola-do-mar	Turnstone, Ruddy Turnstone	

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Actitis hypoleucos (Linnaeus), 1758 (=*Parra senegalla* Linnaeus, 1766) (=*Xiphidiopterus senegallus* (Linnaeus), 1766) (=*Parra senegalla* Linnaeus, 1766) (=*Xiphidiopterus senegallus* (Linnaeus)), 1766	Maçarico-das-rochas	Common Sandpiper	
Tringa ochropus (Linnaeus), 1758	Maçarico-escuro	Green Sandpiper	
Tringa glareola (Linnaeus), 1758	Maçarico-bastardo	Wood Sandpiper	
Tringa totanus (Linnaeus), 1758 (=*Scolopax totanus* Linnaeus, 1758)	(no records for Mozambique)	Redshank, Common Redshank	
Tringa stagnatilis (Bechstein), 1803 (=*Totanus stagnatilis* Bechstein 1803)	Perna-verde-fino	Marsh Sandpiper	
Tringa nebularia (Gunnerus), 1767 (=*Scolopax nebularia* Gunnerus 1767)	Perna-verde-comum	Greenshank, Common Greenshank	
Calidris ferruginea (Pontoppidan), 1763 (=*Tringa ferruginea* Pontoppidan, 1763)	Pilrito-de-bico-comprido	Curlew Sandpiper	
Calidris alpina (Linnaeus), 1758 (=*Tringa alpina* Linnaeus, 1758)	Pilrito-comum	Dunlin	
Calidris minuta (Leisler), 1812 (=*Tringa minuta* Leisler, 1812)	Pilrito-pequeno	Little Stint	
Calidris alba (Pallas), 1764 (=*Tringa alba* Pallas, 1764)	Pilrito-sanderlingo	Sanderling	
Philomachus pugnax (Linnaeus), 1758 (=*Tringa alba* Pallas, 1764)	Combatente	Ruff	
Gallinago nigripennis Bonaparte, 1839	Narceja-africana	Ethiopian Snipe, African Snipe	
Numenius phaeopus (Linnaeus), 1758 (=*Scolopax phaeopus* Linnaeus, 1758)	Maçario-glaego	Whimbrel	
RECURVIROSTRIDAE			
Recurvirostra avosetta Linnaeus, 1758	Alfaiate	Avocet, Eurasian Avocet	
Himantopus himantopus (Linnaeus), 1758 (=*Charadrius himantopus* Linnaeus, 1758)	Perna-longa	Blackwinged Stilt, Common Stilt	

BURHINIDAE			
Burhinus capensis (Lichtenstein), 1823 (=*Oedicnemus capensis* Lichtenstein, 1823)	Alcaravão do Cabo	Spotted Dikkop, Spotted Thick-knee	
Burhinus vermiculatus (Cabanis), 1868 (=*Oedicnemus vermiculatus* Cabanis, 1868)	Alcaravão-de-água	Water Dikkop	
GLAREOLIDAE			
Cursorius rufus Gould, 1837	(no records for Mozambique)	Burchell's Courser	
Cursorius temminckii Swainson, 1822	Corredor de Temminck	Temminck's Courser	
Rhinoptilus cinctus (Heuglin), 1863	(no records for Mozambique)	Threebanded Courser	
Rhinoptilus chalcopterus (Temminck), 1824 (=*Cursorius chalcopterus* Temminck, 1824)	Corredor-asa-de-bronze	Bronzewinged Courser, Violet-tipped Course	
Glareola pratincola (Linnaeus), 1766 (=*Hirundo pratincola* Linnaeus, 1766)		Redwinged Pratincole, Collared Pratincole, Common Pratincole	
LARIDAE	Perdiz-do-mar		
Stercorarius parasiticus (Linnaeus), 1758 (=*Larus parasiticus* Linnaeus, 1758)	Moleiro-pomarino	Arctic Skua, Parasitic Jaeger	
Larus cirrocephalus Vieillot, 1818	Gaivota-de-cabeça-cinzenta	Greyheaded Gull, Grey-hooded Gull	
Sterna fuscata Linnaeus, 1766	Gaivina-de-dorso-preto	Sooty Tern	
Chlidonias hybridus (Pallas), 1811 (=*Sterna hybrida* Pallas, 1811) (=*Chlidonias hybrida* (Pallas), 1811)	Gaivina-de-faces-brancas	Whiskered Tern	
Chlidonias leucopterus (Temminck), 1815 (=*Sterna leucoptera* Temminck, 1815) (=*Chlidonias leucoptera* (Temminck), 1815)	Gaivina-de-asa-branca	Whitewinged Tern, White-winged Black Tern	
PTEROCLIDAE			
Pterocles bicinctus Temminck, 1815	Cortiçol-de-duas-golas	Doublebanded Sandgrouse	

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COLUMBIDAE			
Columba guinea Linnaeus, 1758		Rock Pigeon, Speckled Pigeon, Speckled Rock Pigeon	
Streptopelia semitorquata (Rüppell), 1837 (=*Columba semitorquata* Rüppell, 1837)	Rola-de-olhos-vermelhos	Redeyed Dove	
Streptopelia decipiens (Finsch & Hartlaub), 1870 (=*Turtur decipiens* Hartlaub & Finsch, 1870)	Rola-gemedora	Mourning Dove	
Streptopelia capicola (Sundevall), 1857 (=*Columba vinacea* v. *capicola* Sundevall, 1857)	Rola do Cabo	Cape Turtle Dove, Ring-necked Dove	
Streptopelia senegalensis (Linnaeus), 1766 (=*Columba senegalensis* Linnaeus, 1766) (=*Stigmatopelia senegalensis* (Linnaeus), 1766)	Rola do Senegal	Laughing Dove, Palm Dove	
Oena capensis (Linnaeus), 1766 (=*Columba capensis* Linnaeus, 1766)	Rola-rabilonga	Namaqua Dove, Long-tailed Dove	
Turtur afer (Linnaeus), 1766 (=*Columba afer* Linnaeus, 1766)		Blue Spotted Dove, Red-billed Wood Dove	
Turtur chalcospilos (Wagler), 1827 (=*Columba chalcospilos* Wagler, 1827)	Rola-esmeraldina	Green Spotted Dove, Emerald-spotted Wood Dove	
Turtur tympanistria (Temminck & Knip), 1810 (=*Columba tympanistria* Temminck in Knip, 1810)	Rola-de-papo-branco	Tambourine Dove	
Aplopelia larvata (Temminck & Knip), 1810	Pombo-de-faces-brancas	Cinnamon Dove	
Treron calva Temminck 1809 (=*Columba calva* Temminck, 1809) (=*Treron australis* (Linnaeus) 1771)	Pombo-verde	Green Pigeon	
PSITTACIDAE			
Poicephalus robustus (Gmelin), 1788 (=*Psittacus robustus* Gmelin, 1788)	Papagaio-de-bico-grosso	Cape Parrot	
Poicephalus cryptoxanthus Peters, 1854 (=*Psittacus cryptoxanthus* Peters, 1854)	Papagaio-de-cabeça castanha	Brownheaded Parrot	
Poicephalus meyeri (Cretzschmar), 1826	(no records for southern Mozambique)	Meyer's Parrot	
MUSOPHAGIDAE			
Tauraco porphyreolophus (Vigors), 1831 (=*Corythaix porphyreolophus* Vigors, 1831)	Touraco-de-crista-violeta	Purplecrested Lourie	
Corythaixoides concolor (A. Smith), 1833	Touraco-cinzento	Grey Lourie, Grey Go-away Bird	

CUCULIDAE			
Cuculus canorus Linnaeus, 1758	Cuco-canoro	European Cuckoo, Common Cuckoo	
Cuculus gularis Stephens, 1815	Cuco-canoro-africano	African Cuckoo	
Cuculus solitarius Stephens, 1815	Cuco-de-peito-vermelho	Redchested Cuckoo	
Cuculus clamosus Latham, 1801	Cuco-preto	Black Cuckoo	
Clamator glandarius (Linnaeus), 1758 (=*Cuculus glandarius* Linnaeus, 1758)	Cuco-rabilongo	Great Spotted Cuckoo	
Clamator levaillantii (Swainson), 1829 (=*Coccyzus levaillantii* Swainson, 1829)	Cuco de Levaillant	Striped Cuckoo, Levaillant's Cuckoo	
Clamator jacobinus (Boddaert), 1783 (=*Cuculus jacobinus* Boddaert, 1783)	Cuco-jacobino	Jacobin Cuckoo, Black and White Cuckoo	
Pachycoccyx audeberti (Schlegel), 1879 (=*Cuculus audeberti* Schlegel, 1879)	Cuco-de-bico-grosso	Thickbilled Cuckoo	
Chrysococcyx cupreus (Shaw), 1792	Cuco-esmeraldino	Emerald Cuckoo	
Chrysococcyx klaas (Stephens), 1815	Cuco-bonzeado-menor	Klaas's Cuckoo	
Chrysococcyx caprius (Boddaert), 1783	Cuco-bonzeado-maior	Diederik Cuckoo	
Centropus bengalensis (=*Centropus grillii* Hartlaub, 1861)	Cucal de Bengala	Black Coucal	
Centropus burchellii (=*Centropus superciliosus* Hemprich & Ehrenberg, 1833)	Cucal de Burchell	Burchell's Coucal, Whitebrowed Coucal	
TYTONIDAE			
Tyto alba (Scopoli), 1769	Coruja-das-torres	Barn Owl	
Tyto capensis (A. Smith), 1834	Coruja-do-capim	Grass Owl	
Strix woodfordii (A. Smith), 1834 (=*Noctua woodfordii* A. Smith, 1834) (=*Ciccaba woodfordii* (A. Smith), 1834)	Coruja-da-floreta	Wood Owl	
Asio capensis (A. Smith), 1834 (=*Otus capensis* A. Smith, 1834)	Coruja-dos-pântanos	Marsh Owl	
Otus senegalensis (Swainson) (=*Otus scops* (Linnaeus), 1758) (=*Strix scops* Linnaeus, 1758)	Mocho-de-orelhas-africano	Scops Owl	

Otus leucotis (Temminck), 1824 (=*Strix leucotis* Temminck, 1820)	Mocho-de-faces-brancas	Whitefaced Owl	
Glaucidium perlatum (Vieillot), 1817 (=*Strix perlata* Vieillot, 1817)	Mocho-perlado	Pearlspotted Owl	
Glaucidium capense (A. Smith), 1834 (=*Noctua capensis* A. Smith, 1834)	Mocho-barrado	Barred Owl	
Bubo africanus (Temminck), 1823 (=*Strix africana* Temminck, 1823)	Corujão-africano	Spotted Eagle Owl	
Bubo lacteus (Temminck), 1824 (=*Strix lactea* Temminck, 1820)	Corujão-leitoso	Giant Eagle Owl, Verreaux's Eagle Owl	
Scotopelia peli Bonaparte, 1850	Corujão-pesqueiro	Pel's Fishing Owl	
CAPRIMULGIDAE			
Caprimulgus europaeus Linnaeus, 1758	Noitibó da Europa	European Nightjar	
Caprimulgus pectoralis Cuvier, 1817	Noitibó-de-pescoço-dourado	Fierynecked Nightjar	
Caprimulgus rufigena A. Smith, 1845	Noitibó-de-cauda-branca	Rufouscheeked Nightjar	
Caprimulgus tristigma Rüppell, 1840	Noitibó-sardento	Freckled Nightjar, Rock Nightjar	
Caprimulgus fossii Hartlaub, 1857	Noitibó de Moçambique	Mozambique Nightjar, Square-tailed Nightjar	
Macrodipteryx vexillaria (Gould), 1838 (=*Semeiophorus vexillarius* Gould, 1838)	Noitibó-estandarte	Pennantwinged Nightjar	
APODIDAE			
Apus apus (Linnaeus), 1758(=*Hirundo apus* Linnaeus, 1758)	Andorinhão-preto-europeu	European Swift, Common Swift	
Apus barbatus (P. Sclater), 1865 (=*Cypselus barbatus* Sclater, 1865)	Andorinhão-preto-africano	Black Swift	
Apus caffer (Lichtenstein), 1823 (=*Cypselus caffer* Lichtenstein, 1823)	Andorinhão-cafre	Whiterumped Swift	
Apus horus (Heuglin), 1869	Andorinhão-das-barreiras	Horus Swift	
Apus affinis (Gray), 1852 (=*Cypselus affinis* Gray, 1830)	Andorinhão-pequeno	Little Swift, House Swift	
Apus melba (Linnaeus), 1758 (=*Hirundo melba* Linnaeus, 1758)	Andorinhão-real	Alpine Swift	

Cypsiurus parvus (Lichtenstein), 1823 (=*Cypselus parvus* Lichtenstein, 1823)	Andorinhão-das-palmeiras	Palm Swift	
Telacanthura ussheri (Sharpe), 1870 (=*Chaetura ussheri* Sharpe, 1870)	Rabo-espinhoso-malhado	Mottled Spinetail	
Neafrapus boehmi (Schalow), 1882 (=*Chaetura boehmi* Schalow, 1882)	Rabo-espinhoso de Böhm	Böhm's Spinetail, Bat-like Spinetail	
COLIIDAE			
Colius striatus Gmelin, 1789	Rabo-de-junco-de-peito-barrado	Speckled Mousebird	
Urocolius indicus (Latham), 1790 (=*Colius indicus* Latham, 1790)	Rabo-de-junco-de-faces-vermelhas	Redfaced Mousebird	
TROGONIDAE			
Apaloderma narina (Stephens), 1815	Republicano	Narina Trogon	
ALCEDINIDAE			
Ceryle rudis (Linnaeus), 1758 (=*Alcedo rudis* Linnaeus, 1758)	Pica-peixe-malhado	Pied Kingfisher	
Megaceryle maxima (Pallas), 1769 (=*Ceryle maxima*) (=*Alcedo maxima* Pallas, 1769)	Pica-peixe-gigante	Giant Kingfisher	
Alcedo semitorquata Swainson, 1823	Guarda-rios-de-colar	Halfcollared Kingfisher	
Alcedo cristata Pallas, 1764 (=*Corythornis cristata* (Pallas), 1764)	Pica-peixe-de-poupa	Malachite Kingfisher	
Ispidina picta (Boddaert), 1783 (=*Todus pictus* Boddaert, 1783)	Pica-peixe-pigmeu	Pygmy Kingfisher	
Halcyon senegalensis (Linnaeus), 1766 (=*Alcedo senegalensis* Linnaeus, 1766)	Pica-peixe do Senegal	Woodland Kingfisher, Senegal Kingfisher	
Halcyon albiventris (Scopoli), 1786 (=*Alcedo albiventris* Scopoli, 1786)	Pica-peixe-de-barrete-castanho	Brownhooded Kingfisher	
Halcyon leucocephala (Müller), 1776 (=*Alcedo leucophala* Müller, 1776)	Pica-peixe-de-barrete-cinzento	Greyhooded Kingfisher, Chestnut-bellied Kingfisher	
Halcyon chelicuti (Stanley), 1814 (=*Alcedo chelicuti* Stanley, 1814)	Pica-peixe-riscado	Striped Kingfisher	

MEROPIDAE			
Merops apiaster Linnaeus, 1758	Abelharuco-europeu	European Bee-eater	
Merops persicus Pallas, 1773 (=*Merops persica* Pallas, 1773) (=*Merops superciliosus persicus* Pallas, 1773)	Abelharuco-persa	Bluecheeked Bee-eater	
Merops nubicoides (=*Merops nubicus* Gmelin, 1788)	Abelharuco-róseo	Carmine Bee-eater	
Merops bullockoides Smith, 1834 (=*Melittophagus bullockoides* (A. Smith), 1834)	Abelharuco-de-fronte-branca	Whitefronted Bee-eater	
Merops pusillus Müller, 1776 (=*Melittophagus pusillus* (Müller), 1776)	Abelharuco-dourado	Little Bee-eater	
CORACIIDAE			
Coracias garrulus Linnaeus, 1758	Rolieiro-europeu	European Roller	
Coracias caudata Linnaeus, 1766	Rolieiro-de-peitos-lilas	Lilacbreasted Roller	
Coracias spatulata Trimen, 1880 (=*Coracias spatulatus* Trimen, 1880)	Rolieiro-cauda-de-raquete	Rackettailed Roller	
Coracias naevia Daudin, 1800	Rolieiro-de-sobrancelhas-brancas	Purple Roller, Rufous-crowned Roller	
Eurystomus glaucurus (Müller), 1776 (=*Coracias glaucurus* Müller, 1776)	Rolieiro-de-bico-grosso	Broadbilled Roller	
UPUPIDAE			
Upupa epops Linnaeus, 1758 (=*Upupa africana* Bechstein, 1811)	Poupa	Hoopoe	
PHOENICULIDAE			
Phoeniculus purpureus (Miller), 1794 (=*Promerops purpureus* Miller, 1784)	Zombeteiro-de-bico-vermelho	Redbilled Woodhoopoe, Green Woodhoopoe	
Rhinopomastus cyanomelas (Vieillot), 1819 (=*Falcinellus cyanomelas* Vieillot, 1819)	Bico-de-cimitarra	Scimitarbilled Woodhoopoe	
BUCEROTIDAE			
Bycanistes bucinator (Temminck), 1824 (=*Buceros bucinator* Temminck, 1824)	Calau-trombeteiro	Trumpeter Hornbill	
Tockus leucomelas (Lichtenstein), 1842 (=*Buceros leucomelas* Lichtenstein, 1842)	Calau-de-bico-amarelo	Southern Yellowbilled Hornbill	

Tockus nasutus (Linnaeus), 1766 (=*Buceros nasutus* Linnaeus, 1766)	Calau-cinzento	Grey Hornbill	
Tockus erythrorhynchus (Temminck), 1823 (=*Buceros erythrorhynchus* Temminck, 1823)	Calau-de-bico-vermelho	Redbilled Hornbill	
Tockus alboterminatus (Büttikofer), 1889 (=*Lophoceros alboterminatus* Büttikofer, 1889)	Calau-coroado	Crowned Hornbill	
Bucorvus leadbeateri (Vigors), 1825	Calau-gigante	Ground Hornbill	
LYBIIDAE			
Lybius torquatus (Dumont), 1806 (=*Bucco torquatus* Dumont, 1816)	Barbaças-de-colar-preto	Blackcollared Barbet	
Tricholaema leucomelas (Boddaert), 1783 (=*Bucco leucomelas* Boddaert, 1783)	Barbaças-malhado	Pied Barbet	
Pogoniulus chrysoconus (Temminck), 1832 (=*Bucco chrysoconus* Temminck, 1832)	Barbadinho-de-fronte-amarela	Yellowfronted Tinker Barbet	
Pogoniulus bilineatus (Sundevall), 1850 (=*Megalaema bilineata* Sundevall, 1850)	Barbadinho-de-rabadilha-limão	Goldenrumped Tinker Barbet, Yellow-rumped Tinkerbird	
Trachyphonus vaillantii Ranzani, 1821	Barbaças-de-crista	Crested Barbet	
INDICATORIDAE			
Indicator indicator (Sparrman), 1777 (=*Cuculus indicator* Sparrman, 1777)	Indicador-grande	Greater Honeyguide, Black-throated Honeyguide	
Indicator variegatus Lesson, 1831	Indicador-de-peito-escamoso	Scalythroated Honeyguide	
Indicator minor Stephens, 1815	Indicador-pequeno	Lesser Honeyguide	
Prodotiscus regulus Sundevall, 1850	Indicador-de-bico-aguçado	Sharpbilled Honeyguide, Wahlberg's Honeybird	
PICIDAE			
Campethera bennettii (A. Smith), 1836 (=*Chrysoptilus bennettii* A. Smith, 1836)	Pica-pau de Bennett	Bennett's Woodpecker	
Campethera abingoni (A. Smith), 1836 (=*Chrysoptilus albingoni* A. Smith, 1836)	Pica-pau-de-cauda-dourada	Goldentailed Woodpecker	
Dendropicos fuscescens (Vieillot), 1818 (=*Picus fuscescens* Vieillot, 1818)	Pica-pau-cardeal	Cardinal Woodpecker	
Thripias namaquus (Lichtenstein), 1793 (=*Picus namaquus* A. A. H. Lichtenstein, 1793)	Pica-pau-de-bigodes	Bearded Woodpecker	

JYNGIDAE			
Jynx ruficollis Wagler, 1830	Torcicolo-de-garganta-castanha	Redthroated Wryneck, Rufous-breasted Wryneck	
PITTIDAE			
Pitta angolensis Vieillot, 1816	Pita de Angola	Angola Pitta, African Pitta	
ALAUDIDAE			
Mirafra passerina Gyldenstolpe, 1926	Cotovia-monótona	Monotonous Lark	
Mirafra africana A. Smith, 1836	Cotovia-de-nuca-vermelha	Rufousnaped Lark	
Mirafra rufocinnamomea (Salvadori), 1865 (=*Megalophoneus rufocinnamomea* Salvadori, 1865)	Cotovia-das-castanholas	Flappet Lark	
Mirafra africanoides A. Smith, 1836	Cotovia-cor-de-areia	Fawncoloured Lark	
Mirafra sabota A. Smith 1836	Cotovia de Sabota	Sabota Lark	
Pinarocorys nigricans (Sundevall), 1851 (=*Alauda nigricans* Sundevall, 1850)	Calhandra-sombria	Dusky Lark	
Calandrella cinerea (Gmelin), 1789 (=*Alauda cinerea* Gmelin, 1789)	Cotovia-de-barrete-vermelho	Redcapped Lark	
Eremopterix leucotis (Stanley), 1814 (=*Loxia leucotis* Stanley, 1814)	Cotovia-pardal-de-dorso-castanho	Chestnutbacked Finchlark, Chestnutbacked Sparrow-lark	
HIRUNDINIDAE			
Hirundo rustica Linnaeus, 1758	Andorinha-das-chaminés	European Swallow, Barn Swallow	
Hirundo albigularis Strickland, 1849		Whitethroated Swallow	
Hirundo smithii Leach, 1818	Andorinha-cauda-de-arame	Wiretailed Swallow	
Hirundo dimidiata Sundevall, 1850	Andorinha-de-pérolas	Pearlbreasted Swallow	
Hirundo semirufa (Sundevall), 1850 (=*Cecropis semirufa* (Sundevall), 1851)	Andorinha-de-peito-ruvio	Redbreasted Swallow	
Hirundo senegalensis (Linnaeus), 1766 (=*Cecrops senegalensis* (Linnaeus), 1766)	Andorinha-das-mesquitas	Mosque Swallow	
Hirundo cucullata Boddaert, 1783 (=*Cecropis cucullata* (Boddaert), 1783)	Andorinha-de-cabeça-vermelha	Greater Striped Swallow	

Hirundo abyssinica Guérin-Méneville, 1843 (=*Cecropis abyssinica* (Guérin), 1843)	Andorinha-estriada-pequena	Lesser Striped Swallow	
Hirundo fuligula (Lichtenstein), 1842 (=*Ptynoprogne fuligula* (Lichtenstein), 1842)	Andorinha-das-rochas-africana	Rock Martin, Pale Crag Martin	
Delichon urbica (Linnaeus), 1758 (=*Hirundo urbica* Linnaeus, 1758)	Andorinha—dos-beiras	House Martin	
Pseudhirundo griseopyga (Sundevall), 1850 (=*Hirundo griseopyga* Sundevall, 1850)	Andorinha-de-rabadilha-cinzenta	Greyrumped Swallow	
Riparia riparia Linnaeus, 1758 (=*Hirundo riparia* Linnaeus, 1758)	Andorinha—das-barreiras	European Sand Martin, Common Sand Martin	
Riparia paludicola (Vieillot), 1817 (=*Hirundo paludicola* Vieillot, 1817)	Andorinha-das-barreiras-africana	Brownthroated Martin, African Sand Martin	
Riparia cincta (Boddaert), 1783 (=*Hirundo cincta* Boddaert, 1783)	Andorinha-de-colar	Banded Martin	
Psalidoprocne holomela (=*Psalidoprocne holomelaena* (Sundevall),1850)	Andorinha-preta	Black Sawwing Swallow	
CAMPEPHAGIDAE			
Campephaga flava Vieillot, 1817 (=*Campephaga phoenicea* (Latham), 1790)	Lagarteiro-preto	Black Cuckooshrike	
Coracina pectoralis (Jardine & Selby), 1828 (=*Graucalus pectoralis* Jardine & Selbe, 1828)	Lagarteiro-cinzento-e-branco	Whitebreasted Cuckooshrike	
Coracina caesia (Lichtenstein), 1823 (=*Ceblepyris caesia* Lichtenstein, 1823)	Lagarteiro-cinzento	Grey Cuckooshrike	
DICRURIDAE			
Dicrurus adsimilis (Bechstein), 1794	Drongo-de-cauda-forcada	Forktailed Drongo	
ORIOLIDAE			
Oriolus oriolus (Linnaeus), 1758	Papa-figos-europeu	European Golden Oriole	
Oriolus auratus Vieillot, 1817	Papa-figos-africano	African Golden Oriole	
Oriolus larvatus Lichtenstein, 1823	Papa-figos-de-cabeça-preta	Blackheaded Oriole	
CORVIDAE			

Corvus capensis Lichtenstein, 1823	Gralha do Cabo	Black Crow	
Corvus albus Müller, 1776	Seminarista	Pied Crow	
Corvus splendens Vieillot, 1817	Corvo-indiano	House Crow	
Corvus albicollis (Latham), 1790 (=*Corvulus albicollis* (Latham), 1790)	Corvo-de-nuca-branca	Whitenecked Raven	
PARIDAE			
Parus cinerascens	(no records for Mozambique)	Ashy Tit	
Parus niger Vieillot, 1818	Chapim-preto-meridional	Southern Black Tit	
REMIZIDAE			
Anthoscopus caroli (Sharpe), 1871	Pássaro-do-algodão-cinzento	Grey Penduline Tit	
TIMALIIDAE			
Turdoides jardineii (A. Smith), 1836	Zaragateiro-castanho	Arrowmarked Babbler	
Turdoides bicolor (Jardine), 1831	(no records for Mozambique)	Pied Babbler	
PYCNONOTIDAE			
Pycnonotus barbatus (Desfontaines), 1787 (=*Turdus barbatus* Desfontaine, 1789)	Tutinegra	Blackeyed Bulbul, Common Bulbul, Dark-capped Bulbul	
Phyllastrephus terrestris Swainson, 1837	Tuta-da-terra	Terrestrial Bulbul, Terrestrial Brownbul	
Andropadus importunus (Vieillot), 1818 (=*Turdus importunus* Vieillot, 1818)	Tuta-sombria	Sombre Bulbul, Sombre Greeenbul, Zanzibar Sombre Greenbul	
Chlorocichla flaviventris (A. Smith), 1834 (=*Trichophorus flaviventris* Smith, 1834)	Tuta-amarela	Yellowbellied Bulbul, Yellow-bellied Greenbul	
Nicator gularis Hartlaub & Finsch, 1870	Tuta-de-garganta-branca	Yellowspotted Nicator	
TURDIDAE			
Turdus libonyana (A. Smith), 1836 (=*Turdus libonyanus* (A. Smith), 1836)	Tordo-chicharrio	Kurrichan Thrush	
Turdus litsipsirupa (A. Smith), 1836	Tordo-de-peito-malhado	Groundscraper Thrush	
Oenanthe oenanthe (Linnaeus), 1758	Chasco-cinzento	European Wheatear	
Oenanthe monticola Vieillot, 1818	(no records for Mozambique)	Mountain Chat	
Oenanthe pileata (Gmelin), 1789 (=*Motacilla pileata* Gmelin, 1789)	Chasco-de-barrete	Capped Wheatear	

Cercomela familiaris (Stephens), 1826 (=*Saxicola familiaris* Stephens, 1826)	Chasco-familiar	Familiar Chat, Redtailed Chat	
Thamnolaea cinnamomeiventris (Lafresnaye), 1836	Chasco-poliglota	Mocking Chat	
Thamnolaea arnoti (=*Saxicola arnotti* Tristam, 1869) (=*Myrmecocichla arnoti* (Tristram), 1869)	Chasco de Arnott	Arnot's Chat, Whiteheaded Black Chat	
Saxicola torquata (Linnaeus), 1766 (=*Motacilla torquata* Linnaeus, 1776)	Cartaxo-comum	Stone Chat	
Cossypha heuglini Hartlaub, 1886	Pisco de Heuglin	Heuglin's Robin, Whitebrowed Robin-Chat	
Cossypha natalensis A. Smith, 1840	Pisco do Natal	Natal Robin, Redcapped Robin-Chat	
Cossypha caffra (Linnaeus), 1771 (=*Motacilla caffra* Linnaeus, 1771)	Pisco do Cabo	Cape Robin	
Cossypha humeralis (Smith) (=*Dessonornis humeralis* A. Smith, 1836)	Pisco-de-peito-branco	Whitethroated Robin	
Cichladusa arquata Peters, 1863	Tordo-das-palmeiras-de-colar	Collared Palm Thrush	
Pogonocichla stellata (Vieillot), 1818	Pisco-estrelato	Starred Robin	
Luscinia luscinia (Linnaeus), 1758 (=*Motacilla luscinia* Linnaeus, 1758)	(no records for Mozambique)	Thrush Nightingale, Sprosser	
Erythropygia leucophrys (Vieillot), 1817 (=*Sylvia luecophrys* Vieillot, 1817)	Rouxinol-do-mato-estriado	Whitebrowed Robin	
Erythropygia signata (=*Tychaedon signata* (Sundevall), 1851) (=*Cossypha signata* Sundevall, 1850)	Rouxinol-do-mato-castanho	Brown Robin	
Erythropygia quadrivirgata (Reichenow), 1879 (=*Thamnobia quadrivirgata* Reichenow, 1879)	Rouxinol-do-mato-de-bigodes	Bearded Robin, Eastern Bearded Scrub-Robin	
SYLVIIDAE			
Sylvia borin (Boddaert), 1783	Felosa-das-figueiras	Garden Warbler	
Parisoma subcaeruleum (Vieillot), 1817	(no records for Mozambique)	Titbabbler	

Hyliota australis Shelley, 1882	Papa-moscas-austral	Mashona Hyliota	
Hippolais icterina (Vieillot), 1817	Felosca-icterina	Icterine Warbler	
Hippolais olivetorum (Strickland), 1837	Felosa-das-oliveiras	Olivetree Warbler	
Acrocephalus arundinaceus (Linnaeus), 1758	Rouxinol-grande-dos-caniços	Great Reed Warbler	
Acrocephalus baeticatus (Vieillot), 1817	Rouxinol-dos-caniços-africano	African Marsh Warbler	
Acrocephalus palustris (Bechstein), 1798	Felosa-palustre	European Marsh Warbler	
Acrocephalus schoenobaenus (Linnaeus), 1758	Felosa-dos-juncos	European Sedge Warbler	
Acrocephalus gracilirostris (Hartlaub), 1864 (=*Calamocichla gracilirostris* (Hartlaub), 1864)	Rouxinol-pequeno-dos-pântanos	Cape Reed Warbler	
Chloropeta natalensis A. Smith, 1847	Felosa-amarela	Yellow Warbler	
Bradypterus baboecala (Vieillot), 1817	Felosa-dos-juncos-africano	African Sedge Warbler	
Schoenicola brevirostris (Sundevall), 1850		Broadtailed Warbler	
Phylloscopus trochilus (Linnaeus), 1758	Felosa-musical	Willow Warbler	
Apalis thoracica (Shaw and Nodder), 1811	Apalis-de-colar	Barthroated Apalis	
Apalis flavida (Strickland), 1852	Apalis-de-peito-amarelo	Yellowbreasted Apalis	
Sylvietta rufescens (Vieillot), 1817	Rabicurta-de-bico-comprido	Longbilled Crombec	
Eremomela icteropygialis (Lafresnaye), 1839	Eremomela-de-barriga-amarela	Yellowbellied Eremomela	
Eremomela scotops Sundevall, 1850	Eremomela-de-barrete-verde	Greencapped Eremomela, Duskyfaced Eremomela	
Eremomela usticollis Sundevall, 1850	Eremomela-de-garganta-castanha	Burntnecked Eremomela	
Camaroptera brachyura (Vieillot), 1820	Felosa-de-dorso-verde	Bleating Warbler	
Calamonastes stierlingi Reichenow, 1901 (=*Camaroptera stierlingi* Reichenow,1901)	Felosa de Stierling	Stierling's Barred Warbler	
Cisticola juncidis (Rafinesque), 1810	Fuinha-dos-juncos	Fantailed Cisticola	
Cisticola aridula Witherby, 1900	Fuinha-do-deserto	Desert Cisticola	
Cisticola textrix (Vieillot), 1817	Fuinha-das-nuvens	Cloud Cisticola	
Cisticola ayresii Hartlaub, 1863		Ayres' Cisticola	
Cisticola chiniana (A. Smith), 1843	Fuinha-chocalheira	Rattling Cisticola	
Cisticola erythrops Hartlaub, 1857	Fuinha-de-faces-vermelhas	Redfaced Cisticola	
Cisticola galactotes (Temminck), 1823	Fuinha-de-dorso-preto	Blackbacked Cisticola	
Cisticola tinniens (Lichtenstein), 1842	(no records for southern Mozambique)	LeVaillant's Cisticola	

Cisticola natalensis (A. Smith), 1843	Fuinha do Natal	Croaking Cisticola	
Cisticola fulvicapilla (Vieillot), 1817	Fuinha-de-cabeça-ruiva	Neddicky	
Prinia subflava (Gmelin), 1789	Prínia-de-flancos-castanhos	Tawnyflanked Prinia	
Prinia flavicans (Vieillot), 1820	(no records for Mozambique)	Blackchested Prinia	
MUSCICAPIDAE			
Muscicapa striata (Pallas), 1764	Papa-moscas-cinzento	Spotted Flycatcher	
Muscicapa adusta (Boie), 1828	Papa-moscas-sombrio	Dusky Flycatcher	
Muscicapa caerulescens (Hartlaub), 1865	Papa-moscas-azulado	Bluegrey Flycatcher	
Myioparus plumbeus (Hartlaub), 1858	Papa-moscas-rabo-de-leque	Fantailed Flycatcher, Grey Tit-babbler	
Melaenornis pammelaina (Stanley), 1814	Papa-moscas-preto-africano	Black Flycatcher	
Melaenornis mariquensis (=*Bradornis mariquensis* A. Smith, 1847)	Papa-moscas de Marico	Marico Flycatcher	
Melaenornis pallidus (=*Bradornis pallidus* (v. Müller) 1851)	Papa-moscas-pálido	Pallid Flycatcher, Mouse-coloured Flycatcher	
Sigelus silens (Shaw), 1809	Papa-moscas-fiscal	Fiscal Flycatcher	
Batis molitor (Hahn & Küster), 1850	Batis-comum	Chinspot Batis	
Platysteira peltata Sundevall, 1851	Papa-moscas-carunculado	Wattle-eyed Flycatcher	
Stenostira scita (Vieillot), 1818	(no records for Mozambique)	Fairy Flycatcher	
Trochocercus cyanomelas (Vieillot), 1818	Papa-moscas-de-poupa	Bluemantled Flycatcher	
Terpsiphone viridis (Müller), 1776	Papa-moscas do Paraíso	Paradise Flycatcher	
MOTACILLIDAE			
Motacilla aguimp Dumont, 1821	Alvéola-preta-e-branca	African Pied Wagtail	
Motacilla clara Sharpe, 1908	Alvéola-de-cauda-comprida	Longtailed Wagtail	
Motacilla capensis Linnaeus, 1766	Alvéola do Cabo	Cape Wagtail	
Motacilla flava Linnaeus, 1758	Alvéola-amarela	Yellow Wagtail	
Anthus cinnamomeus (=*Anthus novaeseelandiae* (Gmelin), 1789) (=*Alauda novae Seelandiae* Gmelin, 1789)	Petinha-do-capim	Grassveld Pipit, Richard's Pipit	
Anthus similis Jerdon, 1840	Petinha-de-bico-comprido	Longbilled Pipit, Nicholson's Pipit	
Anthus leucophrys Vieillot, 1818	Petinha-de-dorso-liso	Plainbacked Pipit	

Anthus vaalensis Shelley, 1900	(no records for Mozambique)	Buffy Pipit	
Anthus lineiventris Sundevall, 1851	Petinha-estriada	Striped Pipit	
Anthus caffer Sundevall, 1851	Petinha-do-mato	Bushveld Pipit	
Tmetothylacus tenellus (Cabanis) (=*Macronix tenellus* Cabanis, 1878)	(no records for Mozambique)	Golden Pipit	
Macronyx croceus (Vieillot), 1816 (=*Alauda crocea* Vieillot, 1816)	Unha-longa-amarelo	Yellowthroated Longclaw	
LANIIDAE			
Lanius minor Gmelin, 1788	Picanço-pequeno	Lesser Grey Shrike	
Lanius collaris Linnaeus, 1766	Picanço-fiscal	Fiscal Shrike	
Lanius collurio Linnaeus, 1758	Picanço-de-dorso-ruivo	Redbacked Shrike	
Corvinella melanoleuca (=*Urolestes melanoleucus* (Jardine) 1831)	Picanço-rabilongo	Longtailed Shrike	
MALACONOTIDAE			
Laniarius ferrugineus (Gmelin), 1788	Picanço-ferrugíneo	Southern Boubou	
Laniarius aethiopicus	Picanço-tropical	Tropical Boubou	
Laniarius atrococcineus Burchell, 1822	(no records for Mozambique)	Crimsonbreasted Shrike, Crimson Boubou	
Dryoscopus cubla (Shaw), 1809	Picanço-de-almofadinha	Puffback	
Nilaus afer (Latham), 1801	Brubru	Brubru	
Tchagra australis (A. Smith), 1836	Picanço-assobiador	Threestreaked Tchagra	
Tchagra senegala (Linnaeus), 1766	Picanço-assobiador-de-coroa-preta	Blackcrowned Tchagra	
Telophorus quadricolor (Cassin), 1851	Picanço-quadricolor	Gorgeous Bush Shrike	
Telophorus sulfureopectus (=*Chlorophoneus sulphureopectus* (Lesson), 1831)	Picanço-de-peito-laranja	Orangebreasted Bush Shrike	
Telophorus olivaceus (=*Chlorophoneus olivaceus* (Shaw), 1809)	Picanço-oliváceo	Olive Bush Shrike	
Malaconotus blanchoti (=*Malaconotus hypopyrrhus* Hartlaub, 1844)	Picanço-de-cabeça-cinzenta	Greyheaded Bush Shrike	

PRIONOPIDAE			
Prionops plumatus (=*Prionops plumata* (Shaw), 1809)	Atacador-de-poupa-branca	White Helmetshrike	
Prionops retzii (=*Sigmodus retzii* (Wahlberg), 1856)	Atacador-de-poupa-preta	Redbilled Helmetshrike	
Eurocephalus anguitimens A. Smith, 1836	Picanço-de-coroa-branca	Whitecrowned Shrike	
STURNIDAE			
Creatophora cinerea (Menschen), 1787	Estorinho-caranculado	Wattled Starling	
Cinnyricinclus leucogaster (Gmelin), 1789	Estorinho-de-dorso-violeta	Plumcoloured Starling	
Lamprotornis australis (A. Smith), 1836	Estorinho- de Burchell	Burchell's Starling	
Lamprotornis mevesii (Wahlberg), 1857	Estorinho-metálico-rabilongo	Longtailed Starling	
Lamprotornis nitens (Linnaeus), 1766	Estorinho-metálico-de-ombros-violeta	Glossy Starling	
Lamprotornis chalybaeus Hemprich & Ehrenburg, 1828	Estorinho-grande-de-orelha-azul	Greater Blue-eared Starling	
Lamprotornis chloropterus Swainson, 1838		Lesser Blue-eared Starling	
Lamprotornis corruscus Nordmann, 1835	Estorinho-de-barriga-preta	Blackbellied Starling	
Onychognathus morio (Linnaeus), 1766	Estorinho-de-asa-castanha	Redwinged Starling	
BUPHAGIDAE			
Buphagus africanus Linnaeus, 1766	(no records for Mozambique)	Yellowbilled Oxpecker	
Buphagus erythrorhynchus (Stanley), 1814	Pica-bois-de-bico-vermelho	Redbilled Oxpecker	
PROMEROPIDAE			
Promerops gurneyi Verreaux, 1871	(no records for Mozambique)	Gurney's Sugarbird	
NECTARINIIDAE			
Nectarinia mariquensis (=*Cinnyris mariquensis* A. Smith, 1836)	Beija-flor de Marico	Marico Sunbird	
Nectarinia bifasciata (=*Cinnyris bifasciatus* (Shaw), 1811)	Beija-flor-de-peito-roxo	Purplebanded Sunbird	
Nectarinia venusta (=*Cinnyris venustus* (Shaw & Nodder), 1799)	Beija-flor-de-barriga-amarela	Yellowbellied Sunbird	
Nectarinia talatala (=*Cinnyris talatala* A. Smith, 1836)	Beija-flor-de-barriga-branca	Whitebellied Sunbird	

Nectarinia senegalensis (=*Chalcomitra senegalensis*(Linnaeus), 1766)	Beija-flor-de-peito-escarlate	Scarletchested Sunbird	
Nectarinia amethystina (=*Chalcomitra amethystina*(Shaw), 1811)	Beija-flor-preto	Black Sunbird	
Anthreptes collaris(Vieillot), 1819	Beija-flor-de-colar	Collared Sunbird	
*Anthreptes reichenowi*Gunning, 1909	Beija-flor-de-garganta-azul	Bluethroated Sunbird	
ZOSTEROPIDAE			
*Zosterops pallidus*Swainson, 1838	Olho-branco do Cabo	Cape White-eye	
*Zosterops senegalensis*Bonaparte, 1850	Olho-branco-amarelo	Yellow White-eye	
PLOCEIDAE			
Bubalornis niger(=*Bubalornis albirostris*(Vieillot), 1817)	Tecelão-de-bico-vermelho	Redbilled Buffalo Weaver	
*Plocepasser mahali*A. Smith, 1836	(no records for Mozambique)	Whitebrowed Sparrowweaver	
Passer domesticus(Linnaeus), 1758	Pardal-comum	House Sparrow	
Passer melanurus(Müller), 1776	(no records for Mozambique)	Cape Sparrow	
Passer diffusus(A. Smith), 1836 (=*Passer griseus*)	Pardal-de-cabeça-cinzenta	Greyheaded Sparrow	
Petronia superciliaris(Blyth), 1845	Pardal-de-garganta-amarela	Yellowthroated Sparrow	
Amblyospiza albifrons(Vigors), 1831	Tecelão-de-bico-grosso	Thickbilled Weaver	
Ploceus ocularis(=*Hyphanturgus ocularis*(A. Smith), 1828)	Tecelão-de-lunetas	Spectacled Weaver	
Ploceus cucullatus(Müller), 1776	Tecelão-malhado	Spottedbacked Weaver	
*Ploceus velatus*Vieillot, 1819	Tecelão-de-máscara	Masked Weaver	
*Ploceus intermedius*Rüppell, 1845	Tecelão de Cabanis	Lesser Masked Weaver	
Ploceus xanthops(Hartlaub), 1862	Tecelão-dourado	Golden Weaver	
*Ploceus subaureus*A. Smith, 1839	Tecelão-amarelo	Yellow Weaver	
Anaplectes rubriceps(Sundevall), 1851	Tecelão-de-cabeça-vermelha	Redheaded Weaver	
Anomalospiza imberbis(Cabanis), 1868	Tecelão-parasita	Cuckoo Finch, Cuckoo Weaver	
Quelea quelea(Linnaeus), 1758	Quelea-de-bico-vermelho	Redbilled Quelea	
Euplectes orix(Linnaeus), 1758	Cardeal-tecelão-vermelho	Red Bishop	
Euplectes afer(Gmelin), 1789	Bispo-de-coroa-amarelo	Golden Bishop	

Euplectes axillaris(A. Smith), 1838	Viúva-de-espáduas-vermelhas	Redshouldered Widow	
Euplectes albonotatus(Cassin), 1848	Viúva-de-asa-branca	Whitewinged Widow	
Euplectes ardens(Boddaert), 1783	Viúva-de-colar-vermelho	Redcollared Widow	
ESTRILDIDAE			
Pytilia melba(Linnaeus), 1758	Aurora-melba	Melba Finch	
Mandingoa nitidula (=*Hypargos nitidulus* (Hartlaub), 1865)	Pintadinha-verde	Green Twinspot	
Hypargos margaritatus(Strickland), 1844	Pintadinha-de-peito-rosado	Pinkthroated Twinspot	
Hypargos niveoguttatus(Peters), 1868	Pintadinha-de-peito-vermelho	Redthroated Twinspot	
Lagonosticta rubricata(Lichtenstein), 1823	Peito-de-fogo-de-bico-azul	Bluebilled Firefinch	
Lagonosticta rhodopareira(Heuglin), 1868	Peito-de-fogo de Jameson	Jameson's Firefinch	
Lagonosticta senegala(Linnaeus), 1766	Peito-de-fogo-de-bico-vermelho	Redbilled Firefinch	
Uraeginthus angolensis(Linnaeus), 1758	Peito-celeste	Blue Waxbill	
Uraeginthus granatinus (=*Granatina granatina*(Linnaeus), 1766)	Monsenhor	Violeteared Waxbill	
Estrilda astrild(Linnaeus), 1758	Bico-de-lacre-comum	Common Waxbill	
Estrilda perreini(Vieillot), 1817	Bico-de-lacre-cinzento	Grey Waxbill	
Estrilda melanotis (=*Coccopygia melanotis*(Temminck), 1823)	Bico-de-lacre-de-garganta-preta	Swee Waxbill	
Ortygospiza atricollis (=*Ortygospiza fuscocrissa*Heuglin, 1863)	Bico-de-lacre-cordoniz	Quail Finch	
Sporaeginthus subflavus (=*Amandava subflava*(Vieillot), 1819)	Bico-de-lacre-de-peito-laranja	Orangebreasted Waxbill	
Amadina fasciata(Gmelin), 1789	Degolado	Cutthroat Finch	
Spermestes cucullatus (=*Lonchura cucullata*(Swainson), 1837)	Freirinha-bronzeada	Bronze Mannikin	
Spermestes bicolor(=*Lonchura bicolor*(Fraser), 1842)	Freirinha-de-dorso-vermelho	Redbacked Mannikin	
VIDUIDAE			
Vidua macroura(Pallas), 1764	Viuvinha	Pintailed Whydah	

Vidua regia (Linnaeus), 1766	Viúva-seta	Shafttailed Whydah	
Vidua paradisaea (=*Steganura paradisaea* (Linnaeus), 1758)	Viuvinha do Paraíso	Paradise Whydah	
Vidua funerea (=*Hypochera funerea* (de Tarragon), 1847)	Viúva-negra	Black Widowfinch	
Vidua purpurascens (=*Hypochera purpurascens* Reichenow, 1883)	Viúva-púrpura	Purple Widowfinch	
Vidua chalybeata Müller, 1776 (=*Hypochera chalybeata* Müller, 1776)	Viúva-azul	Steelblue Widowfinch	
FRINGILLIDAE			
Serinus mozambicus (Müller), 1776	Xerico	Yelloweyed Canary	
Serinus atrogularis A. Smith, 1836	(no records for Mozambique)	Blackthroated Canary	
Serinus citrinipectus Clancey & Lawson, 1960	Canário-de-peito-limão	Lemonbreasted Canary	
Serinus canicollis (Swainson), 1838	(no records for Mozambique)	Cape Canary	
Serinus sulphuratus (=*Fringillaria impetuani* (A. Smith), 1836)	Canário-grande	Bully Cana	
Serinus gularis (=*Poliospiza gularis* (A. Smith), 1836)	Chamariço-de-cabeça-estriada	Streakyheaded Canary	
Emberiza flaviventris Stephens, 1815	Escrevedeira-de-peito-dourado	Goldenbreasted Bunting	
Emberiza capensis (=*Hypochera chalybeata* Müller, 1776)	Escrevedeira do Cabo	Cape Bunting	
Emberiza tahapisi (=*Fringillaris tahapisi* (A. Smith), 1836)	Escrevedeira-das-pedras	Rock Bunting	
Emberiza impetuani (=*Fringillaria impetuani* (A. Smith), 1836)	(no records for Mozambique)	Larklike Bunting	

APPENDIX B

RESEARCH PROJECT PROPOSAL FORMAT

Title:	Proposed title for the research project.
Researcher:	Researcher's name and contact details (include e-mail).
Institution:	Institutions to which the researcher is affiliated or is to be registered with.
Supervisor:	Supervisor's name and Department.
Introduction:	Introduction to the proposed study including rationale and hypotheses.
Objectives:	Objectives of the proposed study in point form.
Methods:	Methods to be used for data collection and analysis for each phase of the study.
Timing:	Outline of the basic timing of data collection, data analysis and write-up phase of the project.
Resources:	Outline of the anticipated resources and assistance that are to be requested from the Park.

APPENDIX C

REPORT FORMS[1]

MORTALITY RECORDS								
	OBSERVER							
	DATE							
	LATITUDE							
	LONGITUDE							
	LOCATION							
	SPECIES							
	SEX							
	AGE							
	TIME SINCE DEATH							
	CAUSE OF DEATH							
	LEFT / ANT							
	RIGHT / POST							
HORN AND TUSK DETAIL	AGE							
SKULL	LABEL NO							

[1] Report forms designed by Dr Peter Goodman, KZN Wildlife Services, RSA

INTRODUCTION RECORDS								
	DATE							
	LATITUDE							
	LONGITUDE							
	LOCATION							
	SPECIES							
TOTAL IN EACH AGE CLASS	AD MALE							
	IMM MALE							
	JUV MALE							
TOTAL IN EACH AGE CLASS	AD FEM							
	IMM FEM							
	JUV FEM							
	UNKNOWN							
	SOURCE							
	DETAILS OF MARKED ANIMALS							

REMOVAL RECORDS								
	DATE							
	LATITUDE							
	LONGITUDE							
	LOCATION							
	SPECIES							
	LIVE / DEAD							
TOTAL IN EACH AGE CLASS	AD / MALE							
	IMM MALE							
	JUV MALE							
TOTAL IN EACH AGE CLASS	AD FEMALE							
	IMM FEM							
	JUV FEM							
	REASON							
HORN AND TUSK DETAIL	LEFT / ANT							
	RIGHT / POST							
SKULL	AGE							
	LABEL NO							

INTRODUCTION RECORDS								
	OBSERVER							
	DATE							
	LATITUDE							
	LONGITUDE							
	LOCATION							
	SPECIES							
TOTAL IN EACH AGE CLASS	AD MALE							
	IMM MALE							
	JUV MALE							
TOTAL IN EACH AGE CLASS	AD FEM							
	IMM FEM							
	JUV FEM							
	UNCLASSIFIED							
	OBSERVATION							
	HABITAT							

FIRE INCIDENT RECORDING FORM								
START	TIME							
	DATE							
STOP	TIME							
	DATE							
POINT OF IGNITION	LATITUDE							
	LONGITUDE							
	CAUSE							
FUEL CONDITIONS	GREENNESS							
	MEAN Ht							
	DENSITY In							
	UNIFORMITY							
ENVIRO CONDITIONS	WEATHER							
	WIND SPEED							
	WIND CONDITION							
	WIND DIRECTION							
RESULTS	FIRE TYPE							
	% POLYGON BURNT							
	GRAPHIC FILE NAME							
	POLYGON ID							
	SPATIAL ACCURACY							

APPENDIX D

CODES OF CONDUCT

While statutory requirements constitute one mechanism for environmental regulation, proactive and voluntary approaches are an important way of ensuring long-term commitments and improvements. It is in the interest of all parties involved in tourism and development to ensure that a Code of Conduct with respect to tourism activities is drawn up and adhered to. The tourism industry depends on an unspoiled environment for its continued operation. At the same time, it is an industry that can have a large impact on the environment both physically and socially. The development of such would also facilitate the establishment of a partnership between government and the private sector in conserving and protecting the environment and could be drawn up by developers and tourism operators through to Tourism Associations and Authorities.

CODE OF CONDUCT FOR TOURISM OPERATORS IN THE LIMPOPO NATIONAL PARK

- Strengthen the conservation effort for, and enhance the natural integrity of the places visited.
- Respect the sensitivities of all cultures.
- Be efficient in the use of natural resources (water, energy).
- Ensure waste disposal has minimal environmental and aesthetic impact.
- Develop a recycling programme.
- Support principals (i.e. hotels, carriers etc.) who have a conservation ethic.
- Keep abreast of current political and environmental issues, particularly of the local area, and where possible become actively involved.
- Network with other stakeholders (particularly those in the local area) to keep each other informed of developments and encourage the use of this Operator's Code of Conduct.
- Promote the use of the Guidelines to Environmental Best Practice by visitors to the Park.
- Support eco-tourism education/training for staff, guides and managers.
- Employ local tour guides where possible - all guides should be well-versed and respectful of local cultures and environments.
- Give clients appropriate verbal and written education (interpretation) and guidance with respect to the natural and cultural history of the areas visited.
- Use locally produced goods that benefit the local community, but do not buy goods made from threatened or endangered species or goods that are harvested in an unsustainable manner.
- Never intentionally disturb or encourage the disturbance of wildlife or wildlife habitats.
- Keep vehicles to designated roads and tracks.
- Abide by the rules and regulations of natural areas.
- Commit to the principle of environmental best practice.
- Comply with Safety Standards.
- Ensure truth in advertising.
- Maximise the quality of experience for hosts and guests.

CODES OF CONDUCT FOR VISITORS TO THE AREA

- Cultivate the habit of listening and observing, rather than merely hearing and seeing.
- Do not feed the wildlife or disturb wildlife habitats. We like our flora and fauna so please leave it where it is.
- Be efficient with natural resources by limiting the amount of energy and water you use.
- Educate yourself about the people - their culture and customs - you plan to visit.
- Choose a travel agency, tour operator or hotel, which has written policies and proven practices to conserve natural resources including wildlife, energy, water and waste management. Ask if your accommodations have been certified by any of the associations now acknowledging progressive practices.
- Pay particular attention to your tour operator's use of local produce and construction materials, and operators who have active staff training programmes.
- Remember that imported foods and lodging materials do little for the local economy.
- Remove your litter and leave historical artifacts behind.
- Stay on established trails, and remember that encouraging drivers to leave roads invites long-term damage to many fragile areas and may disturb animal populations during critical periods.
- Respect the privacy and dignity of the cultures you visit by not imposing your values and cultures on them. Ask before photographing people. Respect your guide's advice on local customs, gifts and compensation for services, and be aware of expectations you may create for future travellers. Remember you are the visitor and others will have to follow your example.
- Do not purchase products made from endangered plants. Ask your guide about which species are threatened.
- Select tour operators and packages, which provide expert interpretive services to maximize your ecological and cultural experience. Many agencies now offer specialised product with world-renowned experts in many subjects.

GUIDELINES FOR GUIDES AND GUIDING

- Conduct, reflect on and improve a guided experience within a specific area that entertains and educates tourists by interpreting cultural and natural environments;
- Research, use and plan an itinerary;
- Present authentic, balanced interpretation of general aspects of southern African society as well as specific sites and resources;
- Apply procedures to protect the social and cultural integrity of the host communities;
- Supply appropriate alternative solutions to problems and constraints, taking into account issues such as the constraints of the facilities, tourist expectations, and the requirements of the host community;
- Apply a range of presentation techniques appropriate to the audience, context and client profile;
- Monitor and improve own performance based on critical reviews and evaluation of the event.

APPENDIX E

IEM GUIDELINES FOR DEVELOPMENT

ENVIRONMENTAL APPROACH TO PLANNING AND DESIGN

DESIGN PRINCIPLES

- The developments will be informed by environmental considerations from the outset. Site planning and design involves the location of structures and utilities to make the most appropriate use of natural and cultural resources whilst the long-term aim of sustainable design is to minimise resource consumption and degradation:

SITE PLANNING AND DESIGN

- Designs and location of facilities and other infrastructure will only be finalised after EIA's have been completed;
- Avoiding the need for mitigation and restoration will be strived for in design and development;
- Special features, micro-habitats, location of rare or endangered species, animal nests or burrows and well used game trails must inform the siting of all amenities.

NATURAL ENVIRONMENT AND LANDSCAPING

- Permeate the “built environment”, with “natural environment’ including trees, shrubs and other landscape elements;
- Establish physical/biophysical continuity between the natural environment of the site surroundings and the landscaping within the development site;
- Natural features such as rocks and mature trees will be retained, even in the more densely developed areas of the site, and should be incorporated into and emphasized as key components of the landscaping;
- Avoid geometric forms and highly manicured planting;
- Use planting to screen more utilitarian structures;
- Only indigenous/endemic species to be used for landscaping;
- Retain as much of the existing natural vegetation as possible.

ARCHITECTURAL AND STRUCTURAL DESIGN

- The final size of the developments will be determined by the capacity of the environment to maintain them;
- The human activities that create and maintain buildings must be considered as important as the buildings themselves;

- All buildings will be interactive with the environment, acknowledging the concept that structures have an effect on the environment in the same way as the environment has an effect on the structures;
- Reflect the character of the surroundings through the use of local, natural materials and by emulating, in the architecture, striking forms found in the environs of the site;
- Environmentally friendly technologies and designs concepts will be incorporated into all aspects of the developments. For example, responsible energy use is an important component of sustainable development. Renewable energy sources should be used as far as is possible, and siting and design of facilities should take energy consumption into account so as to reduce the need for energy consuming utilities such as air conditioners. Water conservation is also an important aspect of sustainable development and will be incorporated into all aspects of design, e.g. toilets, showers, kitchens and laundry appliances;
- The cutting of site platforms and related civilities works to level sites must be avoided while design and construction methods, which preserve and harmonise with existing topographic conditions should be encouraged;
- The "footprint" of buildings should not cover ecologically sensitive zones, of the site;
- Infrastructure that penetrates environmentally sensitive zones, for example paths and utility services, to be designed so as to minimise the physical extent of disturbance to the environment and to harmonise with the immediate surroundings in terms of construction materials;
- Encourage the reflection of local culture, mythology and legend as well as the natural heritage, in the architecture, furniture, murals and art works.

BUILDING MATERIALS

- Only building materials that will not have a negative environmental impact on the receiving environment will be used. The ongoing maintenance of build ings and facilities will also only make use of environmentally friendly or benign products;
- Natural materials are less energy intensive and polluting to produce, and contribute less to indoor pollution;
- Local materials have reduced level of energy cost and air pollution associated with their transportation. Use of local materials helps to sustain the local economy (where these are sustainably produced/harvested);
- Durable materials can save energy cost for maintenance as well as for the production and installation of replacement products;
- Materials from non-renewable sources should as far as is practicable be avoided and those from renewable resources should be sustainably utilised.

GUIDELINES FOR THE CONSTRUCTION PHASE OF DEVELOPMENT

The following guidelines are to be followed during the construction phase of all developments:

- The Contractor and his employees shall adhere to the Rules & Regulations of the Park at all times.
- The contractor must ensure the proper supervision of employees at all times and their abidance by the Rules & Regulations of the Park.
- Access to the site must be restricted to employees of the contractor, the Park Authority and the developer and his/her representatives only.
- All employees must be educated to the need to refrain from the destruction of plants and animals, as well as from indiscriminate defecation, waste disposal and or pollution of soil and water resources.
- All machine operators must receive clear instructions to remain within demarcated access routes and operational/construction areas. Penalties should be enforced if this arrangement is not adhered to.
- All mixing of cement and other materials should be done in a such a way that it is properly contained and that contaminated water may not run off into the area.
- The building envelope shall be demarcated and to ensure that building activities are contained within its perimeter and that no undue environmental damage or disturbance occurs outside of this perimeter.
- The construction crew shall be housed off-site where possible. Where not possible, suitable temporary facilities should be erected to house construction crew. These should be properly secured and managed to limit impact and the site should be appropriately rehabilitated once the camp is disassembled.
- The Contractor is to take all precautions to prevent the outbreak and spreading of fires and is to ensure all his employees are aware of the necessary precautions.
- All earthworks, berms, channels, spoil and borrow areas are to be worked in such a way as to minimise the possibility of erosion. Trenching and earth works in sensitive areas are to be hand excavated only.
- On site chemical toilets will be used by the Contractor and waste collected in these will be disposed of regularly at a suitable designated location and in an environmentally appropriate manner.
- The Contractor will provide a suitable, animal proof receptacle to contain all, daily refuse. Refuse will be disposed of regularly at a suitable designated location and in an environmentally appropriate manner.
- The Contractor will ensure that all equipment is in good working order and will not contaminate soil or water resources with diesel, petrol or any other foreign substances.
- All building materials will be stockpiled in designated areas within the building envelope.
- All building rubble is to be removed from the Park and disposed of in a suitable location in an environmentally acceptable manner.
- The Contractor shall ensure that all vehicles stick to designated roads at all times and that should alternative temporary access routes be required that

these be created in consultation with the Park Authority. After use these should be suitably reclaimed to ensure no long term adverse environmental impacts result.

- Where reclamation is necessary, all rubble is to be removed; ground to be lightly ripped; grass with seed heads to be placed on ripped ground or seeding specified by the Reserve to be sown into ripped ground.; light brush cover to be placed over grass; and all reclamation work to be approved by the Officer in charge.
- Power cables and water pipes shall be routed so as to minimise the disturbance to trees and other vegetation.
- Use construction methods which will create job opportunities for as many skilled and semi-skilled artisans from the area as possible.
- Facilitate the adaptation and evolution of design and construction details on site with the input of local craftsmen in their use of endemic construction materials, patterns, symbols and finishes.
- Construction noise must be reduced whenever possible both in respect of causing nuisance to neighbours and Park visitors and in respect of detrimental impact upon the natural fauna.
- The generation and contamination of the environment with dust must be carefully monitored and controlled, requiring the following measures to be observed:
- Adherence to speed limits;
- Sensible and responsible use of equipment which generate dust.

GUIDELINES FOR THE OPERATIONAL PHASE OF DEVELOPMENT

Once operational, the developments will have an ongoing impact on the environment that needs to be properly planned and managed. The following are some of the measures that should be taken to ensure environmentally-friendly lodge operations:

ENVIRONMENTAL MANAGEMENT SYSTEM (EMS)
An EMS will be designed and implemented that deals with all aspects of lodge operation, providing comprehensive guidelines to management and staff. This will include aspects such as:

- Solid waste management
- Sewage and grey water management
- Water use management
- Electricity management
- Use of environmentally acceptable chemicals and cleaning agents and their management
- Vehicle and workshop maintenance and management

The EMS will also include the keeping of suitable records of key aspects and issues, e.g. water consumption, and a Monitoring & Evaluation component so that the operation's environmental performance can be regularly reviewed and improved. This will be achieved through the appointment of an environmental manager (may not be their sole responsibility) who will be tasked with overseeing and maintaining the EMS.

COMMITMENT TO CERTIFICATION AND AUDITING

Environmental auditing is a management tool comprising a systematic, documented, periodic and objective evaluation of how well environmental organisation, management and equipment are performing with the aim of helping to safeguard the environment by:

- Facilitating management control of environmental practices, and
- Assessing compliance with company policies, which would include meeting regulatory requirements.

The audit will include the biophysical environment, social responsibility and health and safety aspects. Environmental audits are presently not a legal requirement but where developments fall within protected areas it is felt that this may constitute a useful environmental management tool. It would seem that this procedure is gaining international credibility and desirability and it is possible to obtain ISO14001 accreditation amongst others for eco-friendly operations in the hospitality industry.

ENVIRONMENTAL EDUCATION

Ongoing education of management, staff and guests is considered an important aspect of responsible environmental management. This will be achieved through the appointment of an environmental manager (may not be their sole responsibility) who will be tasked with disseminating relevant environmental and ecological information to all concerned in the form of talks, information sheets and whatever other means are appropriate.

WASTE MANAGEMENT

- All waste is to be separated at source.
- All waste containers will be housed in the service area and will be fenced, covered and secured. The service area will have a concrete floor to ensure that is can be suitably maintained and no ground seepage will occur.
- Glass will be stored on site in suitable containers until there is sufficient to be transported for recycling.
- Tins, cans and foil will be stored on site in suitable containers until there is sufficient to be transported for recycling.
- Plastics will be stored on site in suitable containers until there is sufficient to be transported for recycling.
- Paper and cardboard may be stored on site in suitable containers until there is sufficient to be transported for recycling.
- Oil and diesel will be stored in a secured area with a concrete floor that does not drain to the outside. Drums are to be in good condition and leaks and spills must be prevented. Used oil will be transported off-site and sold for recycling. A register of oil and diesel transported onto and off the site must be kept. SABS and other government standards and regulations must be followed with respect to the storage of diesel.

Waste food will be separated and stored in suitable containers for collection by a local pig farmer on a regular basis. Alternately, it may be disposed of at a permitted waste site or incinerated.

Wood will be stored in a specially designated area that is also suitably protected from becoming a fire hazard.

Any waste that cannot be recycled or sold must be disposed of at a permitted waste disposal site.

APPENDIX F

RELEVANT ENVIRONMENTAL LEGISLATION FOR DEVELOPMENT

PROCEDURE FOR ENVIRONMENTAL LICENCING

According to the Article 26 of the Law on Investment in Mozambique (Law No 3/93 of 24th June 1993), investors, and subsequently their companies, shall, in the process of elaboration, implementation and operation of their investment projects, carry out and submit the relevant studies and evaluations of the environmental impact and of any pollution and sanitation concerns that may result from their activities and the damages and/or wastes of their undertakings.

Such studies and evaluations shall include any potential effects and/or implications on forest, geological and hydrological resources, whether within their area of concession or close to the peripheries of the areas in which the undertaking is being or is to be implemented and operated.

It shall also be the responsibility of said investors and companies to undertake appropriate measures for the prevention and minimization of any negative environmental effects, particularly those identified in the environmental impact studies, and subject to observance of the rules and guidelines issued by the competent authorities in this field, and in conformity with any legal provisions and any terms specified in the licence granted for the operation of the activity.

To obtain the environmental licence, the following steps must be followed:

(1.) Proponent shall submit the activity proposal to the Investment Promotion Centre (CPI) using the "Project Application Form" (Annex A), which can be obtained at CPI or at the Ministry of Tourism. This proposal shall contain the information defined on the form "Information for Pre-assessment Form" (Annex B). This proposal will have to contain three activity location alternatives.

(2.) CPI or the Ministry of Tourism will send the proposal to the Ministry for the Coordination of Environmental Affairs (MICOA), which will be subjected to pre-assessment.

(3.) Once pre-assessment is complete, MICOA will issue a written communication to the Ministry of Tourism or CPI, informing about all the necessary procedures for the proponent.

(4.) In case an EIA is necessary, proponent shall submit the Terms of Reference (ToR) to MICOA for approval (the number of copies will be communicated on the pre-assessment phase). A more detailed description of what the ToR must contain can be seen on the Description of Environmental Impact Assessment Procedure that follows.

(5.) MICOA, in coordination with CPI and Ministry of Tourism, shall proceed to review the ToR in a period limit of 15 working days. If necessary, according to the complexity of the activity, MICOA will communicate the proponent about an extension of that period.

(6.) The Environmental Impact Assessment Report (EIAR) will be submitted to MICOA for approval before implementation of activity (number of copies required will be communicated on approval of ToR).

(7.) MICOA, in coordination with CPI and/or Ministry of Tourism, will review the EIAR, according to Decree no 76/98 of 29th December 1998 - Regulations on the Procedure for Environmental Impact Assessment.

(8.) MICOA, in coordination with CPI and/or Ministry of Tourism, will carry law enforcement, inspection and environmental audits during construction, operation and deactivation phases.

REGULATIONS ON THE PROCEDURE FOR ENVIRONMENTAL IMPACT ASSESSMENT

Decree no 76/98 of 29th December 1998

MINISTRY FOR THE COORDINATION OF ENVIRONMENTAL AFFAIRS
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The activities contained on the Regulations on the Procedure for Environmental Impact Assessment (RPEIA) appendix (see Table I), require an obligatory environmental impact study (EIS). EIS for oil and gas prospection, research and production and for the mining industry shall be governed by specific regulations.

Table I: Activities that may have significant impact on the environment and which require EIS

---

1. Programmes and projects for intensive livestock and agricultural development, covering individual or cumulative areas greater than 350ha.

2. Clearing, dividing and exploiting the native vegetation cover of individual or cumulative areas greater than 100ha.

3. Hydraulic works such as dams, dikes, channels and irrigation and drainage systems.

4. High-tension electrical transmission lines with a capacity equal to or greater than 150 KV.

5. Pipelines carrying oil, gas or minerals and underwater cables with a length equal to or greater than 25Km.

6. Urban water supply sanitation systems, their piping, treatment stations and effluent disposal systems.

7. Extraction, storage, transport and processing of hydrocarbons and production of hydrocarbon derivatives.

8. Exploitation and processing of minerals.

9. Industrial and agro-industrial installations and complexes, such as: cement, steel and cooking factories, chemical products, paper and cellulose factories, pesticide factories, drinks industries, cashew nut processing, cold stores, slaughterhouses, food processing industries.

10. Thermal power stations with minimal installed capacity of 300KVA

11. Hydroelectric power stations of any capacity.

12. Ports, airports and railways that occupy an area equal to or greater than 25ha, or with a length equal to or greater than 25Km.

13. Building of new road alignments with a unit cost higher than 100.000,00USD per Km.

14. Building of new bridges with a span equal to or greater than 250m.

15. Transport, processing, storage and elimination of toxic and dangerous (including radioactive) products and residues.

16. Landfills, treatment, incineration and other forms of eliminating municipal, industrial and hospital waste.

17. Fish farming projects, with an area equal or greater than 5ha.

18. Industrial fisheries processing.

19. Programmes and projects that imply the permanent or temporary displacement of populations and communities.

20. Plans and projects for territorial development and occupation, with any purpose, including tourism.

21.Plans, programmes and projects that may affect, directly or indirectly, sensitive areas such as: coral reefs; mangroves; native forests; small islands; zones of eminent erosion, including dunes along the coastline; areas exposed to desertification; conservation or protected zones or areas; wetlands; zones where the habitat and ecosystems are in danger of extinction; zones of outstanding landscape beauty; zones of archaeological, historical and cultural value that should be preserved; zones where plant or animal species threatened with extinction are located; ground waters used for public consumption; areas for the protection of springs and water sources.

DESCRIPTION OF ENVIRONMENTAL IMPACT ASSESSMENT PROCEDURE

In order to begin the EIA procedure (See Figure A1), to promote the pre-assessment and formulate the specific terms of reference to guide the Environmental Impact Studies (EIS), the proponents shall present the following documentation to the Ministry for the Coordination of Environmental Affairs (MICOA):

- Description, location and characterization of the activity;
- Executive summary of the project;
- Data on the environment, in the place where the activity is to be implemented.

1. Pre-assessment (Screening): All activities not covered by the Regulations on the Procedure for Environmental Impact Assessment (RPEIA) appendix (Table I), and capable of causing significant environmental impact, shall be subjected to the pre-assessment undertaken by the Ministry for the Coordination of Environmental Affairs (MICOA). An analysis of the draft project concerning its potential impact is carried out to determine wether or not, an environmental impact study is necessary. Time limit for MICOA to communicate decision: five (5) working days.

2. Definition of Questions Work by Reference Group (Scoping): Stage where key impacts that require more detailed investigation are identified and Terms of Reference (ToR) for the EIS are established. Time limit for communicating decision on ToR: fifteen (15) working days.

This phase includes the following steps: (i) preparation of guidelines where objectives and proposal description are included, context and legal frame of proposal, constraints, alternatives, aspects to focus on, methodology for public participation and activity programming; (ii) Other aspects that may be reached by discussions with proponent, responsible entities for the EIA, in general with implied parties; (iii) Identification of the main worries and assessment of relevant questions by developing strategies for the solution of key questions and including information and Terms of Reference for detailed studies.

Terms of Reference ˆ Document that contains the parameters and specific data that must inform the drafting of the environmental impact study of the activity. It must be presented by the proponent for approval by the MICOA before starting on the EIA and includes: proposal precedents, context (summary of proposal, environmental assessment objectives, legal frame and institutional capacity to carry the EIA); project alternatives, project plan and programme, public and relevant institutions participation, necessary data and information, namely project and environment description and information quality; impact analysis, mitigation, compensation and monitoring; conclusions and recommendations.

3. Environmental Impact Study: Undertaking the EIS and the monitoring programme is entirely the responsibility of the proponents of the activity. It shall be presented to the MICOA in the form of a report written in Portuguese.

The EIS must contain at least the following: (a) delimitation and geographical representation of the area of influence of the activity and its reference environmental situation; (b) description of the activity and its alternatives in the planning, construction, operation and (in the case of temporary activity) de-activation stages; (c) comparison of the alternatives considered and the forecast of the future environmental situation of the area of influence in the event of adopting each alternative; (d) identification and assessment of mitigation measures; (e) undertaking, environmental management programme, including the monitoring of impacts and accident prevention and contingency plans; (f) identification of the team that drew up the study; (g) for purposes of public consultation, a non-technical summary covering the main questions dealt with and the conclusions proposed.

4. Public Participation: Process of listening to the opinions of the various sectors of civil society, including corporate or individual persons, directly, indirectly or potentially affected by the proposed activity. The public consultation period and procedures, including those for publicity and for receiving petitions, shall be made widely known by the proponent, according to the guidelines of the MICOA, so as to reach the communities affected by the project. In the public hearing, members of civil society, local government bodies, local bodies of economic associations and of education and research centers, who have some direct or indirect interest in the proposed activity, shall have the right to participate or to be represented. The final descriptive report from the public consultation shall specify the diligences undertaken, the participation that took place, the questions raised in the debates, the submissions and presentations received in due time, accompanied by the respective replies and conclusions.

5. Review of the EIS: Once the EIS has been received and compliance with the norms established in regulations has been verified, the MICOA shall undertake its technical review. During the review period, the MICOA may request data that complements the EIS on aspects of the specific terms of reference approved during the screening phase and which have not been fully dealt with. *Time limit to comunicate decision on EIS: sixty (60) working days*

6. Environmental licence: When the environmental viability of the proposed activities is proved, the respective environmental licence shall be issued. In the event of a serious objection that makes it impossible to accept the proposed activities and grant them as environmental licence, the MICOA shall take one of the following decisions:
(1) a written communication completely rejecting the proposal, with the due technical, scientific and legal explanation;
(2) a written communication on the need to introduce alterations to the proposal, indicating what alterations should be made and giving the respective technical, scientific and legal explanations. *Time limit for issuing environmental licences: up to ten (10) working days after the expiry of the period of review of the EIS.*

OTHER IMPORTANT ISSUES OF THE RPEIA

The MICOA has a system for registering environmental impact assessment consultants. Only the specialists and middle and higher-level technical staff who are registered in terms of the RPEIA may carry out the environmental impact studies in Mozambique.

Monitoring ˆ Regular and periodic measurement of the environmental variables that represent the development of the environmental impact of the activity after the project of an activity has

begun implementation (measurement prior to the start of activity constitute the basic data) in order to document alterations caused, with the aim of verifying the occurrence of the impacts envisaged and the effectiveness of mitigation measures.

Inspections and audits. The MICOA shall undertake regular inspection of the monitoring and environmental management work of the activity by the proponent, in order to ensure the quality of the environment. It may request an environmental impact audit or undertake environmental inspections. when the complexity of the environmental control questions justify so doing.

Environmental licence fees. The following fees shall be paid: (a) licensing of projects up to a value equivalent to one million USD, 1.000.000,00 MZM; (b) licensing of projects with a value equivalent to between one and two million USD, 2.000.000,00 MZM; (c) licensing of projects with a value equivalent to between two and ten million USD, 3.000.000,00 MZM; (e) licensing of projects with a value equivalent to more than ten million USD, 5.000.000,00 MZM.

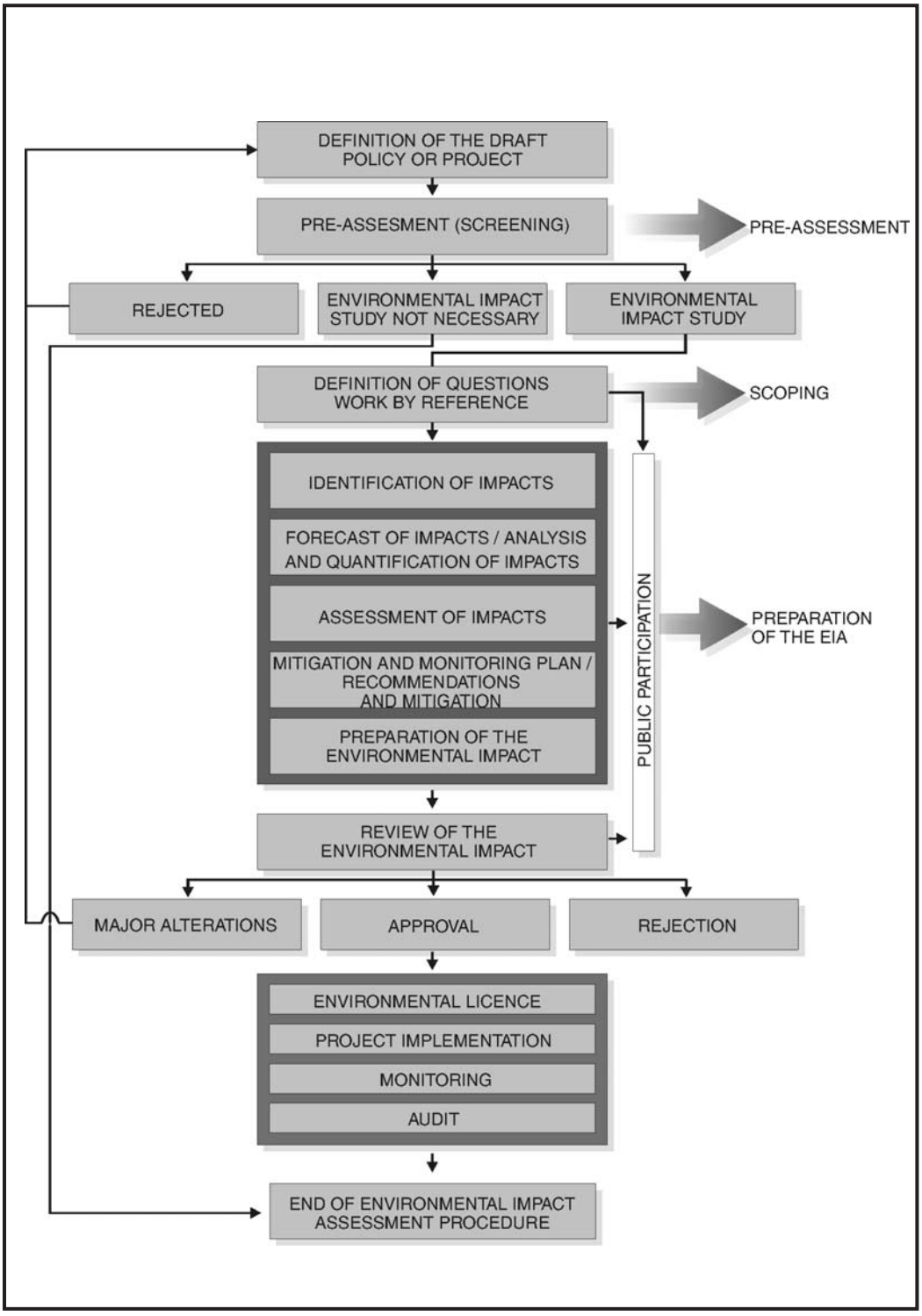

Figure A1: *Environmental Impact Assessment Procedure*

ENVIRONMENTAL INFORMATION FOR PRE- ASSESSMENT OF
DEVELOPMENT PROJECTS FORM

1. ACTIVITY NAME:

2. KIND OF ACTIVITY:
   a) Tourist Industrial Agro-cattle raising Other (Specify)
   b) New Rehabilitation Expansion

3. IDENTIFICATION OF PROPONENT(S):

4. ADDRESS/CONTACT:

5. LOCATION OF ACTIVITY:
   Administrative Location: Village; City; Locality; District; Province
   Insertion area: Urban / Rural

6. FRAMING IN ZONING:
   Residential Area Industrial Services Green

7. ACTIVITY DESCRIPTION:
   Activity infrastructures, dimensions and installed capacity (whenever possible, attach activity infrastructure drawings and description activity):

   Associated activities:

   Short description of technology of construction and operation:

   Main and complementary activities:

   Human resources type, origin and number:

   Raw-material types, origin and quantities:

   Scientifically mentioned chemical products to be used:
   (in case of long list, show as annex)

   Water and energy types, origin and consuming rates:

   Fuels and lubricants origin and quantities to be used:

   Other necessary resources:

8. LAND POSSESSION (legal situation on acquiring physical space):

9. ALTERNATIVES FOR ACTIVITY LOCATION: (Motive for choosing the implementation area and indicating at least two alternative locations)

10. SHORT INFORMATION ABOUT LOCAL AND REGIONAL REFERENCE ENVIRONMENTAL SITUATION:

Physical characteristics of implementation activity location: Plain / Planalto / Valley / Mountain

Main Ecosystems: River / Lake / Sea / Terrestrial

Location Area: Coastal Area / Inland Area / Island

Main type of vegetation: Forest / Savanna/ Other (Specify)

Land use according to structural plan or other politics: Agriculture / Residential /

Industrial/ / Protection / Others (Specify)

Main Infrastructures existing around activity location area:

Complementary information using maps:

- Location map (suitable scale)
- Framing map of the activity in the area (suitable scale)
- Other relevant information, which may facilitate analysis of activity

DATE:

APPENDIX G

INFRASTRUCTURE DEVELOPMENT

GUIDING PRINCIPLES

- Infrastructure in the Park must be themed and must be consistent with the design criteria contained in Appendix E.
- Infrastructure development must not proceed on an ad hoc basis but should rather result from a thorough, holistic analysis of what is needed in order for the Park to function effectively and meet it primary objectives. Consideration must be given to the financial feasibility and cost effectiveness of any development, as well as on-going maintenance costs.
- All infrastructure development must be in accordance with national environmental legislation and regulations (see Appendix F).

OBJECTIVES

- To ensure that the infrastructural needs of the Park are met in order that Park management can function effectively and the Park's primary objectives can be met.

INFRASTRUCTURE REQUIRED

MASSINGIR

ENTRANCE GATE

The main entrance gate will be located at Massingir, west of the dam wall. This entrance will provide access to visitors from Maputo and the coast of Mozambique. As the biggest tourist developments are envisaged close to this entrance gate it will have to make provision for relatively large numbers of visitors once the facilities are developed. The entrance gate should be designed so that is can be built in phases (as the traffic increases the next phase could be developed).

HEAD OFFICE COMPLEX

A: The Head Office Complex will be built in close proximity of the entrance gate. This will ensure that major developments are built on the periphery of the Park. It will also facilitate the sharing of service infrastructure such as the provision of water and electricity.

OR

B: Park headquarters and service area: located north of the dam wall, west of the road. A facility in this locality would be strategically located to exercise easy access control and provide information to visitors. A suitable, previously heavily disturbed site is available. Apart from administrative facilities, the site could house stores, workshops and provide a launching facility for the Park's boat(s) used for law enforcement, monitoring and research.

The following buildings will be needed in the HQ area:

- Office building
- Storeroom facilities
- Workshop facilities
- Fuel depot
- Vehicle depot
- Staff village

Park warden and other management staff that need to be available on a 24-hour basis.

TOURISM INFRASTRUCTURE

- Boat launching ramp
- Camping site: on the northern banks of the Massingir Dam. This facility could be integrated into the Massingir Dam Resort development depending on the concession and management model for both facilities. 40 to 60 camping stands with communal ablutions. Electricity provided as part of the resort development. Access from the Massingir-Mavodse road. Aimed at the middle market, in particular anglers. Overnight stop for overland tours (whether groups or individual families).
- Recreational facility: although the need for a recreational facility for the general public (including Massingir Town) has as yet not been expressed, it is likely that this will arise over time as standards of living improve. A suitable site could be found on the banks of the Dam, in a peripheral locality, just west of the Park Head Quarters and Service area.

EDUCATION AND INFORMATION

- Information Centre

MAPAI

ENTRANCE GATE

Mapai will initially have a smaller entrance/ exit gate but it could change in time depending on development in the Support Zone.

REGIONAL RANGER POST

A post for a regional ranger will also be established in this area. The following infrastructure and buildings will be required:

- Small office complex
- Workshop
- Store
- Slaughter facility
- Fuel depot

EDUCATION AND INFORMATION

- Information Centre

SHINGWEDZI

Tourism Infrastructure
Shingwedzi camping facility: overnight facility for 'overland' tours (whether groups or individual families). Maximum capacity of 10 individual camping stands within demarcated area on the eastern bank of the Shingwedzi River north of the proposed bridge. This will allow for easy access from the Massingir-Shingwedzi road. Rustic communal ablution facilities would be provided. This should not impinge on possible concession areas in the longer term, but immediate development is possible with no permanent footprint.

TRANSBOUNDARY ENTRANCES

It will be necessary to establish at least three transboundary crossings between the KNP and the LNP. The crossings will be based at the following sites: Pafuri, Shingwedzi and Giriyondo. The following infrastructure will be required at the different crossings:

- Immigration office
- Staff accommodation
- Ablution facility for visitors

A regional ranger post will also be established at Pafuri, which will require the following additional infrastructure:

- Small office complex
- Workshop
- Store
- Slaughter facility
- Fuel depot
- Simple Information Centre

FENCES

The fence between KNP and LNP will not be dropped until priority issues relating to communities and security have been resolved. The possibility of a phased approach should be negotiated, with the northernmost section from Pafuri to the Shingwedzi being dropped once agreement has been reached by the Governments of South Africa and Mozambique and affected communities (including the Makuleke Community in the Makuleke Region of KNP). This will enable the recolonisation process, described in the Conservation Management section, to commence.

It is not proposed to fence off the Limpopo River boundary as this would jeopardise the TFCA vision by restricting animal movement. Should resident communities identify the need for fencing off of villages or lands, the location of these fences will be determined with the affected people and provision made for the necessary funding (estimates difficult at this stage), taking into account access to water by wildlife and stock.

The current 'sanctuary' fence will be kept in place until any further decisions, in consultation with residents, are taken. Animal numbers will be allowed to build up. Once it has been agreed to

populate the Shingwedzi area, the fence will be lifted in a suitable section and then put back. The enclosure will then be maintained and used for ranger training, rare species breeding and protection, as an animal introduction area when needed, etc.

FIELD RANGER STATIONS

Field ranger stations (pickets) will be required at the following points:

- Massingir district x 7
- Chicualacuala district x7
- Mabalane district x 7

Each field ranger station will require the following:

- Accommodation for 6 people (individual rooms)
- Ablution facility
- Kitchen and recreation room
- Store room

ROADS

The present road infrastructure within the LNP is very poor. It cannot provide the necessary access for tourism purposes, particularly in terms of allowing access from the KNP.

A network of roads and tracks is proposed to link the proposed development sites and to provide access to activity areas. If one wants to effectively attract a large number of tourists, most of these roads should be passable by a normal sedan vehicle (2x4) throughout the year. Whilst this might not necessarily require tarring, it will be necessary to limit dust. With the low rainfall and high temperatures, dust will be prevalent through much of the year. In particular, the alluvial soils along the Shingwedzi generate a very fine dust. It not only causes hazardous and unpleasant driving conditions, but it can also detract from the game-viewing experience as animals will tend to avoid very dusty vegetation along side the roads. The main roads must permit vehicles to pass each other safely. Design specifications should aim at maximum driving speeds below 50 km per hour.

The required road network is discussed section by section in the Tourism Concept Development Plan. It is important to note that this development will have to be phased, co-ordinated with tourism development in the Park over time and that financial feasibility studies will have to be conducted in order to ensure the sustainability of the development of such infrastructure:

The total length of the road network that will eventually be required is between 750 and 800 km. Obviously, additional tracks will be used solely for management and patrolling purposes.

In addition, it would be of strategic importance to formalise the present arrangement through Pumbe gate. A 40 km track which can easily be upgraded links Massingir Town with Pumbe Gate on the KNP border. From there there is an easy link to the S 90 tourist road north of Satara.

Access through Pumbe Gate would allow for a circular route (KNP-Pumbe-Massingir-Giriyondo-KNP) and could draw tourists from a more southerly part of the KNP. This route would also draw in privately leased land into the Transfrontier Park and would thus broaden development opportunities. All in all, there would be 4 cross-border linkages between the LNP and KNP, thereby drawing the two Parks closer together.

No provision has been made for a road on the western border of the LNP. It is important to keep in mind that a fairly high standard road exists on the KNP side, which runs parallel with or on the current border fence. It will be important to tie activities on both sides of the border into a common tourism framework. The current, popular, 4x4 eco-trail along this boundary track is a good example of an activity that will benefit from integration into the two Parks.

Two important bridges are required. The first one is vital to cross the Shingwedzi river in the upper two-thirds of the Shingwedzi Valley. This will need to be a high-water bridge that must allow passage at all times in view of the importance of this road axis. The second bridge along the Shingwedzi is close to its confluence with the Olifants River. It is of lesser strategic importance and a less expensive crossing can be engineered. A number of other bridges will be required, for example to cross the Madonse River, which is a tributary of the Shingwedzi.

AIRSTRIPS

The airstrip outside Massingir Town appears to be in a reasonably good condition although it will need to be resurfaced to allow use by jet aircraft. It will in all likelihood play an important role in the ferrying of guests to and from the Dam developments. It will be necessary to address customs and immigration issues to achieve a 'gateway' that enables international visitors to fly directly to their destination.[1] Experience with the international market suggests that international guests do not want a vehicle drive longer than 1 hour from arrival to destination.[2] The three lodge sites in the Shingwedzi valley are between 2 and 3 hours drive (on a good road) from Massingir. The existing grass airstrip near the present Gaza Camp will therefore be attractive to the operator of the Upper-Shingwedzi lodge. A second grass strip could be developed on the boundary of the Nwgenya and Madonse concession areas to service both these lodges (Fig. X5). Operational rules in terms of flying paths and heights will need to be specified in order to safeguard the wilderness experience of the central areas and Lebombo mountains.

POWER

The Dam Resort would need to be electrified. The total length of an overhead line from Massingir town is ca. 20 km. The feasibility (costs, ecological and aesthetic criteria) of supplying electricity to the proposed lodge sites will need to be assessed. It is unlikely that overhead powerlines can be effectively and sensitively run to the Upper Shingwezi, Ngwenya and Madonse sites.

WATER

Boreholes will be used to supply water to tourism and Park infrastructure developments.

[1] Peace Parks Foundation. Annual Review 2001
[2] Mr P Fernhead, SanParks. Personal communications. Maputo workshop, discussion of the first draft of the Concept Tourism Development Plan, 4 June 2002

MINISTÉRIO DO TURISMO
Direcção Nacional de Âreas de Conservação

PARQUE NACIONAL DO

Limpopo

NATIONAL PARK

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MOÇAMBIQUE