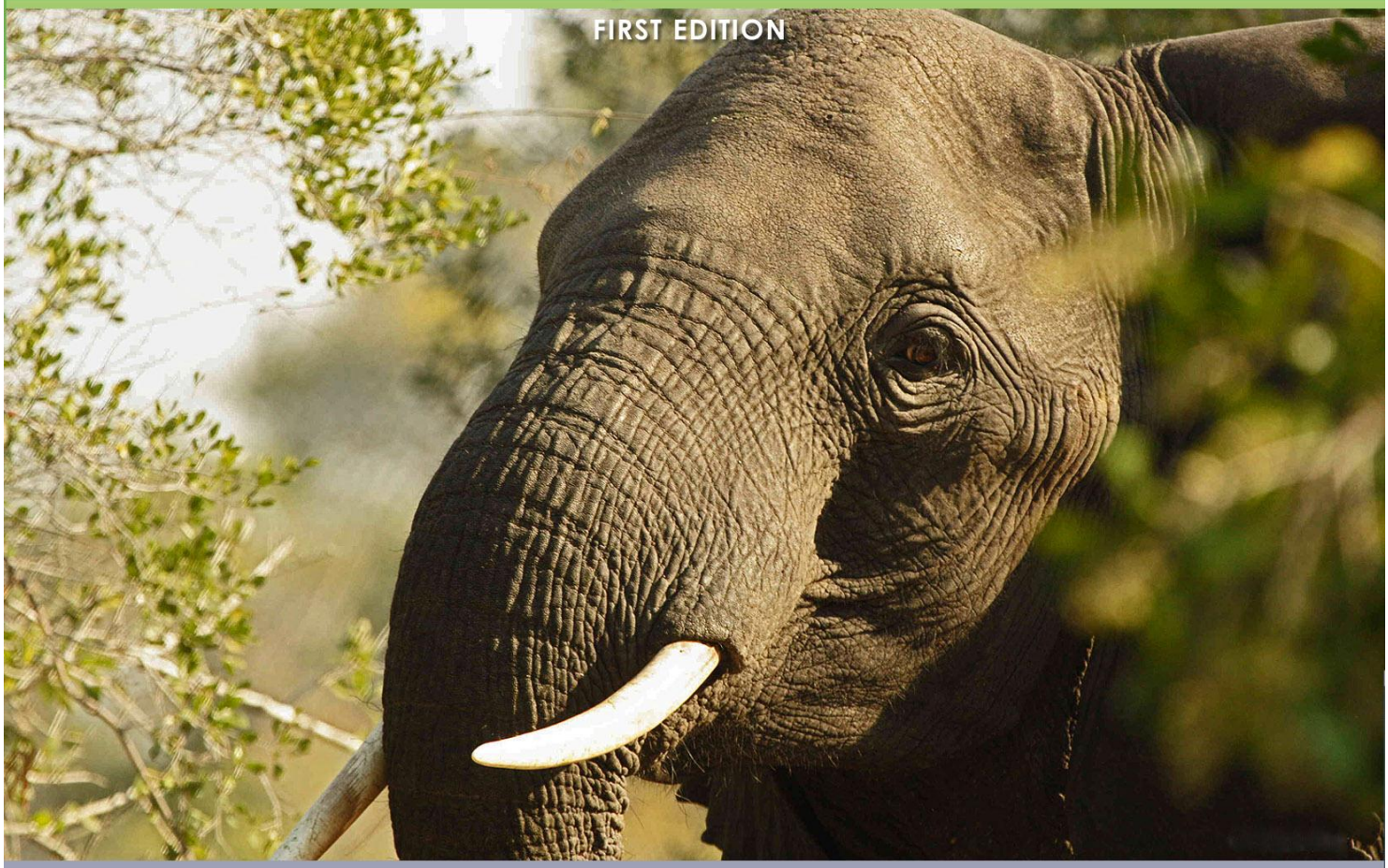
Maputo Special Reserve
Management Plan

FIRST EDITION



Maputaland Component
Lubombo Transfrontier Conservation Area

Facilitated by:

Maputaland Component of the Lubombo Transfrontier Conservation Area

Maputo Special Reserve

Management Plan

First Edition

Compiled for:

The Republic of Mozambique, Ministry of Tourism

National Directorate of Conservation Areas

Facilitated by:

Peace Parks Foundation

Sponsored by:

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REPÚBLICA DE MOÇAMBIQUE
MINISTÉRIO DO TURISMO

DESPACHO

A Reserva Especial de Maputo é uma zona de protecção dos recursos florestais e faunísticos destinada à conservação da biodiversidade e garantia da continuação dos processos ecológicos e preservação dos ecossistemas.

Impõe-se que a gestão de uma Reserva Nacional deva ser feita de acordo com um plano de maneio 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 gestão e maneio de recursos naturais na Reserva Especial de Maputo, ao abrigo do n.º 5 do artigo 10 da Lei n.º 10/99 de 7 de Julho, conjugado com o n.º 2 do artigo 87 do Decreto n.º 12/2002 de 6 de Junho, determino:

1. É aprovado o Plano de Maneio da Reserva Especial de Maputo para o período de 2011 a 2016, que é parte integrante do presente despacho.

2. O presente despacho produz efeitos imediatos.

Ministério do Turismo em Maputo, 4 de Fevereiro de 2011

O Ministro do Turismo

Fernando Sumbana Júnior

ACKNOWLEDGEMENTS

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ABBREVIATIONS/ACRONYMS

AUDI	Access, Use, Development and Infrastructure
CAP	Community Action Plan
CCA	Community Conservation Area
CEC	Current Environmental Character
CHM	Cultural Heritage Management
CMBMP	Coastal and Marine Biodiversity Project
CPPPs	Community Public Private Partnership
DNAC	National Directorate of Conservation Areas
DNFFB	National Directorate of Forestry and Wildlife
GoM	Government of Mozambique
IFC	International Finance Corporation
INAMAR	National Maritime Institute
IUCN	International Union for the Conservation of Nature
KPA	Key Performance Area
LTFCA	Lubombo Transfrontier Conservation Area
MICOA	Ministry of Coordination and Environmental Affairs
MITUR	Ministry of Tourism
MPA	Marine Protected Area
MSR	Maputo Special Reserve
NGO	Non-governmental Organisation
PAMT	Protected Area Management Team
PPMR	Ponta do Ouro Partial Marine Reserve
SADC	Southern African Development Community
SPC	Strategic Plan for Commercialisation
TEP	Tembe Elephant Park
TFCA	Transfrontier Conservation Area
UEM	Eduordo Mondlane University

SECTION 1. INTRODUCTION

1.1 PURPOSE OF THE DOCUMENT

The document contextualises the Maputo Special Reserve (MSR) (refer Map1) in terms of its position within the Maputaland component of the Lubombo Transfrontier Conservation Area (LTFCA) and provides a structured description of the study area, the place, it's people and the plan.

The purpose of this management plan for the MSR is to provide a framework for the rehabilitation and development of the MSR, and will provide guidance for management staff. This includes the integration of all donor, Non-governmental Organisation (NGO), private sector, institutional and Government of Mozambique (GoM) activities in the MSR. Annual Business Plans and project specific roll-out plans will be based on this plan. It will thus be a developing plan which will be regularly reviewed to ensure that management objectives remain relevant and management actions are continually improved.

The structure of the management plan for the MSR is based on three sections, preceded by a introduction, each portion addressing different aspects, namely:

Introduction – providing insight into the location and extent of the study area, as well as its purpose and significance as foreseen by the Mozambican Government and stakeholders. The significance that stakeholders place on the MSR are described as well as the relative contribution of the MSR study area to the Mozambican national conservation estate. An overview of the stakeholder process followed for the compilation of the plan is also provided.

The Place – provides background information necessary for the reader to understand the planning context and covers the natural, cultural, land use, social and governance environments.

The People – provides insight into the stakeholders of the MSR including the various sector groups – resource managers; business; benefit flow managers; and government.

The Plan – provides details regarding the management framework based on the vision, mission and broad objectives for the MSR, as well as specific objectives set for each of the Key Performance Areas – Biodiversity and Resource Management; Business, Benefit Flow Management and Governance. These objectives are spatially contextualised in a series of maps reflecting the Access, Use, Development, and Infrastructure requirements for the MSR.

It is envisaged that this Management Plan for the MSR will serve as a summary of the needs and expectations of the stakeholders within Mozambique, and form the basis of the support that the Government, through the National Directorate of Conservation Areas (DNAC) as the lead agency, will provide to achieving these objectives. As a broad and strategic guideline document this plan can be used as a reference for detailed conservation planning initiatives for the various tourism developments and activities that are envisaged.

1.2 MSR LOCATION AND EXTENT

The MSR and the Ponta do Ouro Partial Marine Reserve (PPMR) comprises the Mozambique contribution of the Maputoland component of the larger LTFCA, an area that stretches from Inhaca Island in the north to south of the Tembe Elephant Park. It runs from the PPMR in the east, to the Usuthu Gorge Community Conservation Area in the west.

Conservation areas, other than the MSR and PPMR, thus include *inter alia*:

- Inhaca Island Reserve (Marine and Terrestrial Components) including the following special protected areas:
  - Barreira Vermelha;
  - Inguane;
  - Portuguese Island;
  - Inhaquene; and
  - Ponta Torres;
- Coastal Forest Reserve;
- Tembe Elephant Park;
- Seleza Nature Reserve;
- iSimangaliso World Heritage Site; and
- Ndumu Game Reserve.

Community Conservation Areas (CCA) within the surrounding area include:

- Tshanini;
- Bhekabantu; and
- Usuthu Gorge.

The MSR and PPMR have been planned collectively, yet detailed plans have been prepared for each. Together, these key conservation areas constitute an integrated protected area aimed at conserving and protecting the natural and cultural resources inherent to the region, as well as contribute to the attainment of national conservation targets within Mozambique (refer Figure 1).

MSR itself is composed of two main areas being the Core Area and the Futi Corridor.

The MSR lies in the Matutuine District of Maputo Province in Southern Mozambique, south of Machangulo Peninsula (refer Map 2). Its current boundaries are the Maputo Bay in the north; the Indian Ocean to the east; the Maputo River, the Futi River and a line 2 km east of the Salamanga- Ponta do Ouro road in the west, and the southern end of Lake Xingute and the southern restriction of Lake Piti in the south.

Originally declared as the Maputo Elephant Reserve, where its conservation objective was specifically related to the conservation of elephants. After the introduction of other species, and upon realisation of the biodiversity value of the MSR, on August 9th 1969 it was renamed by legislative decree to be the Maputo Special Reserve. Under Mozambican legislation Special Reserves are areas designated for the protection of more than one species of animals or plants, and where hunting is prohibited.

The Futi Corridor, linking the core area of the MSR within Mozambique with the Tembe Elephant Park within South Africa, lies between the Rio Maputo in the west and the Indian Ocean in the east and its main objective is to serve as ecological linkage aimed at extended wildlife and habitat management. The Futi Corridor is expecting proclamation imminently.

MSR must be seen as core area within the regional land use context that focuses on conservation (refer to the Concept Development Plan – Use Map, Map 46), including game farming concessions and other compatible land use.

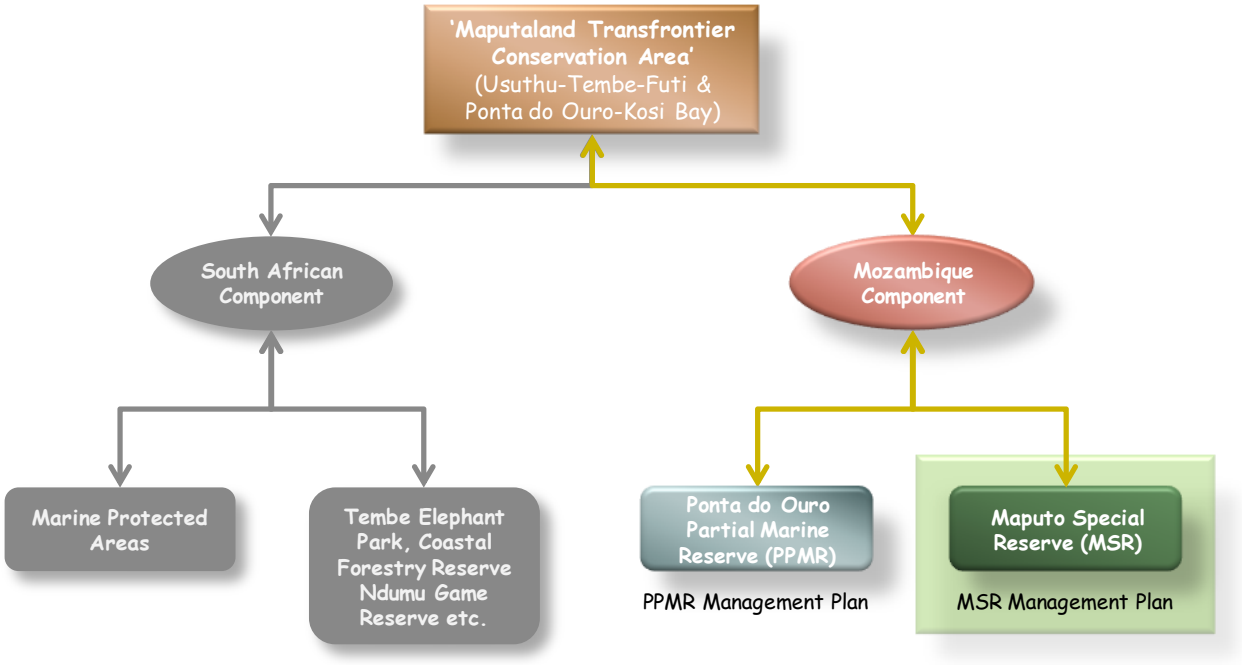


Figure 1: MSR Context

Map 1: Regional Study Area – TFCA Scope

Map 2: Study Area

1.3 PURPOSE AND SIGNIFICANCE OF THE RESERVE

The MSR was originally established to protect the elephant population in the area. Its purpose in the 1960s was expanded to include the protection of other large mammal species and again in the 1990s, the growing recognition of its wider biodiversity importance.

The purpose of the MSR is now regarded as ***to contribute to the protected areas system of Mozambique by conserving the exceptional biodiversity of this coastal zone which lies in the Tongaland-Pondoland bio-geographical region and enables linkages between marine, coastal and inland components***.

The significant attributes of the MSR are outlined below:

Maputaland Center of Plant Endemism: the MSR is situated within this center of globally significant plant endemism, one of only four identified in southern Africa. The MSR lies in a strategic position at the southern limit of the tropics where many species are at the southern limit of their range, and also contains species from more temperate zones to the south. The status of endemics found in the MSR is poorly known, but by extrapolation from similar areas nearby, endemism is likely to be high;

Plant community diversity: the MSR supports an impressive variety and combination of terrestrial plant communities and ecosystems, some of which are not protected elsewhere in southern Africa. They include floodplain, savanna, mangrove, swamp forest, dry licuati forest and woodlands on sand, coastal dune forest, dry grasslands, and hygrophilous grasslands (fresh and saline). Associated with this is likely to be a high species richness, not yet fully inventorised;

Wetland communities of international significance: the Reserve and the PPMR contain a diverse variety and extensive system of wetland communities, including riverine and estuarine communities, sea grass beds, mangrove, saline and freshwater hygrophilous grasslands, reed and sedge beds, swamp forest, fresh and saline coastal lake systems, and marine shoreline with sandstone reefs supporting the sub-region's most diverse coral communities. The MSR would qualify under the RAMSAR Convention as a wetland site of international significance, should Mozambique become a signatory to the Convention;

Fish: the MSR supports at least three fish species which are endemic or near endemic to the Maputaland Center of Plant Endemism;

Reptile populations: The MSR contains a healthy population of Nile crocodiles and the coastline of the PPMR is an important nesting site for leatherback and loggerhead turtles. All these species are currently on CITES Appendix 1. Levels of endemism are high, especially in fossorial (burrowing) species in the dune forests;

Birds: the MSR supports a wide variety of bird species due to its broad range of habitat types, including several that are CITES listed, and three species and 47 subspecies which are near-endemic to the Maputaland Center;

Large mammal populations: the MSR contains a breeding population of over 350 elephant, concentrated in the north-western part of the MSR. This is the last remaining large population of elephant in Maputo Province, and the most southerly in Mozambique. It is suspected that, together with the Tembe Elephant Park population, these elephants constitute a genetically distinct population. Historically, the MSR supported a wide range of species, protecting populations of national importance;

Scenic beauty: the MSR and PPMR encompasses land- and seascapes of exceptional beauty. The former include extensive vistas of an undulating landscape of marshes, grassland, woodland and forest capped ridges, while the latter comprise turquoise seas and white sand beaches bounded by forested coastal dunes;

Sacred and cultural sites: a number of sacred burial and ceremonial sites of great significance to current and past residents of the area exist within the boundaries of the MSR;

Strategically situated tourist destination: situated close to Maputo and its international airport, South Africa and Swaziland, the MSR is well positioned to potentially receive national and international tourists;

Environmental education: proximity to Maputo and district centers and relatively easy accessibility, coupled with its distinctive natural features, gives the MSR excellent potential for environmental education at all levels; and

Natural resources in the MSR currently form a very important part of the subsistence of resident and adjacent communities. These include fish, honey, building materials (poles, grass and reeds), wild food plants, medicinal plants and game. Small but significant areas are cultivated inside the MSR. Some resources such as mangrove produce, game meat and fish are removed by non-residents.

The Maputaland Center of Plant Endemism is a region of approximately 17,000km^2 that falls within Mozambique, South Africa and Swaziland. The region contains high levels of species richness and also contains the iSimangaliso World Heritage Site. People have relied on harvesting natural resources to support their livelihoods and this has helped maintain its biodiversity.

This center contains at least 2500 plant species of which 225 species and three genera are endemic or near-endemic. It is also associated with an outstanding diversity of fauna that also includes many endemic species in both vertebrate and invertebrate groups, for example,

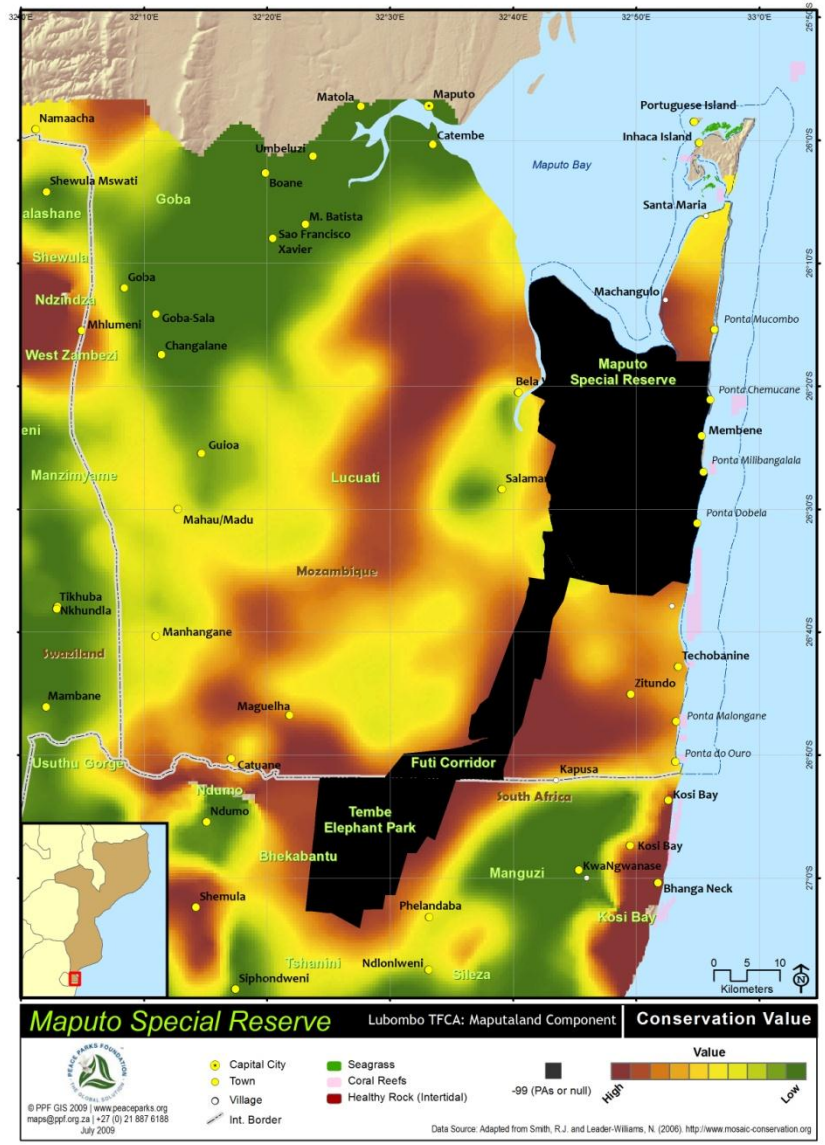
- 472 species of birds of which five species and 43 subspecies are endemic or near endemics,
- 102 mammals with 14 endemic species and subspecies,
- 112 reptile species and subspecies with 23 species being endemic,
- 45 frogs with three species that are endemic, and
- 67 fish with eight species that are endemic.

The Maputoland Center is unique when compared to other such centers given that the high number of endemic species is spread over almost the whole taxonomic spectrum. It is critical in terms of the prescripts of the IUCN's Convention on Biological Diversity that Centers of Endemism are identified and recognised by conservation authorities. It is these areas that become a priority for the implementation of a strategy and measures by authorities to protect and safeguard these elements of biodiversity.

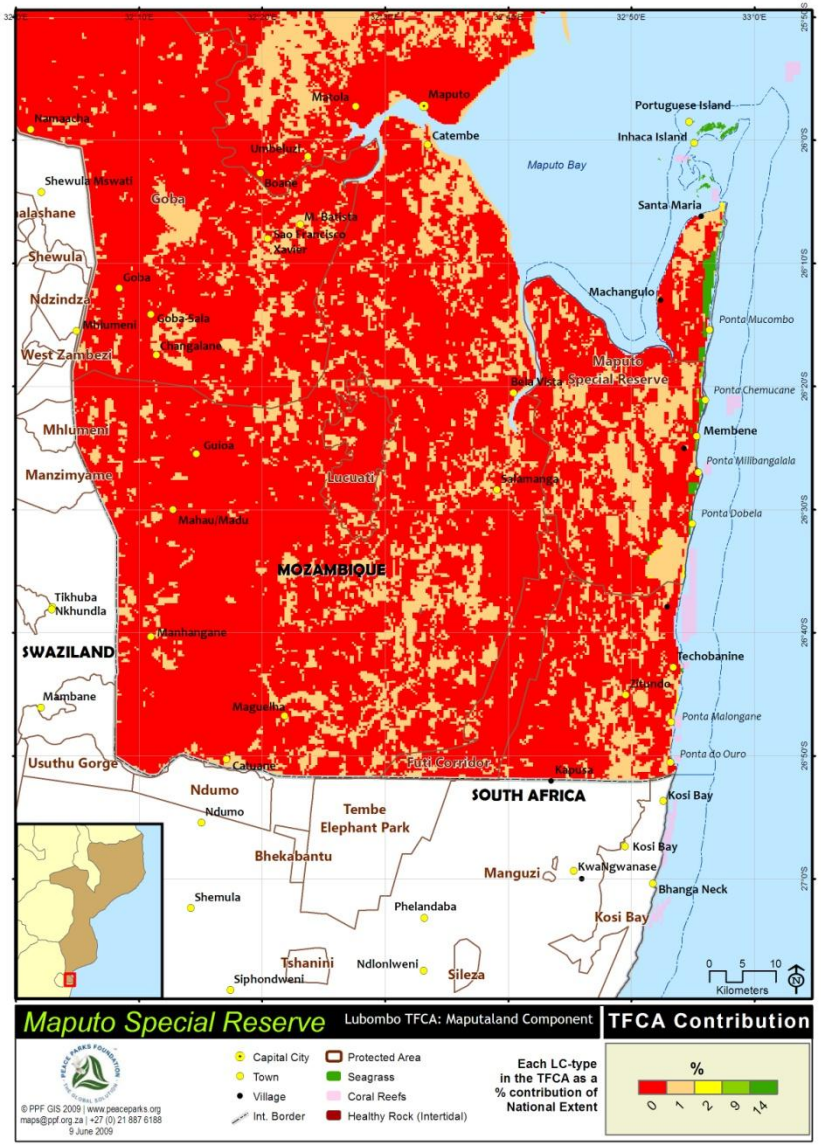
From a conservation perspective, the MSR with its potential ecological linkage to the Tembe Elephant Park in South Africa is critical to attaining specific conservation targets within Maputaland, yet based on threats by incompatible land uses such as agriculture areas of conservation concern remain in the area, including the Machungulo Peninsula, the Licuati Forests to the west of the protected area and the area to the east of the southern portion of the Futi Corridor (refer Map 2).

Within the region the largest threats are to the sand forests and the areas to the east of the Futi Corridor, and further afield to the areas surrounding the city of Maputo. Maps 3-10 show the threat and protection status of specific land cover types within the region surrounding the MSR as well as the Country context.

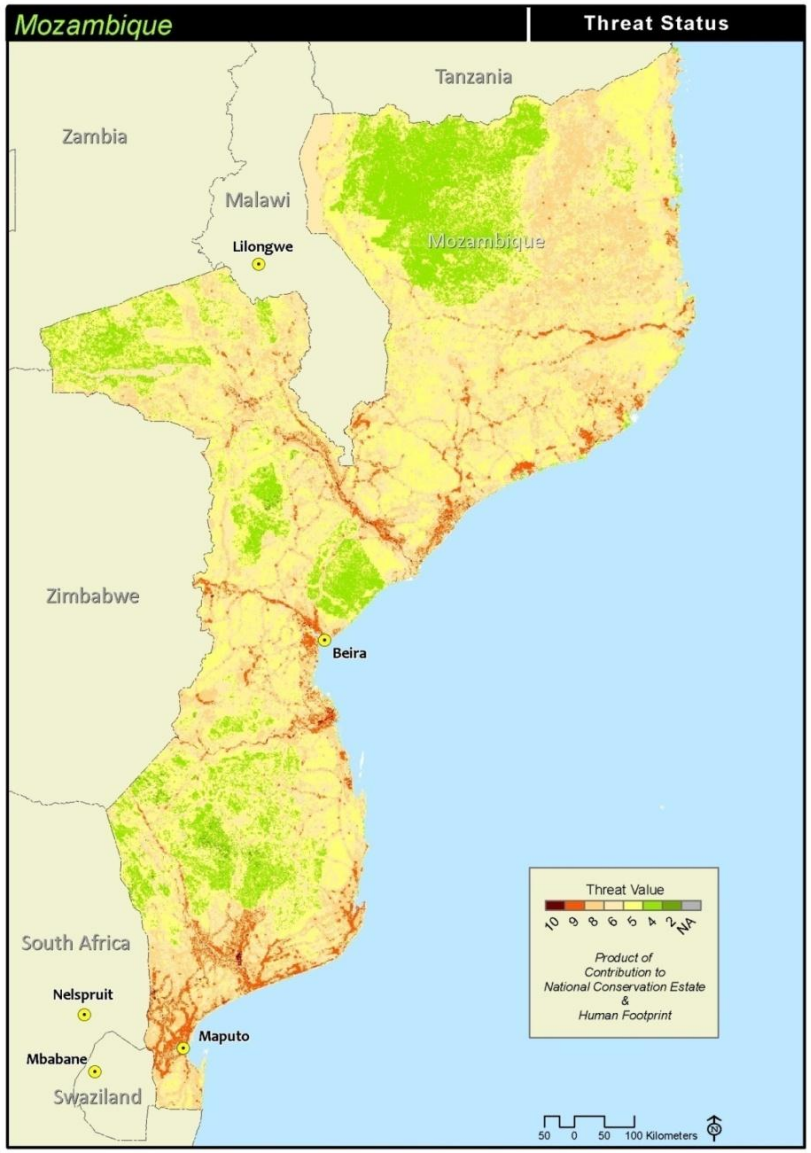
Lake Piti is prominent on the threat status map for the area, while the relative contribution of the protected area in terms of its protection status as a percentage to the national conservation estate is evident, despite the relatively small size of the protected area on a national scale.



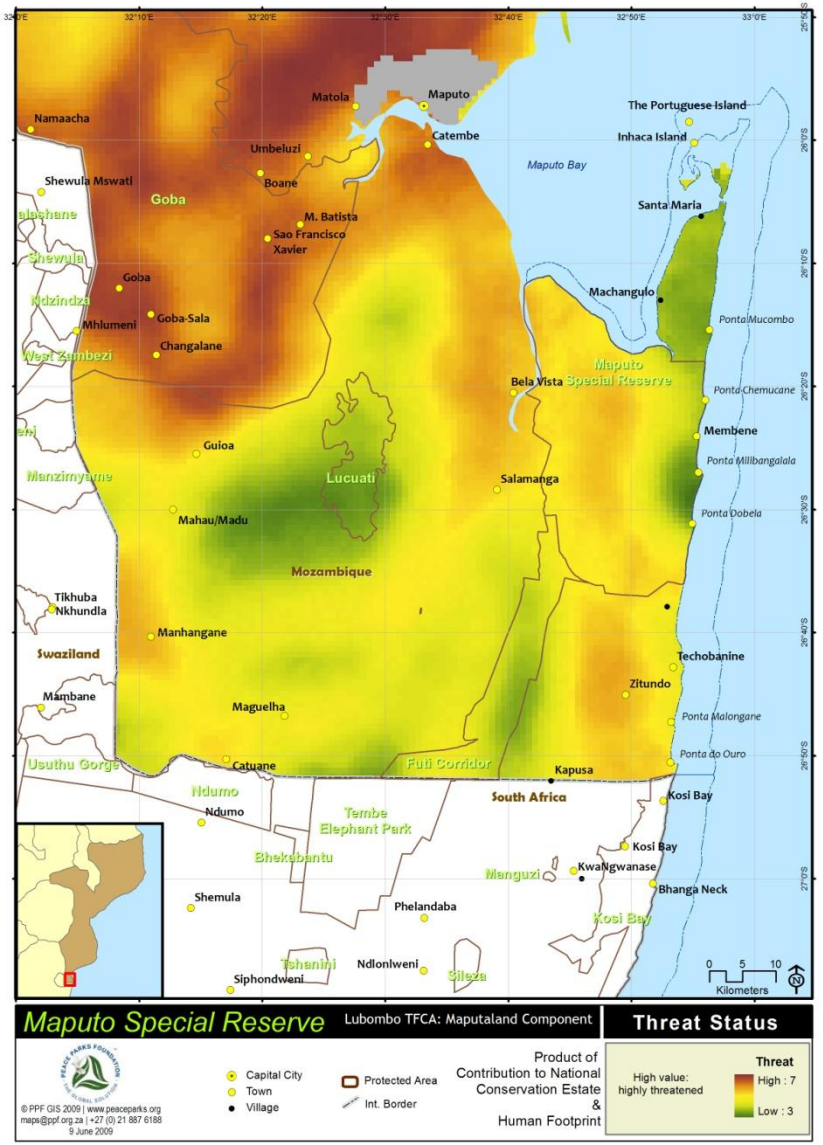
Map 3: Irreplacibililty (according to Smith)



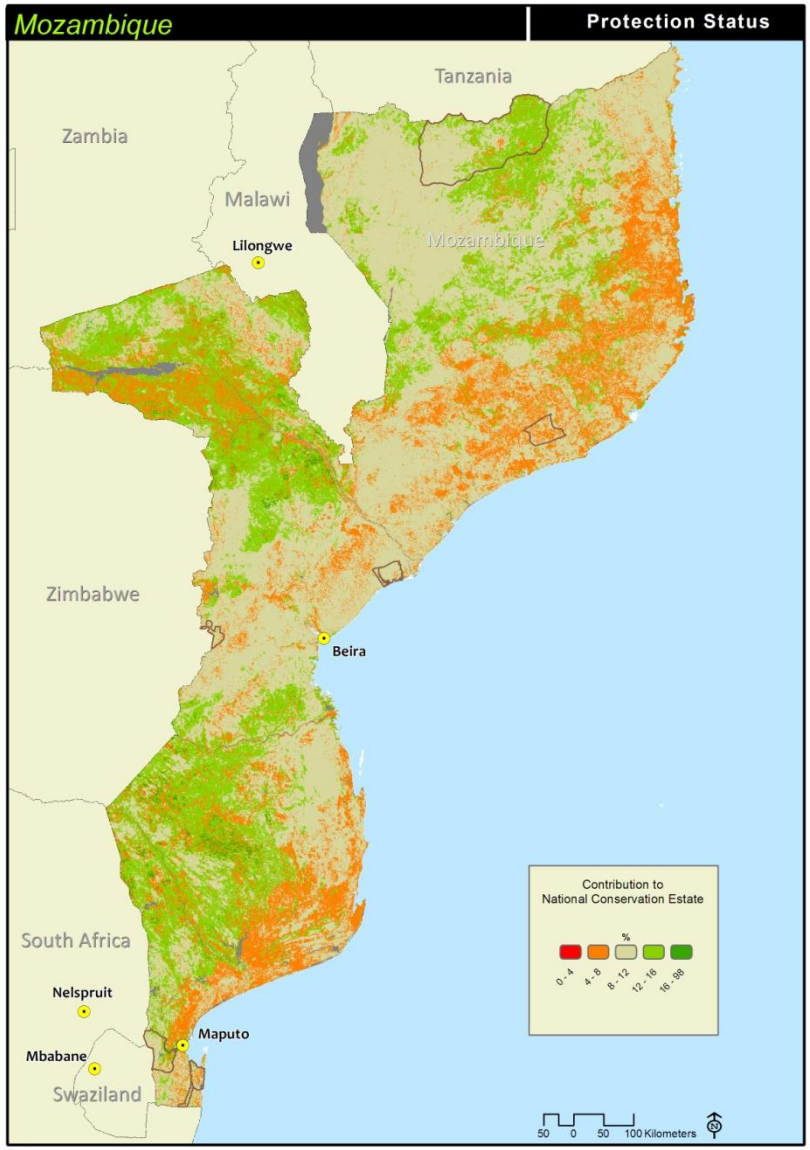
Map 4: TFCA Contribution



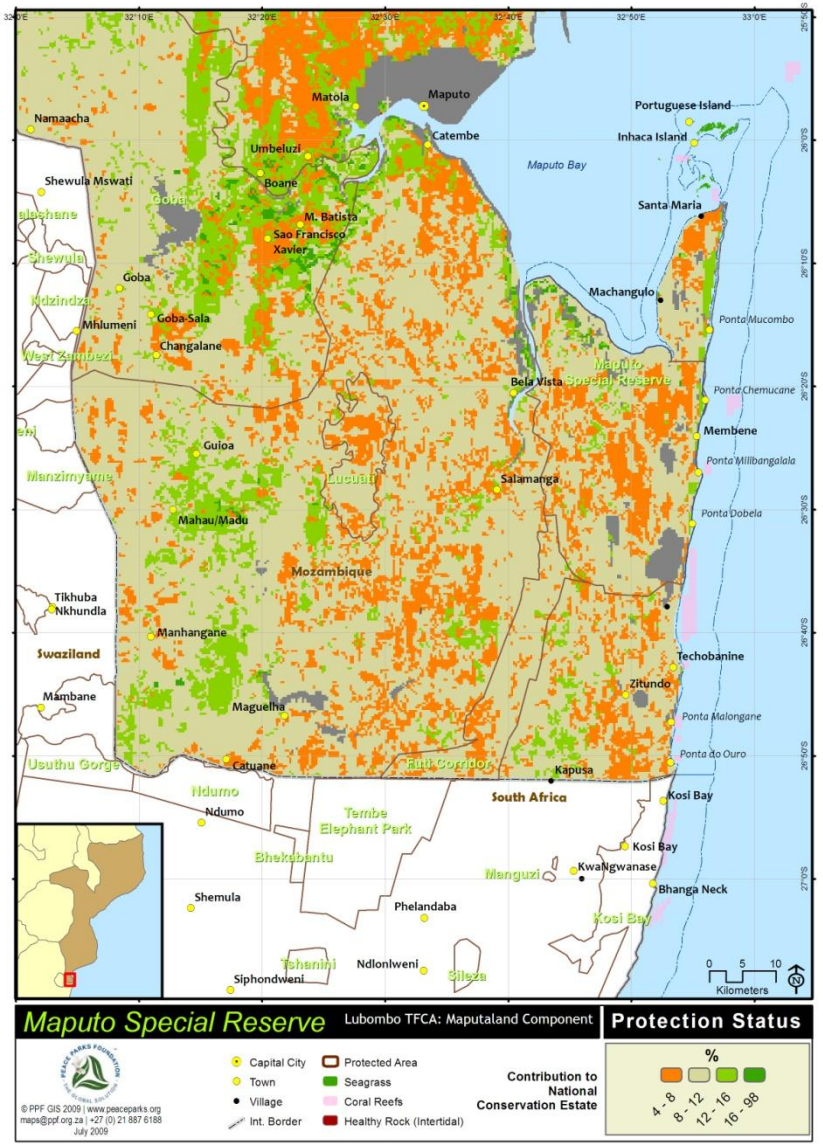
Map 5: National Threat Status



Map 6: Local Threat Status



Map 7: National Protection Status



Map 8: Local Protection Status

Map 9: National Land Cover

Map 10: Local Land Cover

1.4 STAKEHOLDER CONSULTATION PROCESS

The Management Plan for MSR has been compiled based on various stakeholder meetings and deliberations (refer Figure 2). The preparation of the initial draft of the document was a collaborative initiative by numerous institutions and expert individuals who provided information, documentation and advice.

The initial draft was discussed with stakeholders on 18 December 2009 followed by the following Community Consultation Meetings for collection of observations and comments:

- Buingane, 27 January 2010;
- Lihundo, 27 January 2010;
- Tchia, 29 January 2010;
- Guengo-Mucule, 2 February 2010;
- Matchia, 4 February 2010;
- Tsolombane, 10 February 2010;
- Massuane, 12 February 2010;
- Ponta do Ouro, 16 February 2010;
- Phuza, Ponta Malongane, Ponta Mamoli, Zitundo, 17 February 2010;
- Machangulo, Tikalala, Mhala, Ngomene, Ndelane, Nhonguane, Chivambo, Tchavane, 17 February 2010; and
- Mabuluco, Madjadjane and Muvukuza, 19 February 2010.

A final stakeholder meeting was held on 12 March 2010 where feedback on the review process was provided. During the review period informal discussions took place with various individual operators and Park Management.

The final plan for submission and approval by the Minister of Tourism was prepared after Park Management and experts meetings held during April and May 2010.

The stakeholder consultation process including a comments register and documentation relating to engagements are contained in a separate report – *MSR and PPMR Management Plans Consultation and Review Report, May 2010*.

Figure 2: Consultation Process

SECTION 2. THE PLACE

2.1 NATURAL ENVIRONMENT

Within this section on the natural environment the following is discussed:

- Geology and Geomorphology;
- Elevation;
- Slope;
- Soils;
- Climate;
- Hydrology; and
- Habitats.

2.1.1 Geology and Geomorphology

Maputaland comprises almost entirely of nearly flat low-level coastal plain, the maximum elevation of which is of the order of 150m, and forms part of the Zululand coastal plain extending northwards into Mozambique. To the west of Maputaland proper, however, the Lebombo range rises to an elevation of some 600m from the stratification of its mother rocks consisting of four categories, i.e. Stormberg Rhyolites, Cretaceous Sediments, Tertiary Sediments and Pleistonecene and Recent Sediments (refer Map 11 and Figure 3).

The coast is straight and without the shelter of large bays, consisting primarily of extensive sandy beaches with well-vegetated sand dunes, and is thus exposed to the full force of the elements. The sandy beaches are interspersed with occasional rocky headlands.

The coastline typified by asymmetrical base at the ends of which are platforms of Pleistocene sandstone which project from the land in a north-easterly direction in to the sea (Pereira 2003).

The wind system, responsible for the sea surface currents together with the other factors like tides, influence the circulation of the bay and it may determine the transport and distribution of the different marine species in the area. The predominant winds are from the SE, although winds from NE occur. The average monthly speed is about $2ms^{-1}$, in the winter and $4ms^{-1}$, in the summer. The winds are weak between March and July.

Sandbanks and channels are found in the bay. The majority area of the bay is 10m deep apart from some channels that are over 15m. The sandbanks cover an area of about $381km^2$. The bottom is sandy in the side connected to the sea, eastern, and muddy in the western side. This may determine the composition of benthonic species. There are also rocks, stones and dead corals. During neap tide, juveniles of some species find protection from the sunrays and the wind in the rocks and dead corals.

Mangroves are the most important ecosystem that influences the dynamic of the bay. There are about 11.150ha of mangrove swamps. Out of this, 270ha are in the Inhaca Island (Kalk, 1995). The Inhaca mangroves can be considered the typical of the bay area. The mangroves channels are rich in the organic matter and are known as nursery for many species of penaideos, like Penaeus indicus, P. monodon and Metapenaeus monoceros (Kalk, 1995).

2.1.2 Elevation

Within the study area the altitudinal variation ranges from sea level to 194m above sea, with the higher areas characterised by dunes on the eastern, seaward side of the Reserve and the lower areas on the floodplain of the Maputo River on the western side of the Reserve (refer Map 12).

2.1.3 Slope and Aspect

MSR encompasses land- and seascapes of exceptional beauty. The former include extensive vistas of an undulating landscape of marshes, grassland, woodland and forest capped ridges, while the latter comprise turquoise seas and white sand beaches bounded by forested coastal dunes (refer Maps 13 and 14).

2.1.4 Soils

Three soil types dominate the MSR, namely:

- *Albic Arenosols:* sandy
- *Protic Arenosols:* very sandy
- *Molli-Gleyic Fluvisols:* loamy.

Derived from the Latin word *arena,* the arenosols are characterised by deeply bleached surface soils extending below 100cm from the surface, and are permeable to water. The principle minerals within the arenosols, both the sand and silt fractions, are quartz and feldspars. These soils are associated with ancient sand dunes and show minimal soil formation.

The Molli-Gleyic soils are loamy in texture and have higher silt content mainly as a result of fluvial deposits from the Maputo and Futi rivers (refer Maps 15 and 16).

2.1.5 Climate

The climate of the MSR is characterised by a warm wet summer (October-March with temperatures varying between 26°C and 30°C) and by a cool dry winter (April – September with temperatures varying between 14°C and 26°C).

Average annual rainfall varies between 690-1000mm.

The most striking feature of the climate of Maputaland is the variation of rainfall across the area in an east to west or inland direction. Near the coast, in the east of the region, rainfall averages 1000 to 1100mm annually, but this declines progressively inland or westward to only some 600mm annually at the western margin of the region, at the foot of the Lebombo Range which rises above it a short distance to the west. On the crest of the Lebombo Range itself, the rainfall again increases to some 800mm annually, rapidly decreasing westwards (refer Maps 17-20).

2.1.6 Hydrology

Characterised by the existence of three main Rivers, the Futi, Maputo and Tembe with diverse lagoons of which Piti, Chingute and Mundi are most important (Tello,1973, refer Map 21).

The wetlands of the MSR, Machangulo and vigilance area are of important local, national and international significance. This is possibly the most intensively cultivated area of the region, consequently most of the vegetation is disturbed. The best examples today are in the Ndumu Game Reserve where the various communities have been described. Along most of the Pongolo River and Mkuze River courses the remains of a wood fringe of tall trees, up to 35m high, with such species as *Ficus sycomorus, Rauvolfia caffra and Syzygium guineense* occurs. Also common are shorter woody plants, particularly *Ficus capreifolia* which still forms extensive fringing communities in certain localities. On the floodplain itself common *Trichilia emetic, Kigelia Africana* and *Acacia albida.* The pans which are common in the floodplain particularly in the northern sector of the region, generally surrounded by *Acacia xathophloea* tree communities, beneath which there is usually a dense swad of stoloniferous grasses such as *Cynodon, Sporobolus* and *Digitaria*.

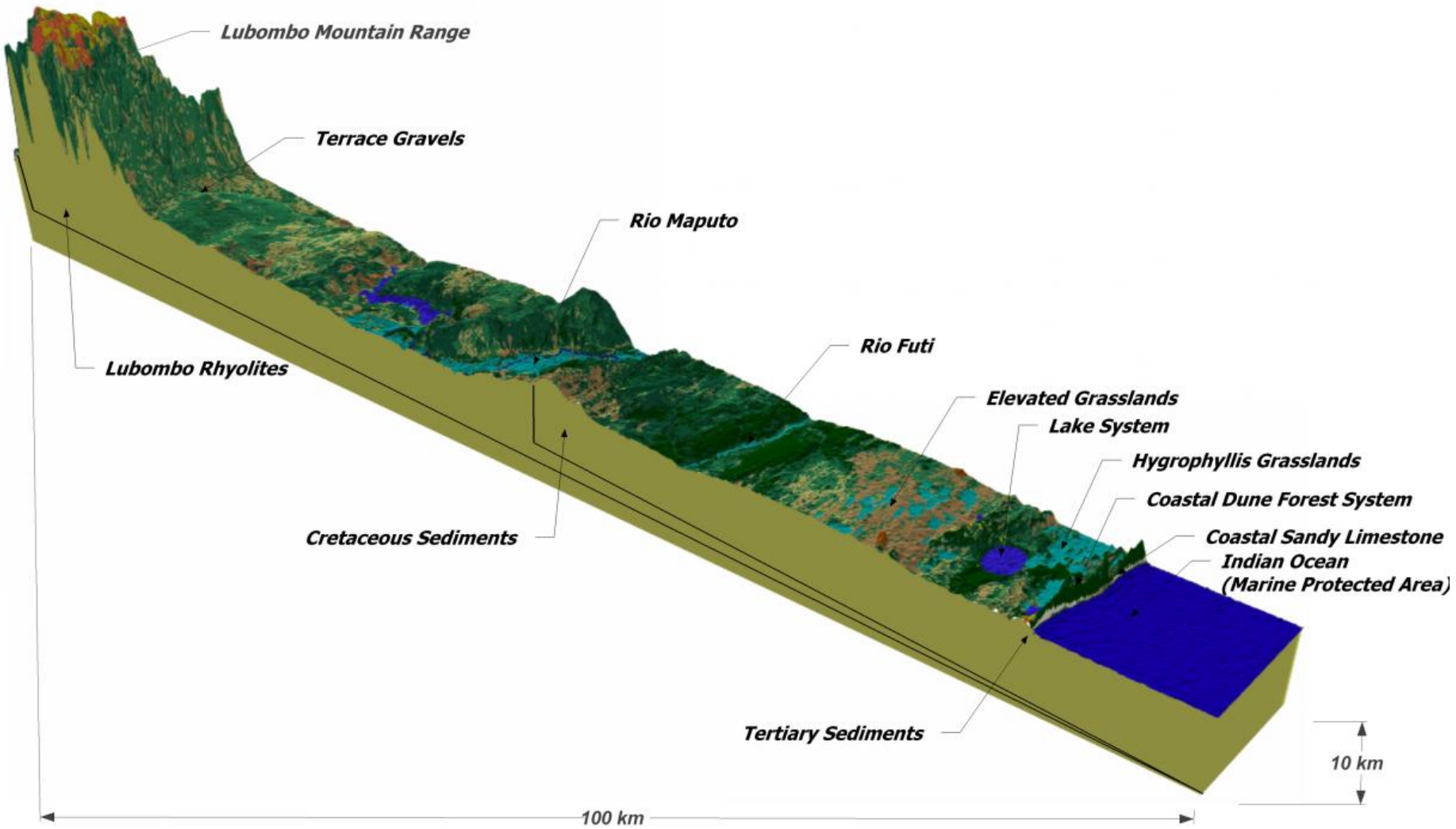
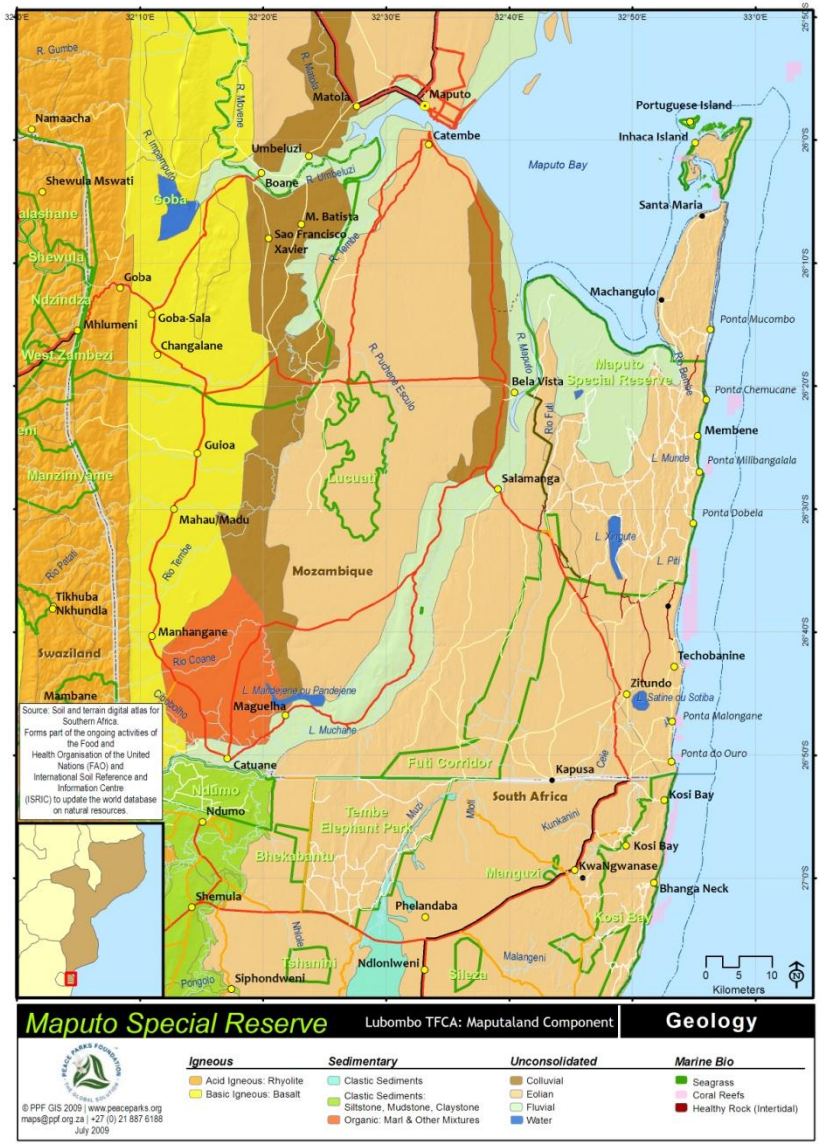
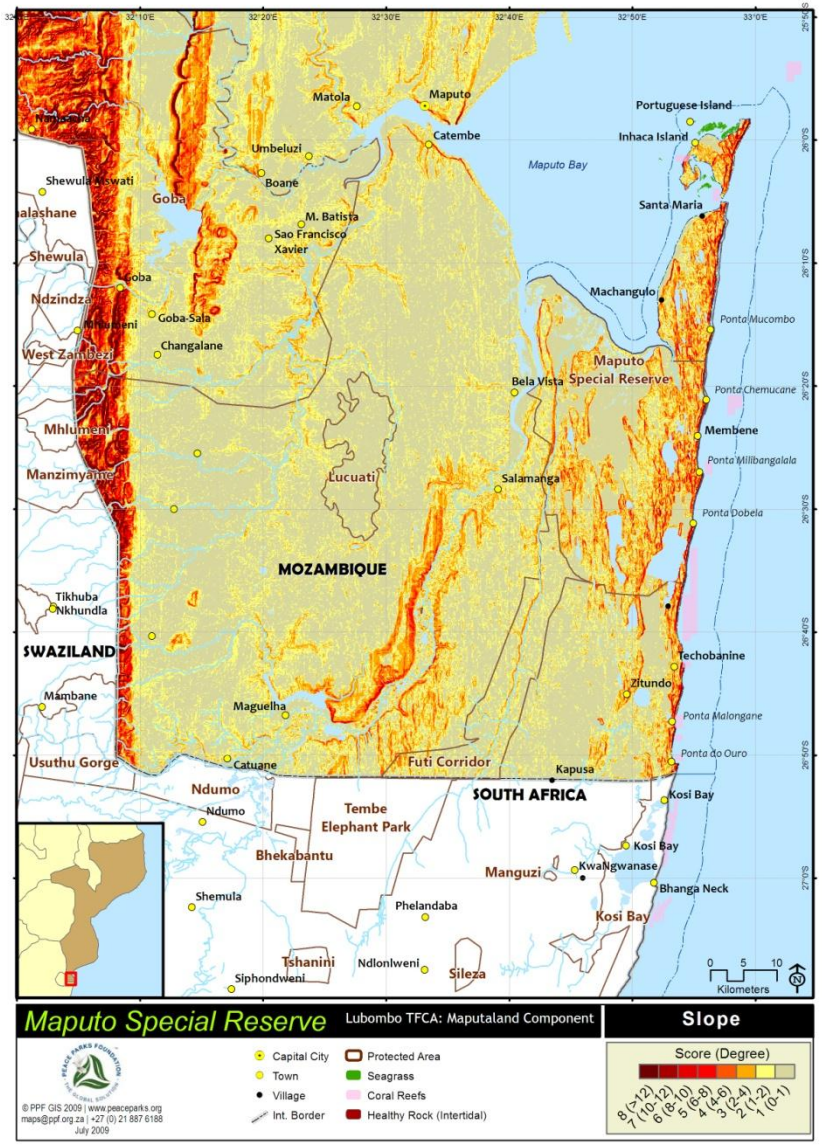


Figure 3: Profile of Lubombo Landscape

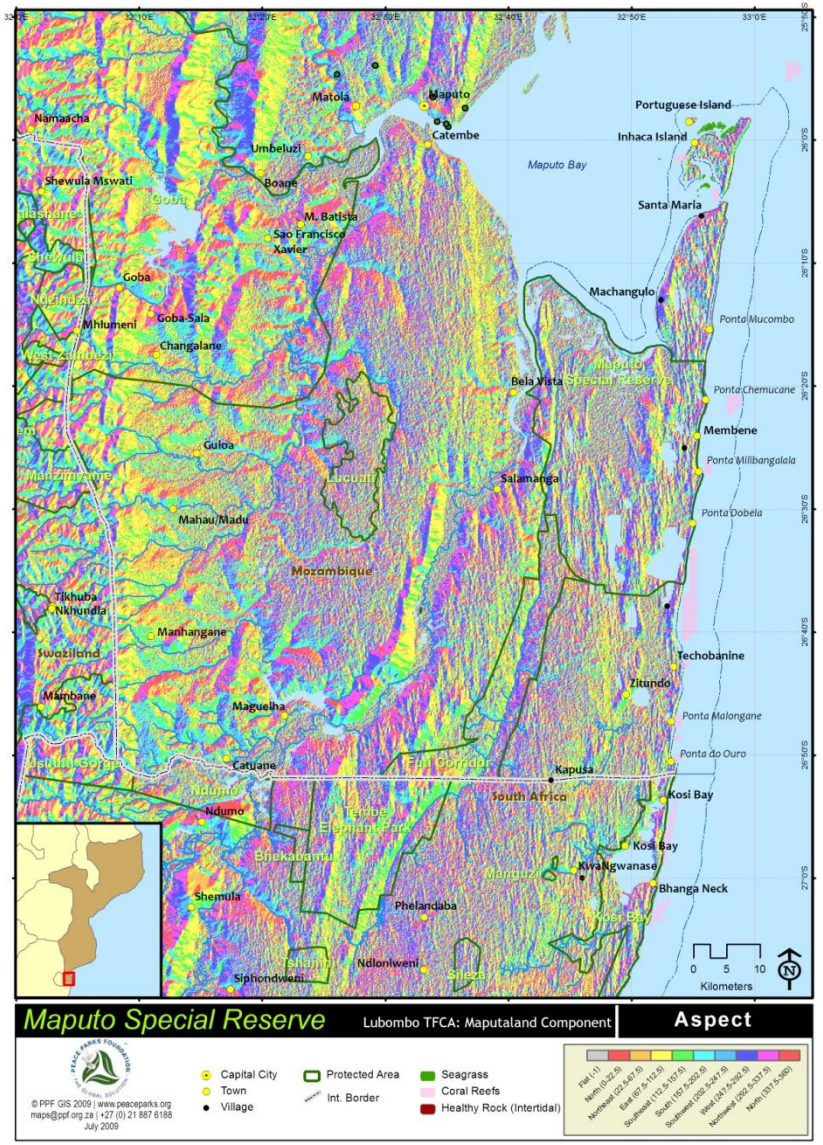


Map 11: Geology

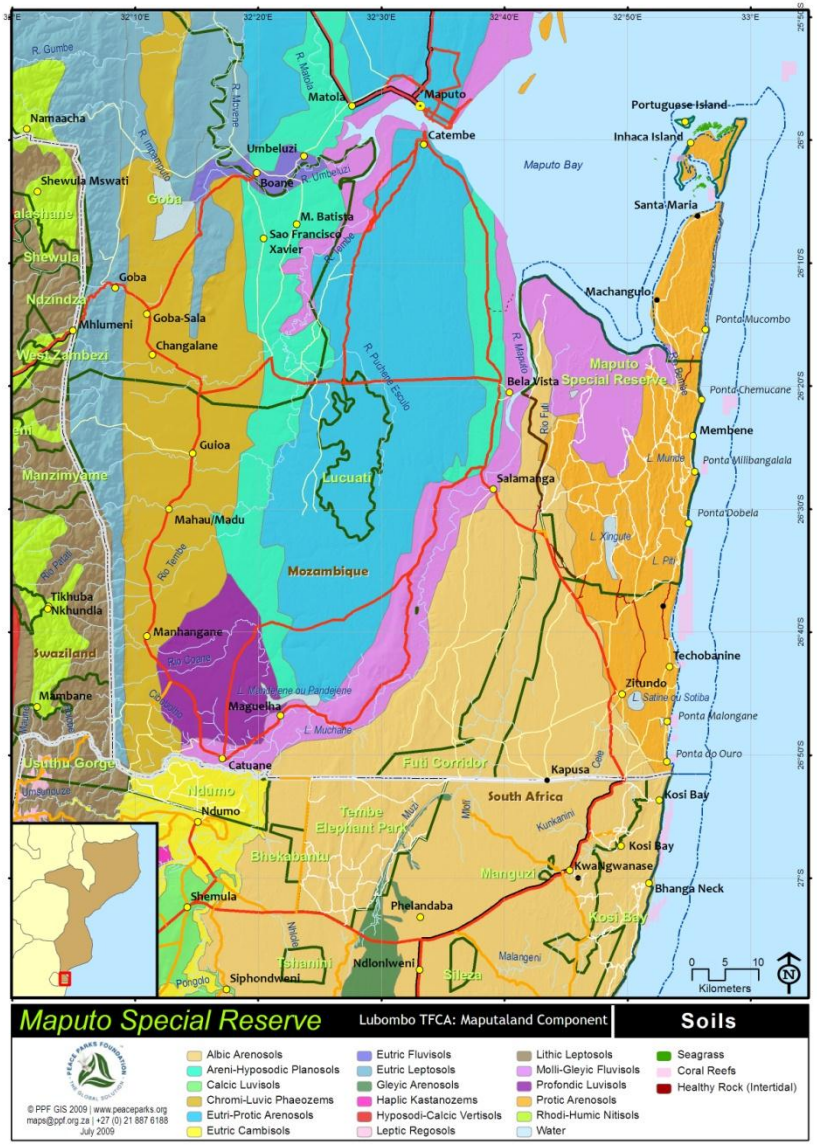
Map 12: Elevation



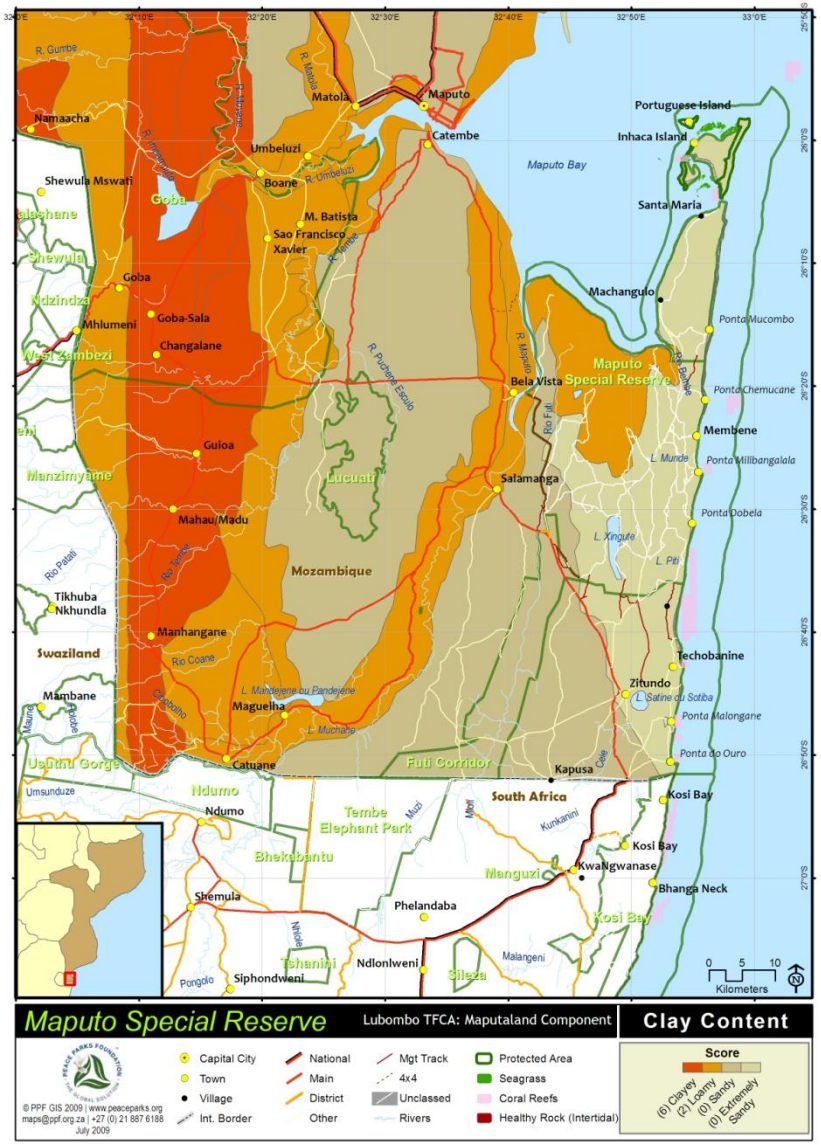
Map 13: Slope



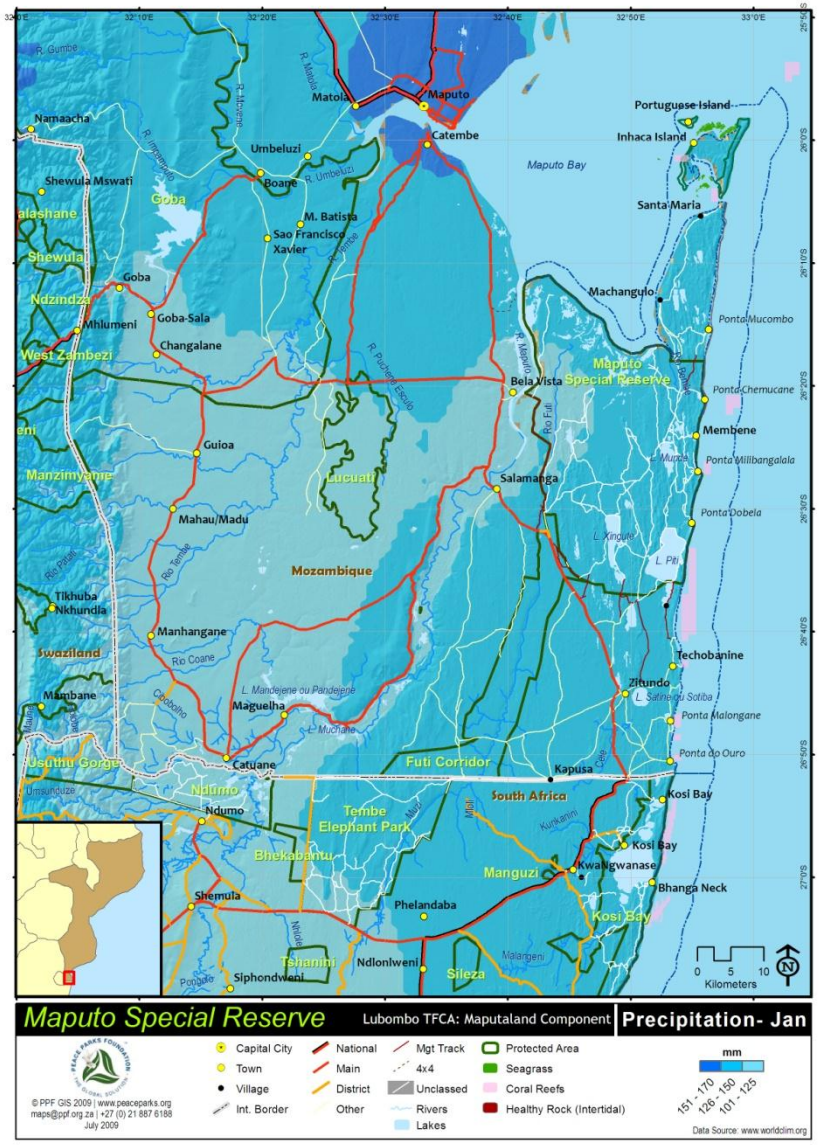
Map 14: Aspect



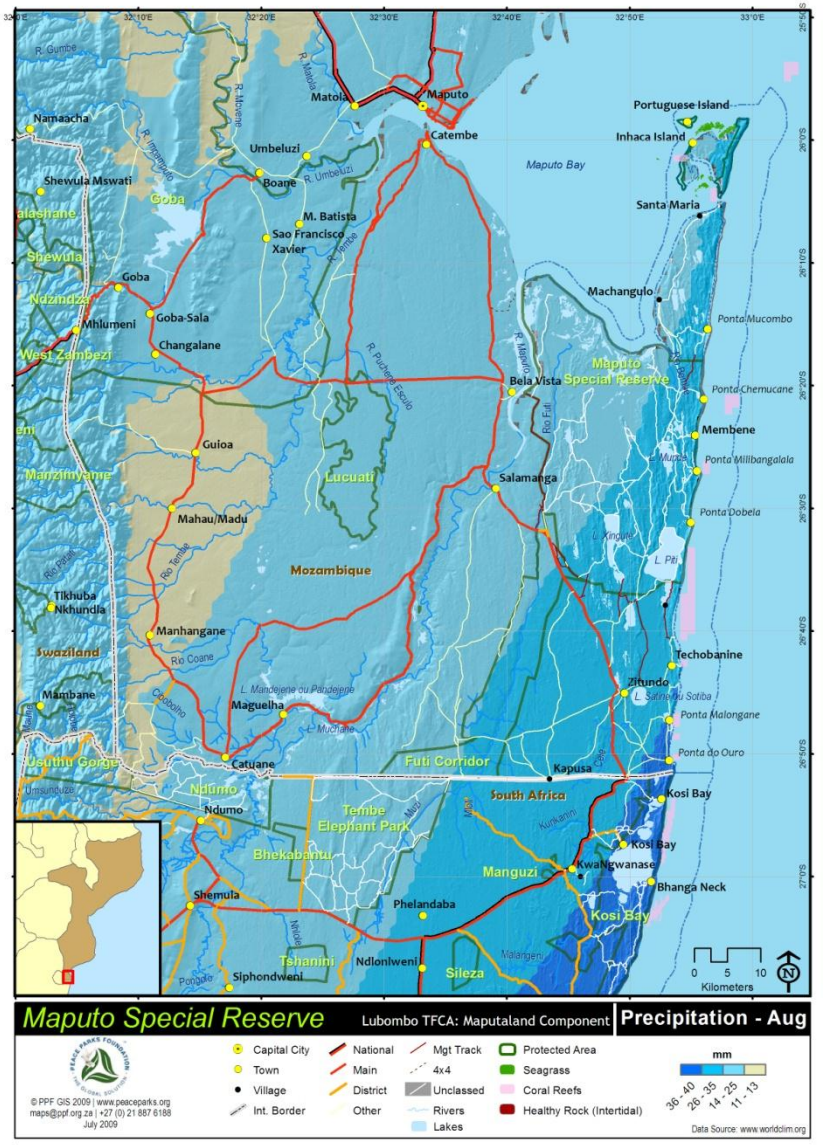
Map 15: Soils



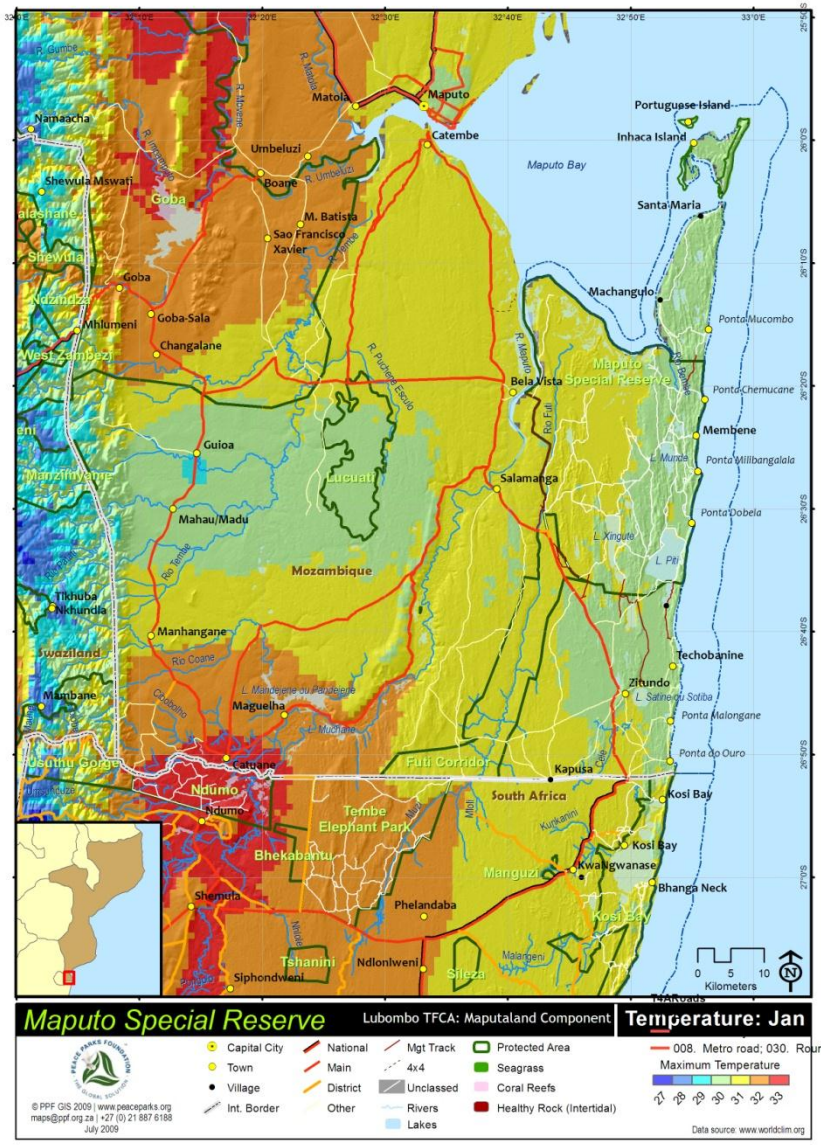
Map 16: Clay Content



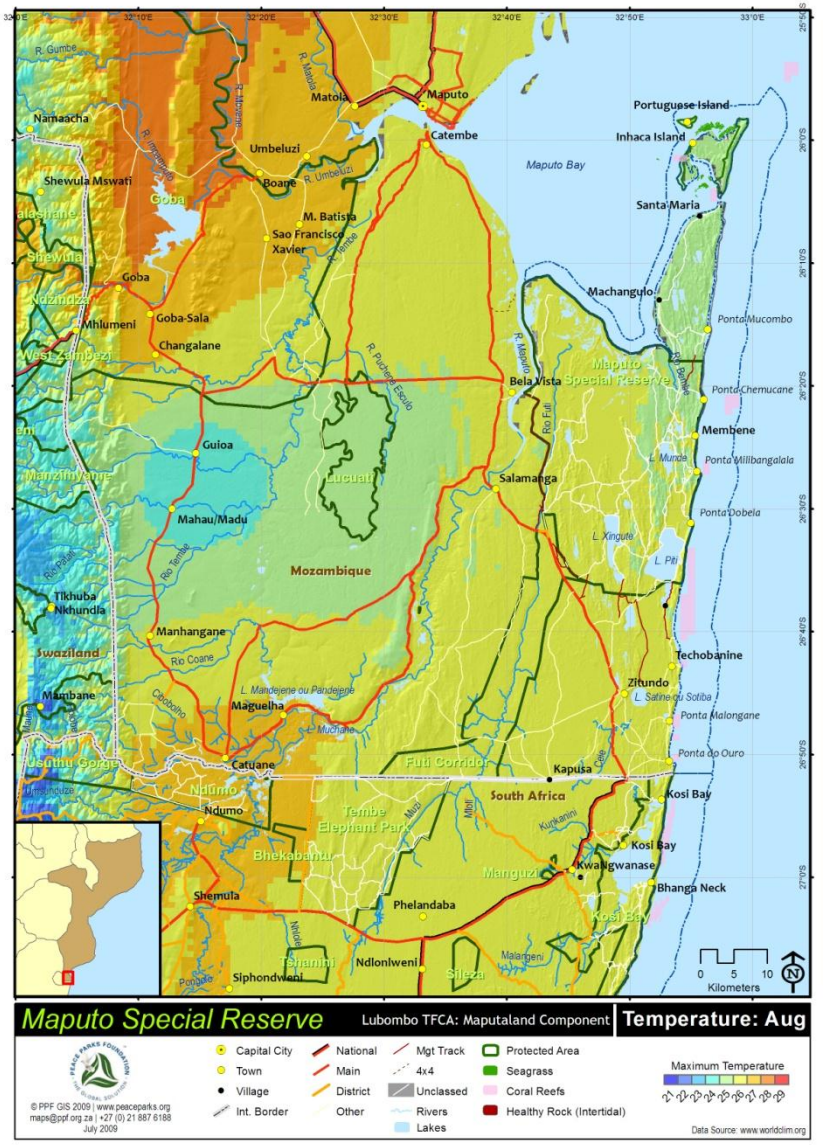
Map 17: Precipitation (January)



Map 18: Precipitation (August)



Map 19: Temperature (January)



Map 20: Temperature (August)

Map 21: Catchments and Hydrology

Figure 4: Grasslands of the MSR

Figure 5: View over Inland Lake

2.1.7 Habitats

2.1.7.1 Vegetation

The vegetation of the MSR (refer Maps 22 and 23) is characterised by a unique mosaic of varied ecosystems including:

- *Mangroves:* predominantly composed of Avicennia marina and Rhizophora mucronata
- *Dune Vegetation:* composed by pioneer species like the Scaevola plumieri, Ipomoea pes-caprae and Canavalia rosea;
- *Wooded Grasslands:* These support species like Sideroxylon inerme, Diospyros rotundifolia, Mimusops caffra, Cyperus compactus and Monanthotaxis caffra;
- *Sand Forest-Woodland Mosaic:* Composed by Themeda triandra, Cynodon dactylon, Sporobolus virginicus and Dactyloctenium aegyptium. Some of these mosaic woodland are waterlogged during rainy season
- *Sand Forest:* dominated by Ochna natalitia, Mimusops caffra, Euclea natalensis, Psydrax locuples, Afzelia quanzensis, and Dialium schlecterii;
- *Savannah:* realatively open áreas dominated by species like Strychnos madagascariensis, Strychnos spinosa, Dichrostachys cinerea, Garcinia livingstonei, Vangueria infausta, Syzygium cordatum, Sclerocarya birrea, Afzelia quanzensis, and Terminalia sericea;
- *Futi Riverine Vegetation:* dominated by Phragmites australis, Juncus kraussii and Cyperus compactus. In some cases in these vegetation you can find encrached island bushes of Ficus sycomorus, Syzygium cordatum, Kigelia africana, Helichrysum kraussii, and Panicum maximum.
- *Artificial Eucalyptus Forests:* encroaching into the natural vegetation of MSR.

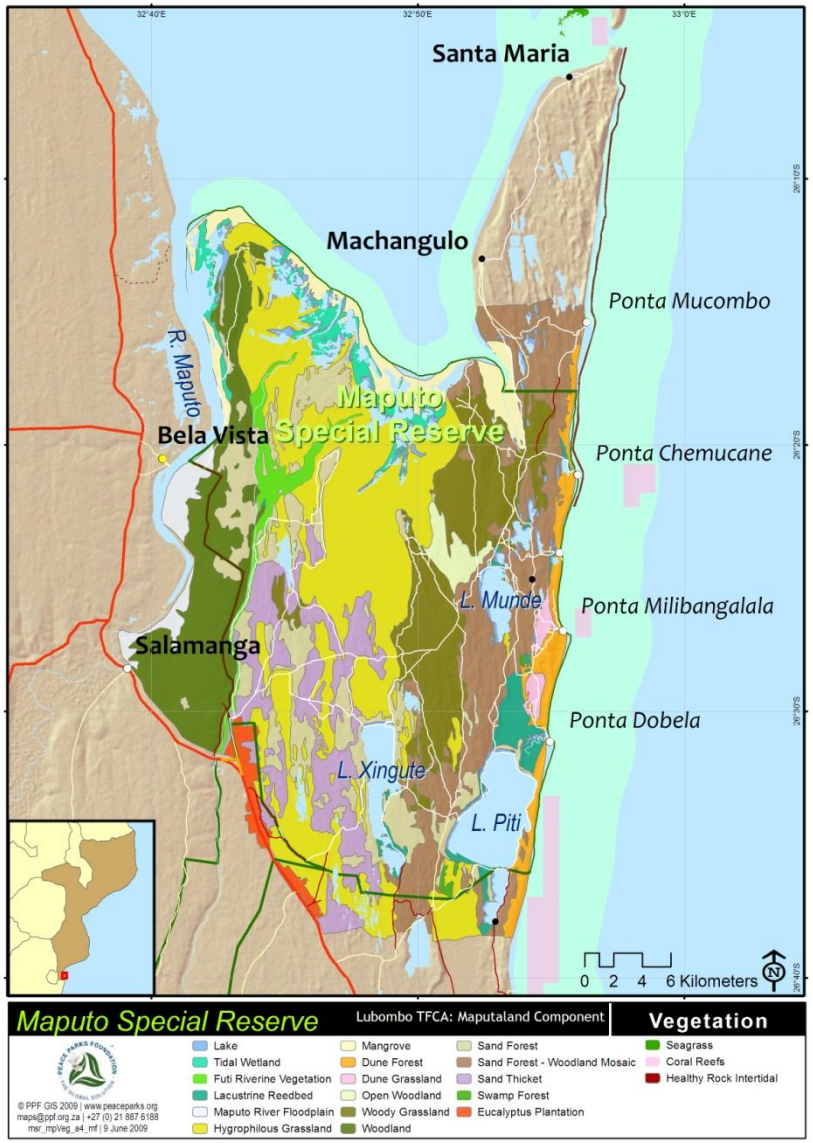
2.1.7.2 Habitats and Associated Wildlife

The vegetation, topography and geology of the MSR creates specific terrestrial habitats with associated species of wildlife (refer Map 24), namely:

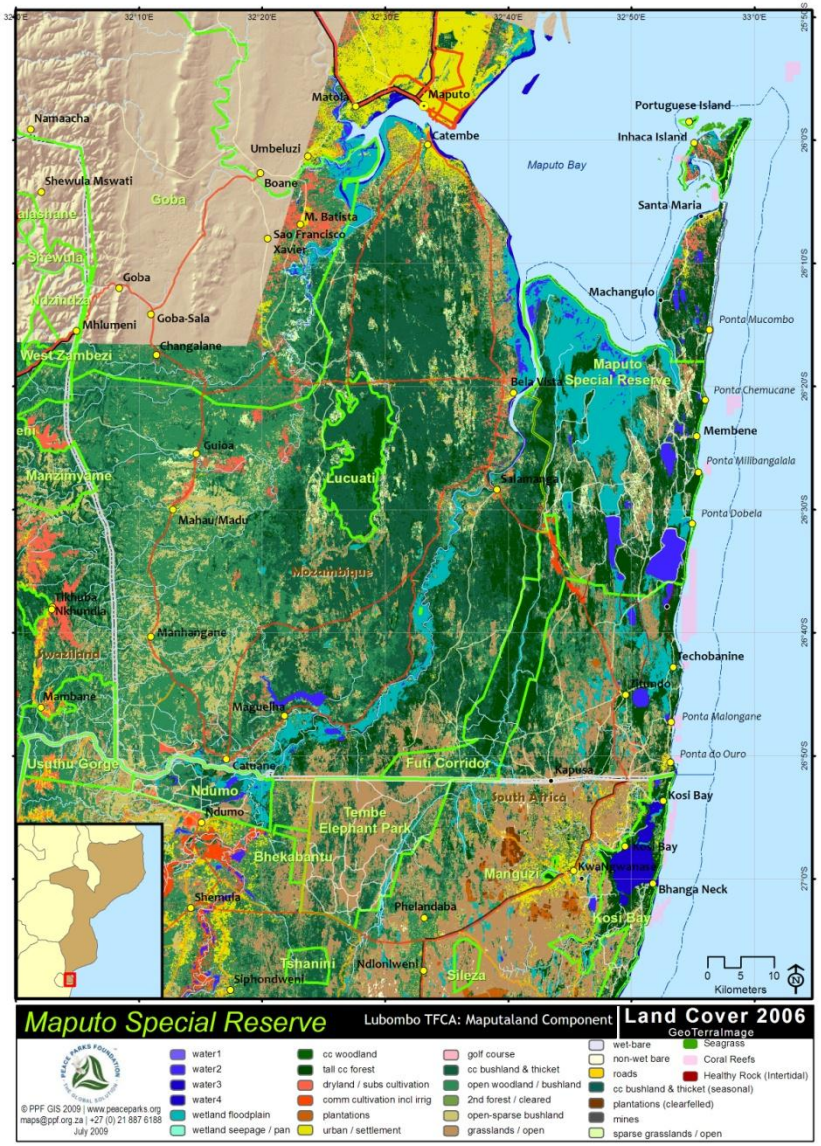
- *Lakes*: Hippo, Crocodile, Migratory birds
- *Futi/Riverine Vegetation*: Reedbucks, Elephant
- *Lacustrine Reedbed*: Reedbucks
- *Maputo River Floodplain*: The ecology of the Maputo River as it flows past the MSR is poorly understood. The estuary is thought to be an important feeding area for young prawns and fish, which are probably being over-fished. The river has high potential for tourism. Various developments are planned on this section of the river and upstream which could have impacts for the MSR.
- *Hygrophilous Grassland:* such as the Futi Valley, important for both wildlife and neighbouring human populations. Its value lies primarily in the fact that it remains permanently moist providing water for animals to drink and green forage for livestock (both wild and domestic) well into the dry season. Because of this moisture it is also sought after site for cultivation of crops. Herein lies the threat, since extensive clearing of the dense *Phragmites* and *Cyperus* vegetation cover will cause its desiccation.
- *Mangroves:* These play an extremely important role in coastal geomorphic process by stabilizing sediments. Mangroves are also very important as fish and prawn breeding and feeding grounds. Crabs and Shrimps can be found in this area
- *Dune Forest:* Important for Birds, snakes and Elephants. This type of forest is very narrow in places and break in the strip could have implications for free movement of genetic material of less mobile species, e.g., plant species with seeds which do not disperse far, and species of small animals which cannot cross gaps in the forest.
- *Dune Grassland:* Towards the eastern extremity of the palm veld the palms themselves become few and palm veld grades into open grassland. This tussocked grassland is rather mixed with common general being *Themeda, Tristachya, Trachipagon, Aristida* and many more. In depressions *Hemarthria, Ischaemum* and *Paspalum* are the more common genera; the species concerned are either rhizomatous or stoloniferous.
- *Open Woodland:* Inyala, Bushbuck, Elephant
- *Wooded Grassland:* Bushpig, Red and Grey Duiker, Steenbok, Wild dog

- *Sand Forest:* it has Suni, Vervet Monkey. The vegetation mapped has sand forest is, in fact, a mosaic of sand forest patches in matrix of open woodland which has fairly good grass understory. The sand forest itself is very interesting and unique type of vegetation, rich in wood species. The forest canopy varies, but it is usually 10 m to 25 m high. Common & widespread tree species *Newtonia hildebrendtii, Cleistanthus schlechteri, Hymenocadia ulmoides, Balanites maughamii, Ptaeroxylon obliquum, Diallium sclhecht, Erythropholeum lasiantum and Cola microcarpa.* The forest is very dense with numerous woody, subcanopy shrubs and small tree species, and relatively few herbs. The forest patches themselves are quite discrete.
- *Sand Forest-Woodland Mosaic:* This occurs on the heavy black soils along the foot of the Lebombo mountains. Much of the area has been cultivated at some stage or another, and common trees occurring are *Acacia tortilis, Spirostachys Africana, Schotia brachypetala and Lonchocarpus capassa*. Thickets of *Dichrostachys cinerea, Euclea* spp. and short *Acacia* spp. are common. A grass understorey is not well developed and where grasses occur they are tussocked genera, such as *Eragrostis, Aristida, Bothriochloa and Sporabolus*. In this vegetation Red and Grey Duiker, Jackal, do occur.
- *Sand Thicket:* it is inhabited mostly by Duikers and spur fowl. In parts, where the topography is particularly flat and soils are poorly drained, a dense thicket vegetation develops. This vegetation is particularly thick, and where is has been partially protected is almost impenetrable. The thicket it is not particularly tall, ranging from 2 m to 5m high, but it has many species present and possibly the most diagnostic *Acacia grandcornuta, Gardenia cornuta, Euphorbia grandicornis and Papea capensis*.
- *Swamp Forest:* These are rare habitats types and rate top priority for conservation. Good swamp forest has a closed canopy some 15m to 25m high and some of the most common and widespread species are *Ficus trichpoda, Syzigium cordatum, Raphia australis, Voacanga thoarsii, Rauvolphia caffra and Podocarpus falcatus.* Climbing ferns are a feature of this type of forest.
- *Eucalyptus Plantation***:** Porcupine and Birds.

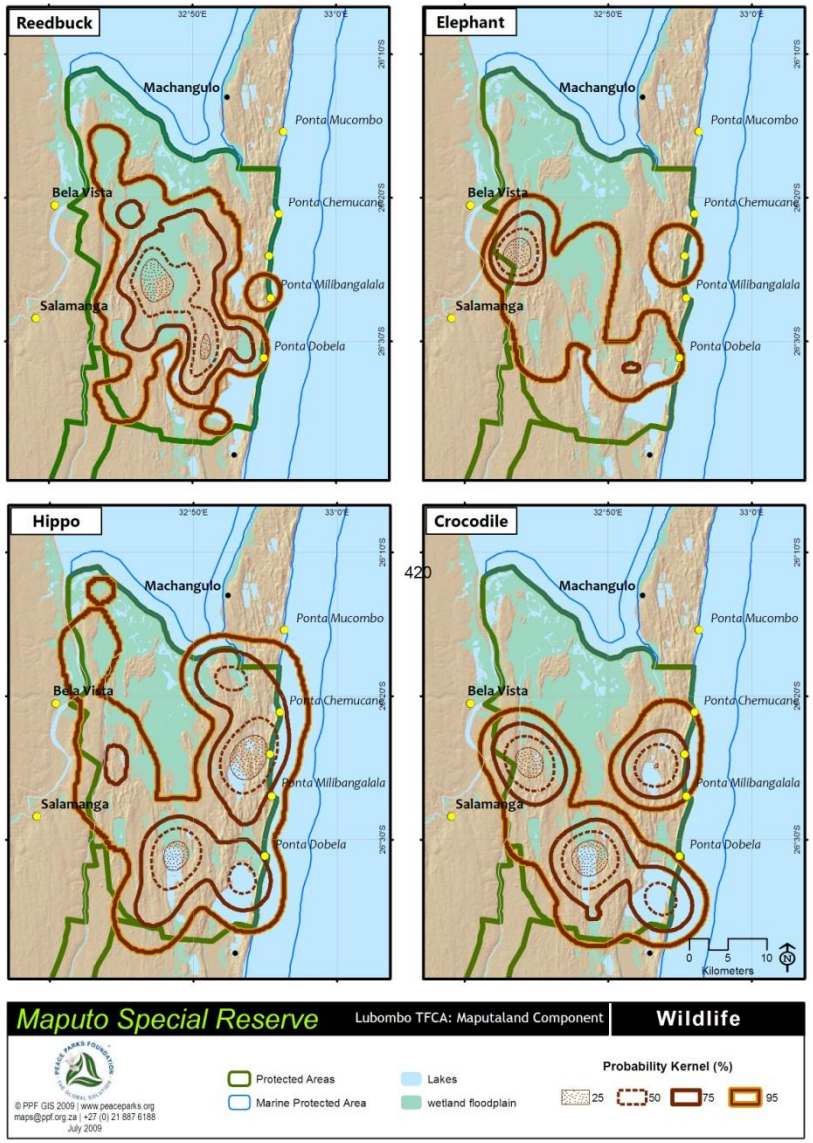
Figure 6: Birdlife on the Lakes of the MSR



Map 22: MSR Vegetation



Map 23: Land Cover 2006



Map 24: Wildlife

Figure 7: Elephant of the MSR

Figure 8: Hippo, Lake Xingute

2.2 CULTURAL ENVIRONMENT

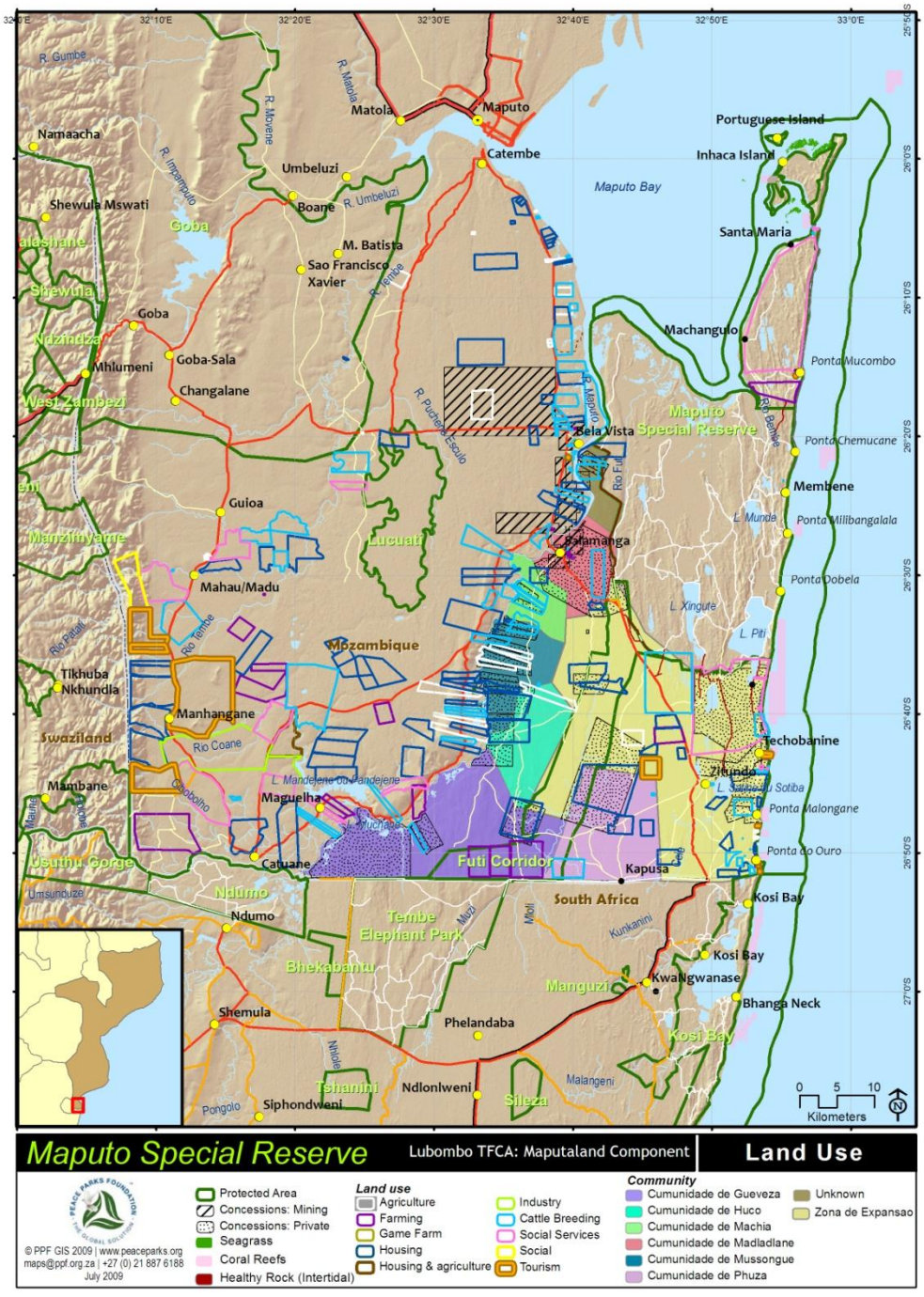
Despite the occurrence of a few settlements within the MSR, the major cultural sphere of influence occur around Bela Vista, Salamanga, Machangulo, Zitundo and the portion between Techobanine and Ponta do Ouro (refer Map 25).

Map 25: Cultural and Heritage Landscape

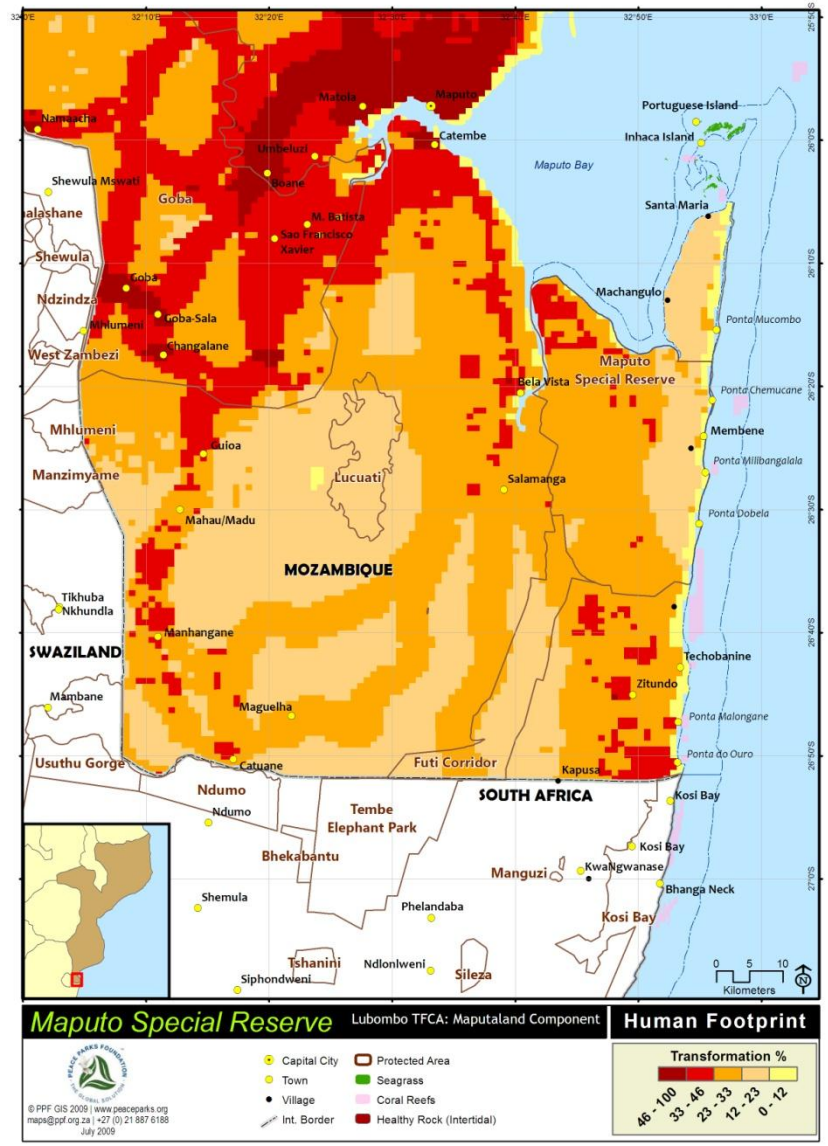
2.3 LAND USE AND TENURE ENVIRONMENT

2.3.1 Current Land Use and Tenure Patterns

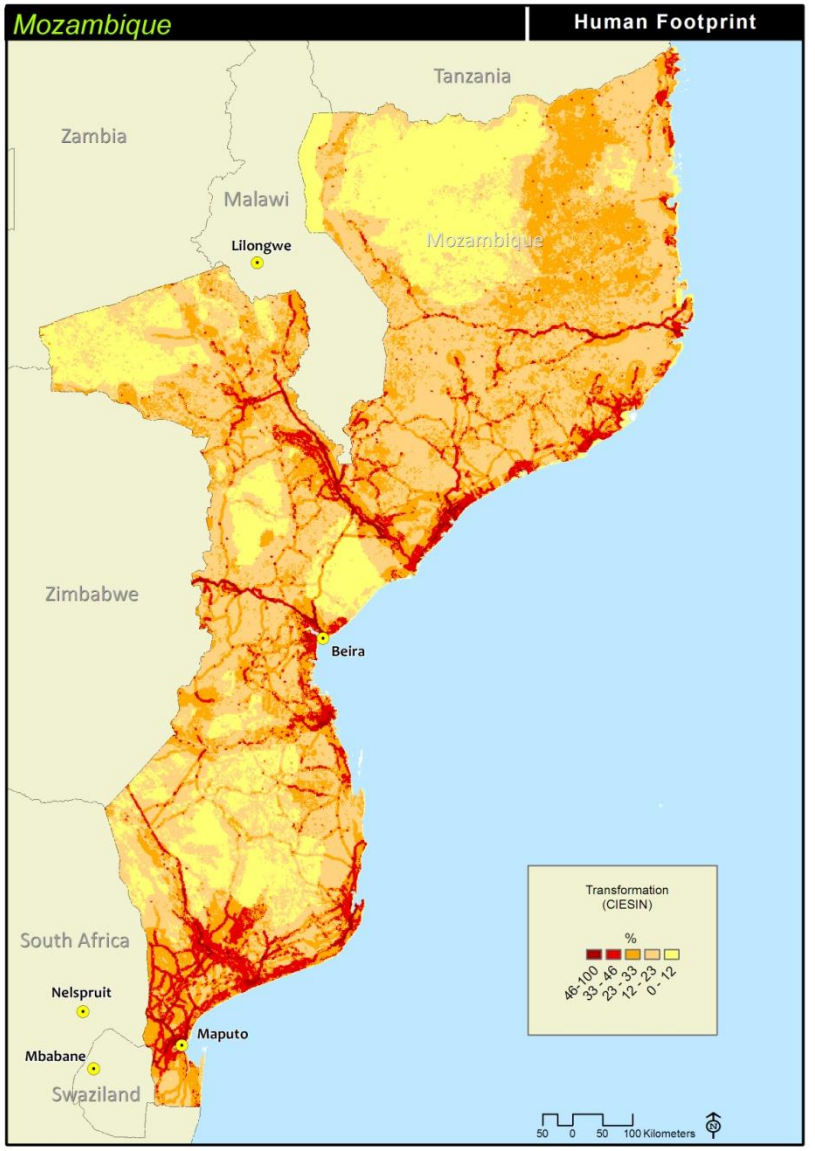
he area surrounding the MSR shows a variety of land uses including agriculture; farming (both livestock and game); tourism; trade; and housing (refer Map 26) being practiced by the various communities and concessionaires. Most of these activities occur along the Maputo River, yet a few are scattered along the Ponta do Ouro – Salamanga Road with a few housing initiatives close to the tourism core areas such as Ponta do Ouro and Ponta Malongane as indicated in the Human Footprint maps (refer Maps 28 and 29). These maps further indicate relatively high impact within the Reserve at the Maputo River Mouth. From these maps the impact of roads on the environment becomes evident.



Map 26: Land Use



Map 27: Human Footprint



Map 28: Human Footprint – Transformation (CIESIN)

2.4 SOCIAL ENVIRONMENT

2.4.1 Demographics

Demographically, Maputo Province is comprised in its majority by the Tsonga ethnic group. Within this, the Changanas, Bitongas, Chopes, Matsuas, Rongas are found, the last being the native to the southern portion of the Province. The Ronga linguistic group is predominantly distributed within the Districts of Manhiça, Marracuene and Matutuíne. The Matutuine District population is estimated at 37,239 inhabitants, according to the 2007 population census, with a population density of 10 inhabitants per km² (refer Map 29).

2.5 GOVERNANCE ENVIRONMENT

2.5.1 Structures of Government

The Regional Government set up at SADC level lies within the wildlife sector. The MSR is part of the Maputaland Centre of Plant Endemism with Regional significant value within the Lubombo Transfrontier Conservation Area. Mozambique is composed of eleven Provinces and 123 Districts, whereby the Maputo Special Reserve is within the Matutuine District (refer Map 30).

Trilateral Ministerial Committee from the three countries meets bi-annually to drive and monitor progress on the TFCA. A Trilateral Commission meets at least three times a year to monitor progress and advises the Ministerial Committee. The Trilateral Commission has, in accordance with the requirement of the TFCA protocol, established and assigned Task Groups as technical advisors to address the development and implementation of the various TFCA priorities and management plans as identified by the various working groups.

To implement the MSR, the Ministry of Tourism created the DNAC responsible to manage the area. Therefore, DNAC appointed the MSR Manager responsible for the day to day operation of the MSR reporting to the National Director (refer Figure 8).

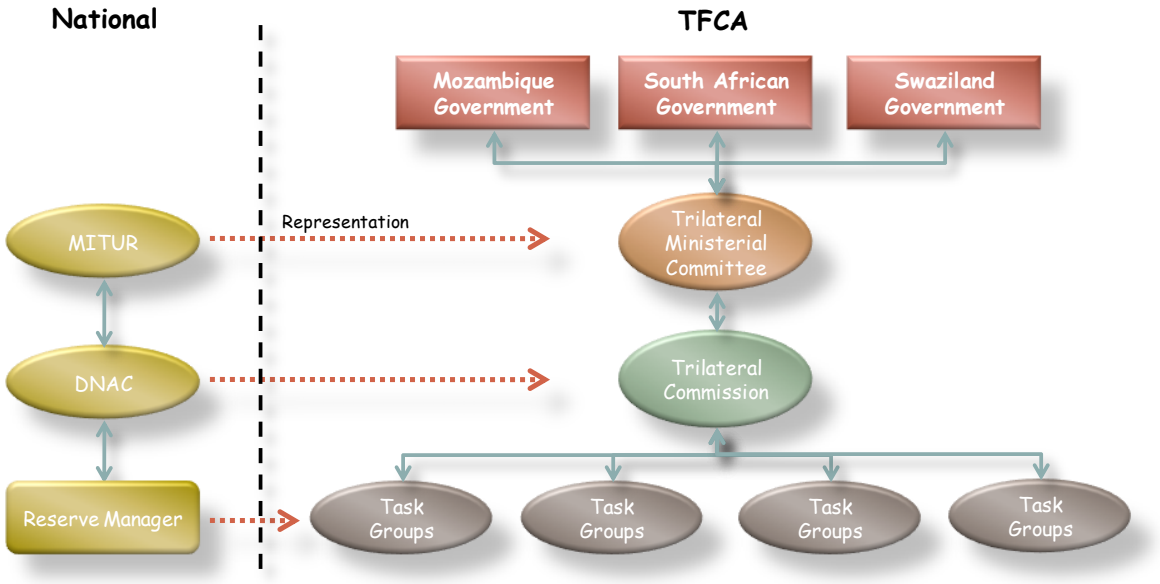


Figure 9: Lubombo Transfrontier Conservation Area Institutional Arrangements

2.5.2 Current TFCA Administrative Arrangements

The Governments of Mozambique, South Africa and Swaziland have placed poverty alleviation high on the respective national and international strategies and also recognise the need for local economic development. This development is to be based on the sustainable use of natural resources. Due to the high potential for tourism in this area, the development of ecotourism is a key strategy in the development of the *area/region.* In the Maputoland Conservation Planning System, the launch of the LTFCA in 2000 was seen as key in the development process of the region: "*The Lubombo TFCA falls entirely under the Maputoland center of endemism and aims to serve as a vehicle for conservation and sustainable use of biological and cultural resources, whilst promoting regional peace, co-operation and socio-economic development.*"

With the signing of the General Transfrontier Conservation and Resource Area Protocol between the Governments of the Republic of South Africa, Republic of Mozambique, and Kingdom of Swaziland on 22 June 2000 the LTFCA Commission was formally established. This established the tri-lateral Ministerial Committee and its working groups (refer Figure 8).

The Usuthu-Tembi-Futi Transfrontier Conservation and Resource Area Protocol as well as the Ponta do Ouro-Kosi Bay Transfrontier Conservation and Resource Area Protocol between the governments of the Republic of South Africa and Mozambique was also signed.

The main objectives of the LTFCA are:

Firstly-

- to realise economic returns from tourism and associated activities within the Area, while safeguarding its ecological integrity, and to promote the sustainable socio-economic development of the Area, for the benefit of all Parties in accordance with the TFCA Objectives and to develop, market and promotes the TFCA to this end;
- To address the needs and aspirations of local communities by ensuring their direct participation in and/or ownership of and/or derivation of benefits from any programmes or initiatives that are undertaken in the Area and encouraging or empowering them to do so in whatever way is possible and appropriate;
- to accommodate within appropriate management regimes for the Area a broad spectrum of human activities compatible with the protection and management of the terrestrial and aquatic ecosystems in the Area;

Secondly-

- to protect depleted, threatened, rare or endangered species and populations in the Area, and in particular, to preserve habitats in the Area
- maintain those ecological processes which characterise the Area and to protect the integrity of ecosystem structure and functions in the Area;
- prevent outside activities from detrimentally affecting the Area by identifying such threats and undertaking appropriate action to remove or mitigate such threats;

Thirdly-

- to preserve, protect and manage any historical and cultural, site and natural aesthetic value values of terrestrial and aquatic areas in the Area, for present and future generations;
- to facilitate the interpretation of terrestrial and aquatic ecosystems in the Area for the purposes of conservation, educational and tourism;
- to provide for research and training, and for monitoring the environmental effects of human activities in and near the Area, including the direct and indirect effects of development and adjacent land-use;

Fourthly-

- to make full use of the opportunities and advantages offered by the transnational nature of the Area and to use this to maximum effect in meeting these objectives;
- to promote cross border co-operation and interaction between the Parties at all levels including that of local communities, private sector, non-governmental organizations and government agencies;

- to attempt to resolve any specific problems in the Area but solely in the jurisdiction of either Party which may impact on these objectives; and
- to investigate options for the facilitation of cross-border movement.

The TFCA plays a role in reconnecting the natural connectivity of fragmented protected areas in the region. The Futi Corridor creates the ecological connection between Tembe Elephant Park and MSR.

TFCA initiatives are seen as being a catalyst that could attract new development and investment into the area with the focus on development based on the abundant natural resources and the wealth of cultural resources. From a planning perspective it is essential that a land-use zonation plan is compiled for the region that shows the biodiversity rich areas, settlement areas, towns and villages, and the existing infrastructure in terms of roads, power lines, communications, clinics, schools etc. It would then be within this framework zonation that future development opportunities and priorities would be systematically identified and selected.

There is considerable potential to expand existing protected areas and to establish new ones. This action would improve and reinforce their ecological sustainability. Careful consideration will be required in implementing a programme of animal re-introductions especially for species such as lion, rhinoceros and buffalo. The network of protected and resource managed areas (including fishery resources) by trained and skilled conservation staff would form the resource base for the development of tourism through private sector and public/government investment, promotion, and community participation. It holds the prospect for considerable improvement in the livelihoods of the people in the region through the creation of new jobs and businesses (e.g. manufacture of crafts, operating B&Bs and guest houses, marketing of agricultural produce, providing trained guides for visitor excursions, etc), and the development of capacity in conservation management, tourism and hospitality.

What is considered important is that the linkages (biodiversity, infrastructural, and communication) across the international border are facilitated and put in place in the interests of achieving TFCA Protocol development and sustainability objectives.

The TFCA Protocol is also recognised as having the potential to ensure cooperative and peaceful relations across the border and would allow for the resolution of disputes as local institutional structures are strengthened.

To enable the formulation of specific projects for the conservation of biodiversity and local economic development, an overall planning framework is needed. The current Management Plan aims to provide such a framework.

TFCAs are a relatively new conservation paradigm, working to promote biodiversity conservation, socio-economic development as well as peaceful relations and regional cooperation with several advantages, including, *inter alia*:

Ecological advantages – where a transfrontier or regional approach has significant ecological benefits, such as:

- Consolidating the integrity of natural systems, particularly those that have been disrupted by the arbitrary drawing of international boundaries;
- Improving the protection and management of shared natural resources such as watersheds and animal species requiring a large habitat range such as elephants and large carnivores;
- Extending the area available to plant and animal species, thereby reducing the risk of biodiversity loss; and
- Harmonizing land use policies and natural Resource Management strategies, thereby promoting sustainable development across international boundaries.

Socio-economic advantages – where a regional approach to biodiversity conservation and tourism development will have the following positive socio-economic effects:

- Economic integration brought about by cross-border trade, the development of "*ecotourism hubs*" that disperse tourists over a wider area, and packaged destinations that allow tourists to visit more than one country in one trip;
- Direct income to households through employment in the various tourism operations with the multiplier effect created by the extended family system characteristic of most rural communities in the region;

- Economic empowerment of rural communities through the establishment of legal entities or trusts, training on enterprise development and creation of an environment for affirmative action for rural communities; and
- Reduction in the operational costs of law enforcement, marketing, research and monitoring through joint activities and programming.

Organisational advantages – where TFCAs play a major role in:

- Building good relations between partner countries as they strive to cooperate on a range of mutually beneficial activities;
- Increased collaboration and cooperation across the borders with equitable geographical distribution of economic activities will limit economic migration and contribute to promoting peace and stability in the region;
- Providing economic and social benefits from development activities which in turn are allowed to trickle down to community levels; and
- Creating stronger collaborative management between agencies responsible for natural resource and wildlife management within the TFCA, both nationally and regionally.

2.5.3 Legal Framework

Even though the MSR is a Mozambican protected area, the conservation initiatives are of international significance and wherever possible the national legislation should be aligned and supported by international, regional, and sub-regional legislation, policies and procedures. A list of the relevant legislations at these various levels is provided below:

International-

- Agenda 21;
- Conservation on Trade of Endangered Species of Wild Fauna and Flora (CITES);
- Convention on Biodiversity;
- Convention on Migratory Species of Wild Animals (even though Mozambique is not a contracting party);
- World Cultural and Natural Heritage Convention;
- Watercourses Convention;
- RAMSAR Convention on Wetlands, 1971;
- Durban Accord 2002;

African regional level-

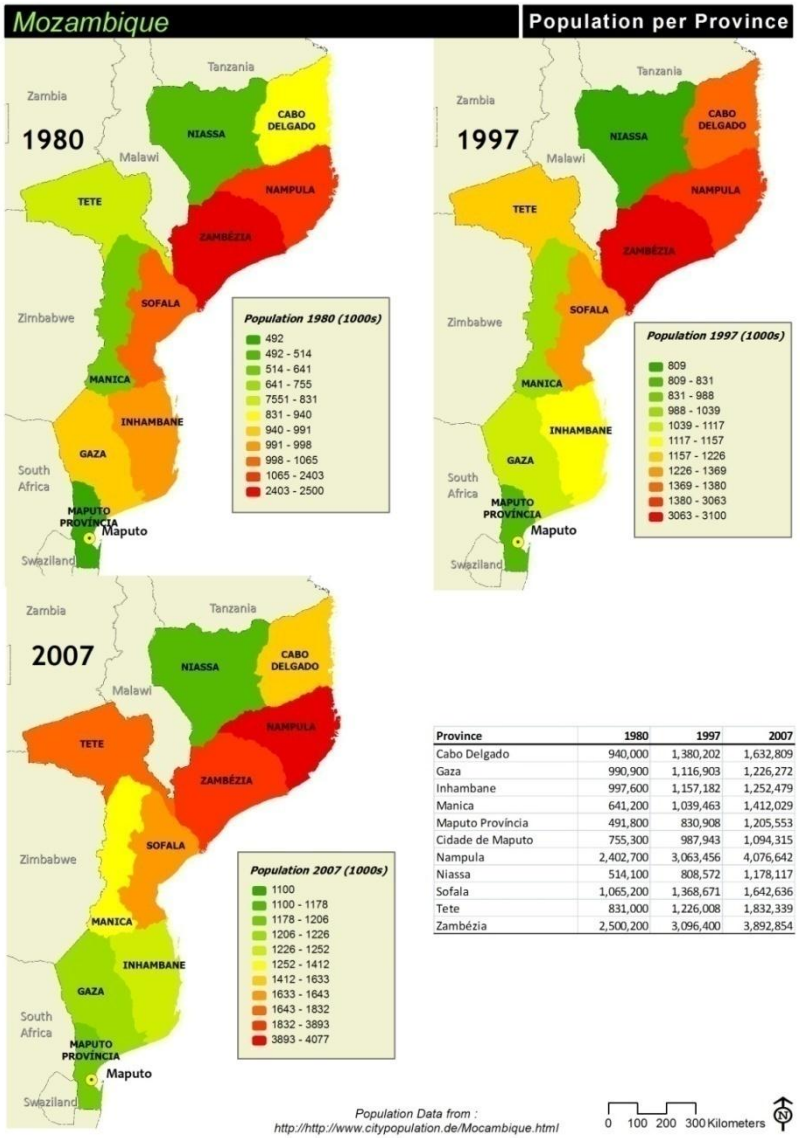
- African (Banjul) Charter on Human and People's Rights;
- New Partnership for Africa's Development (NEPAD);
- African Nature Convention;
- African Convention on the Conservation of Nature and Natural Resources;
- Treaty establishing the African Economic Community;

SADC regional level-

- Treaty of the Southern African Development Community;
- Protocol on Wildlife Conservation and Law Enforcement of 1999;
- SADC Protocol on Shared Water Resources;
- Revised Protocol on Shared Water Resources;

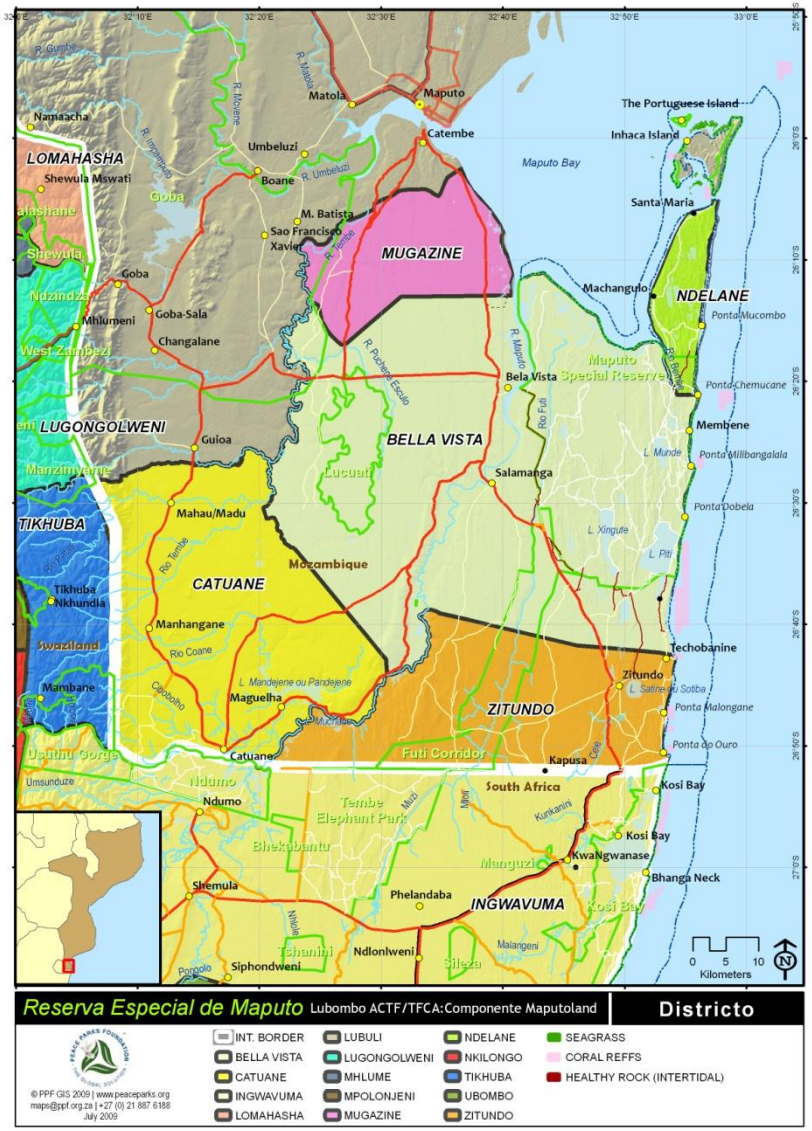
National-

- Constitution of 1990;
- Environmental Act No. 30 of 1997;
- Forest and Wildlife Act of 1999;
- Water Law of 1991;
- Fisheries Law 3/90; and
- Land Law No. 19/97.



Province	1980	1997	2007
Cabo Delgado	940,000	1,380,202	1,632,809
Gaza	990,900	1,116,903	1,226,272
Inhambane	997,600	1,157,182	1,252,479
Manica	641,200	1,039,463	1,412,029
Maputo Província	491,800	830,908	1,205,553
Cidade de Maputo	755,300	987,943	1,094,315
Nampula	2,402,700	3,063,456	4,076,642
Niassa	514,100	808,572	1,178,117
Sofala	1,065,200	1,368,671	1,642,636
Tete	831,000	1,226,008	1,832,339
Zambézia	2,500,200	3,096,400	3,892,854

Map 29: Population Distribution and Major Settlements



Map 30: Governance

SECTION 3. THE PEOPLE

3.1 STAKEHOLDERS AND ROLE PLAYERS

Various stakeholders and role players representing the different communities of interest have an important role to play in ensuring the success of the MSR as a protected area. These include:

- Resource Managers;
- Business and other Users;
- Land Users and other Beneficiaries; and,
- Government (refer Figure 9).

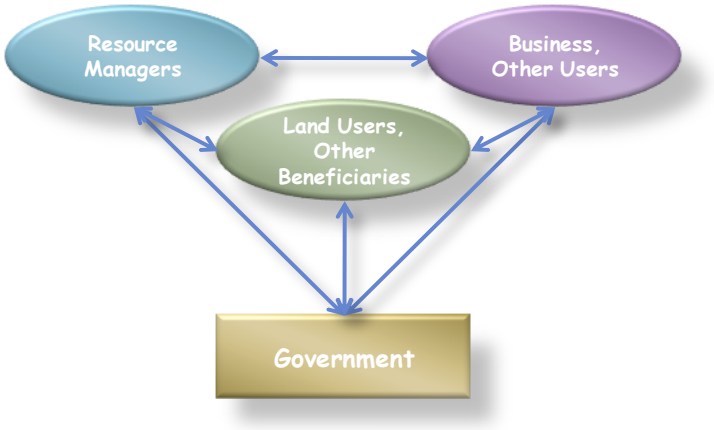


Figure 10: Communities of Interest

3.1.1 Stakeholder Groups

3.1.1.1 Resource Managers

Since the MSR has both the terrestrial and marine component, the reserve has personnel and staff to address both components and report to the relevant Ministry and Department within the GoM.

3.1.1.2 Beneficiaries

In Matutuíne district there are others stakeholders dealing with natural resources use, rural development and social support services as follows:

- LUPA (ex-Helvetas);
- Hluvuko (micro credit);
- Geração Biz;
- FDC (Foundation for Community Development);
- Kutsemba (advocacy);
- Sekeleka (Home care related to HIV-AIDS);
- IPRUMO (HIV-AIDS prevention);
- Macassane;
- Projecto-Vida; and
- Concern Universal(drilling of water wells).

Churches:

- Catholic;
- Presbyterian;
- God Assembly;
- Christian Vision;

- Old Apostles;
- Twelve Apostles;
- Hindus; and
- Muslims.

The MSR, inclusive of the PPMR, affects 24 communities, some of which live within MSR, yet most reside outside along the boundary of the protected area. Map 31 shows the location of the affected communities. These communities fall within three Administrative regions – Machangulo, Zitundo and Madjadjane (refer Figure 11). Further details on these communities will be included in the *MSR and PPMR Community Action Plan*.

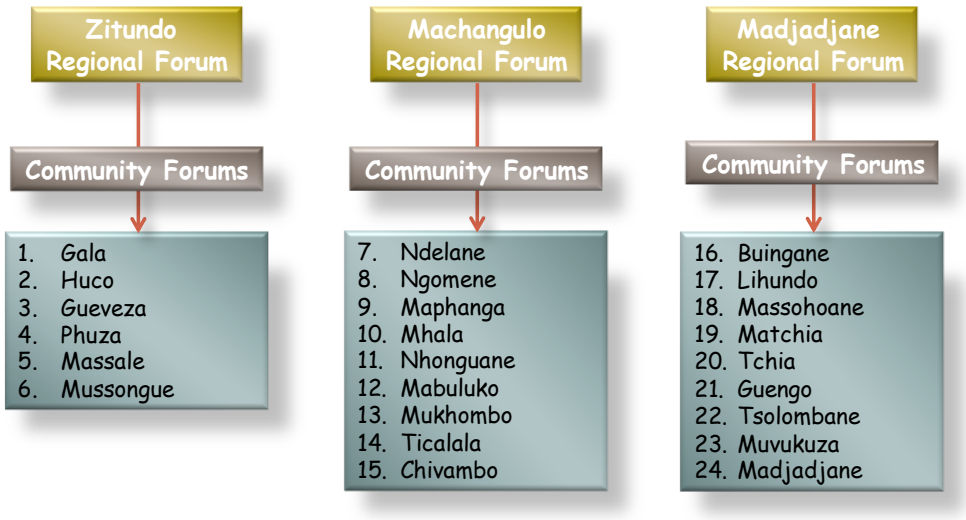


Figure 11: Affected Communities

3.1.1.3 Business Community

Ranging from large multi-national corporations to small local businesses, the area surrounding the MSR attracts a diverse range of investors and operators. These include small artisanal fishermen to large tourism and residential operators, servicing an international market, as well as a broad suite of farmers aiming to eke a living through agriculture and livestock.

3.1.1.4 Government

The Stakeholders at the National level are:

- MITUR (Transfrontier Conservation Areas Unit - DNAC);
- Ministry of Agriculture;
- Ministry of Fisheries;
- Ministry of Finance;
- Ministry of Coordination of Environmental Actions;
- Ministry of Transport and Communication;
- Ministry of Public Works and Buildings;
- Ministry of Planning and Development;
- Ministry of Defence; and,
- Eduardo Mondlane University (UEM).

The Stakeholders at the Provincial level area:

- Agency for the Development of the Elephant Coast;
- Provincial Directorate of Industry, Commerce and Tourism;
- Provincial Directorate of Agriculture;
- Provincial Directorate of Fisheries;
- Provincial Directorate of Planning and Finance;
- Provincial Directorate for Environmental Coordination;
- Provincial Directorate of Transport and Communication;
- Provincial Directorate of Public Works and Buildings;
- Independent Battalion of Boane; and

- Provincial Directorate of Education and Culture.

The Stakeholders at the District level are:

- District Services of Economic Activities;
- District Services for Planning and Infrastructures; and
- District Services for Education, Culture, Youth and Technology.

Map 31: Location of Affected Communities

SECTION 4. THE PLAN

4.1 INTRODUCTION TO THE MANAGEMENT FRAMEWORK

Recognising the diverse range of management interventions required to successfully attain the vision and broad management objectives of the Management Plan, specific management objectives have been set for each of the key performance areas.

Based on the specific management objectives, the rationale and strategy providing operational guidelines have been developed, based the policy and legislative framework, with recommendations regarding the requisite support required, as well as the action projects which can be utilised, and indicators against which success can be measured. These guidelines have been developed for each of the specific objectives within the broad management objectives and key performance areas (*vide* Figure 12).

Broad objectives to guide management are based on the Key Performance Areas (KPAs) identified as critical to the attainment of sustainability based on the principles underlying the ecotourism. Within this model it is imperative that a harmonious balance is attained between environmental resources, both natural and cultural; the industries which utilise these resources and the communities which host these resources.

Attention must be provided to all three these sectors simultaneously if this delicate balance is to be achieved. If one sector is neglected it is impossible to maintain the balance, requiring a completely new approach to the management of resources necessitating an integrated and aligned methodology.

If the focus of management remains on resource protection, as has historically been done within the field of conservation, both the host communities and the industry are neglected resulting in illegal and uncontrolled use of any available resources, creating a negative spiral necessitating an increased focus on resource protection. However, if the focus is on the industry, resources tend to be neglected, and communal benefits remain an afterthought, if addressed at all. Conversely, if the focus is on community benefits, resources can become degraded and the investors dissatisfied with the available opportunities resulting in reduced investment and related benefits.

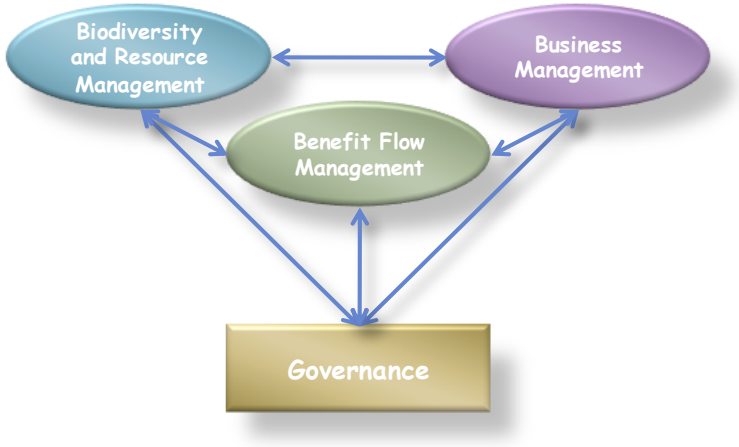


Figure 12: Key Performance Areas

Even when two of these key performance areas are addressed simultaneously balance can and will not be achieved. Additionally, the fallacy that within conservation it is possible to initially focus on resource management and then fast track both industry involvement and benefit flow management, skews important strategic decisions regarding conservation areas.

Only by placing equal importance on all three KPAs can sustainability be achieved, and this is where the pivotal role of Government becomes important. By guiding resource management, industry involvement and benefits to host communities, government creates the enabling environment for each of these KPAs to function independently yet in an integrated and interrelated manner as well. This oversight role of government is critical to achieving sustainability, and necessitates clarity regarding sector specific issues within the context of integrated planning and management.

To ensure accountability each of these KPAs must be incorporated into a management system aimed at providing collective insight into the broad objectives as set by the stakeholders, as well as the policy

framework and guiding principles within which these objectives will be managed, the action plans and programmes to be implemented, and the performance measures or indicators necessary to ascertain whether the objective has been met.

To guide this, the flow diagram below (*vide* Figure 13) provides a strategic framework that ensures accountability within this endeavour to attain sustainability by addressing management responsibility; support; plans and programmes; as well as indicators regarding performance measurement. The model addresses each key performance separately, yet focusing on the attainment of the common vision and mission.

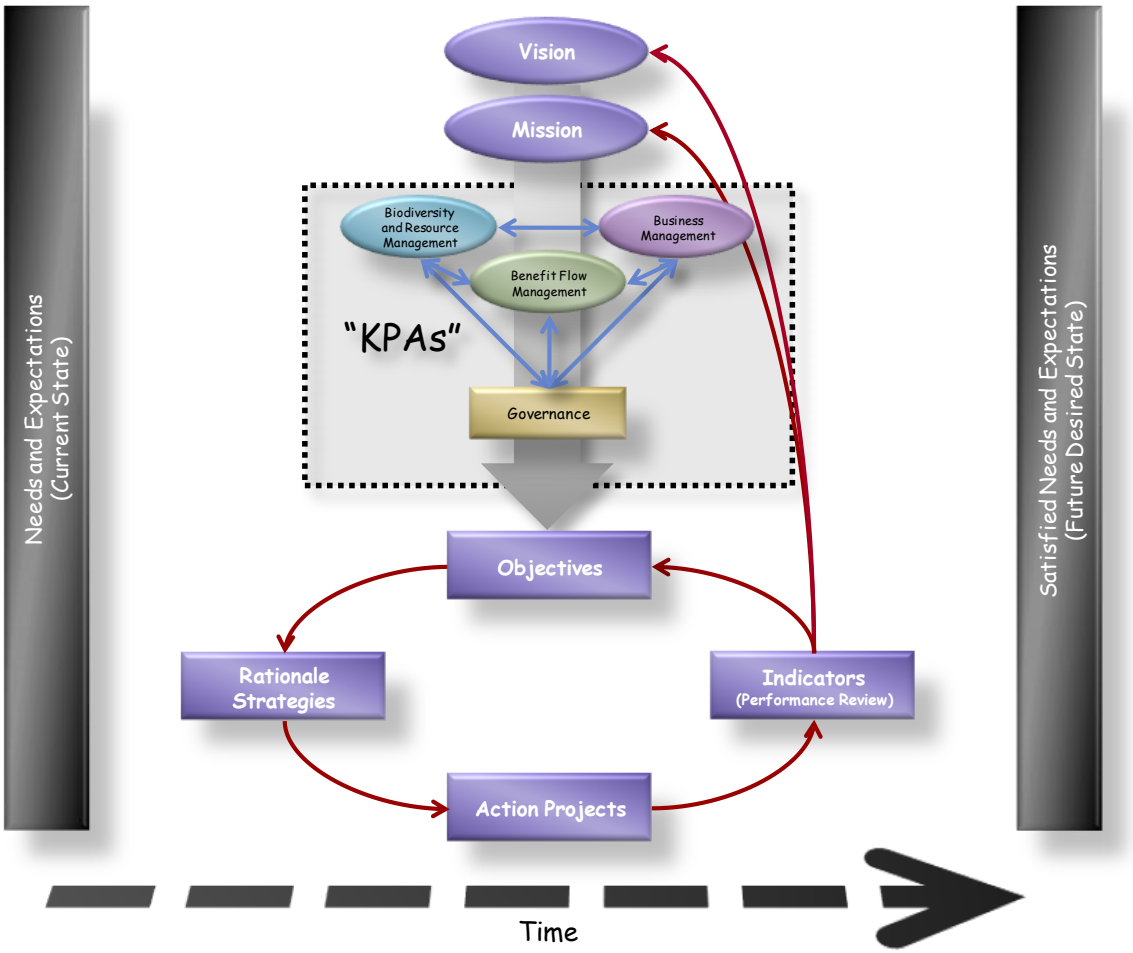


Figure 13: Management Framework

4.2 THREATS AND CHALLENGES

The main issues facing the MSR include:

- Low numbers and species diversity of mammals;
- Local communities living inside the MSR;
- Continued illegal hunting;
- Uncontrolled burning;
- Conflicts between elephants and local people outside the MSR;
- Undeveloped tourism potential;
- Changing hydrological situation;
- Inappropriateness of the boundaries;
- Access within the MSR and to the Machangulo Peninsula; and
- Low management capacity.

Ecologically, the MSR is in good condition apart from the low numbers of larger mammals. People living inside the MSR are currently low in number (about 1,000) compared with pre-war figures (up to 10,000), but the

increasing levels of returnees is a cause for concern in the absence of any clear strategy with which to deal with the problem.

Levels of their resource use are generally low and localised, apart from illegal commercial gill-netting in some of the lakes. There is limited livestock in the MSR, and vegetation has largely recovered from pre-war overgrazing. This situation is transitory. - if more people return to the MSR, resource exploitation will increase and livestock numbers may build up again, and the situation could evolve to the point where the MSR objectives are compromised. The MSR is at a critical point in its history, requiring decisions and initiatives to be taken to ensure its integrity, while at the same time working out a solution that is equitable to the region and its people.

The MSR contains a wide variety of habitat types. It has a remarkably high biodiversity value, lying within the Maputaland Centre of Endemism which has high species diversity and endemism at specific and sub-specific levels, particularly in the flora, avifauna, herpetofauna and ichthyofauna. Values of the MSR are reviewed in more detail in section.

Up until the early 1980s the integrity of the MSR was severely affected by human settlement, livestock and other activities occurring inside its boundaries. The subsequent civil war had large impacts on the MSR, resulting in a great reduction of most of the remaining large mammal populations, the evacuation of most of the local people resident in the MSR and surrounding rural areas to safer places, and the destruction of their livestock herds. This resulted in recuperation of degraded habitats, and the MSR is now in excellent condition apart from the depleted larger mammal populations.

With the coming of peace, local people are moving back into the MSR, although numbers are significantly lower than before the war. Their level of activity is low and there are limited numbers of cattle and goats. The impacts are however exacerbating, and will have a significant impact on the ecotourism potential of the MSR.

4.3 VISION AND MISSION

4.3.1 Vision

It is envisaged that the MSR will ***be managed to conserve, through protection and wise use, the exceptional terrestrial and marine biodiversity of this area, and will form a key part of a larger international biodiversity conservation area, while offering opportunities for tourism development, and community involvement and benefit***.

4.3.2 Mission of the MSR

Based on the Vision, the Mission of the MSR is to achieve the following:

- ***Biodiversity conservation***: the biodiversity of the MSR will be conserved (ecosystems and landscapes, species diversity including endemics, and genetic resources); the large wild land mammal populations which once characterised the area will be re-established and maintained;

- ***Conservation of marine systems***: the MSR will contribute to the conservation of the adjacent marine ecosystem and their plant and animal communities, including threatened species;

- ***Ecological connectivity***: linkages with other new and existing protected areas will be enhanced in order to maintain their connectivity with the MSR and promote the viability of this core area of biodiversity. Specifically this will be done through the incorporation of the Futi Corridor and conservation of habitats in other areas south and west of the MSR, and through the inclusion and integration of the of the MSR within the LTFCA;

- ***Equitable benefits for affected communities***: communities living inside and adjacent to the MSR will participate in and share responsibility for MSR management; current conflicts will be mitigated through continued access to sacred sites and the sustainable use of certain natural resources, and the integration of local development with conservation and tourism;

- ***Unlocking the ecotourism potential of the MSR***: diverse opportunities will be created for citizens and foreigners to appreciate the natural values of the MSR, for the purposes of enjoyment, education and revenue generation; and

- ***Local and national development***: the MSR will play a role in promotion of local development through attraction of investment funds, employment creation, revenue generation and support to local rural development, and will also contribute to national economic development.

4.4 KEY PERFORMANCE AREAS - SPECIFIC MANAGEMENT OBJECTIVES

Based on the vision and mission of the MSR, the Key Performance Areas for the effective management of the MSR have been identified as being the management of:

- *Biodiversity*: based on both natural and cultural resources aimed at ensuring the protection and viability of the ecosystem that underlies the biodiversity of the MSR;
- *Business*: ensuring that the MSR generates sufficient income to enhance the conservation contributions of the GoM to such an extent that the protected area can become self-sustaining;
- *Benefits*: to the region and its people ensuring that the value of conservation is well understood and appreciated, and therefore supported;
- *Governance*: to ensure that the legislative, policy and support framework enables the conservation activities to be effective.

Specific management objectives for each of the Key Performance Areas have been identified as follows:

Biodiversity and Resource Management:

- To ensure the functioning of ecological processes and systems.
- To secure adequate staffing, infrastructure and equipment that enable effective and efficient management of MSR.
- To lobby for the review of existing and where necessary development of new legislation and policies in order to facilitate the development of MSR and the LTFCA.
- To promote and ensure sustainable utilisation of natural resources.
- To promote community and political awareness regarding conservation as a viable land use option.

Business Management:

- To empower MSR through the development of policy and the revision of the legal framework that promotes the devolution of power and revenue retention.
- To create an environment conducive to investment.
- To improve and develop a diverse tourism product.

Benefit Flow Management:

- To develop and implement interventions that reduce human and wildlife conflict.
- To ensure equitable benefits to communities through increased tourism opportunities.
- Broaden understanding of the benefits of wildlife conservation.
- To support local and socio-economic development.

Governance:

- To establish appropriate institutional arrangements and coordination regarding the MSR and PPMR.
- To lobby for the review and revision of policy and legislation regarding biodiversity business and benefits beyond borders.
- To empower and capacitate management though the provision of adequate resources.
- Support in the provision of requisite infrastructure to improve to the MSR and TFCA.

4.5 IDENTIFYING THE ACTION PROJECTS

This section regarding actions projects for the KPAs of the MSR includes where appropriate linkages and joint management issues with the PPMR. For details regarding the strategic business framework for the PPMR, the reader is; however, referred to the *PPMR Management Plan.*

Furthermore, it should be noted that the responsibilities regarding the various action projects have been allocated as per the proposed institutional arrangements to administer the MSR and PPMR.

4.5.1 KPA1: Biodiversity and Resource Management

The rationale, strategies and key action projects for the following biodiversity and Resource Management objectives are set out in the tables below:

- To ensure the functioning of ecological processes and systems.
- To secure adequate staffing, infrastructure and equipment that enable effective and efficient management of MSR.
- Review existing and where necessary develop new legislation and policies in order to facilitate the development of MSR and the LTFCA.
- To promote and ensure sustainable utilisation of natural resources.
- To promote community and political awareness regarding conservation as a viable land use option.

Table 1: Functioning of ecological processes and systems

Objective:	*To ensure the functioning of ecological processes and systems*

Rationale:

To maintain genetic diversity and fitness, it is important that the MSR's plant and animal populations do not become isolated from others in the region, or they may become unviable. It is therefore important that connecting corridors are maintained for the flow of genetic material. It is recommended that the boundaries of the MSR be analysed using a variety of criteria and identified areas included within the MSR boundaries, or are protected by the creation of buffer zones. The implications of boundary renegotiations should be discussed with local communities, and the possibilities of joint management arrangements considered.

The terrestrial limits of the MSR exclude important parts of the natural system. They do not cover:

- all the elephant range, including the Manhoca area, the forests and other dense vegetation on the west bank of the Futi River (also important for protection of the river); and forests between the Futi and Maputo Rivers; Baixa Nhambse (also important for aquatic birdlife including some species not recorded within the MSR); and the Maputo River floodplain near Salamanga which may have once been an important feeding area for elephant cow herds;
- the whole of the forests between Mechingane and Gala, and the whole of the swamp forests of Lakes Xingute and Piti ; and
- the southern part of Lake Piti.

The MSR's legal boundary currently stops at the high tide mark. It does not include any inshore waters, reefs or corals. Due to the proclamation and alignment of the PPMR with the MSR the protection of the marine biodiversity and resources are ensured.

None of the Maputo River is included in the MSR; its estuary has great importance for young prawn and fish populations and it has high potential for tourism.

The proclamation of the Futi Corridor as part of the MSR ensures that the ecological linkage along the Futi River is maintained, re-establishing the connection between the elephant populations that have been separated by the fence along the South African/Mozambican border. The objective of the Corridor is to promote biodiversity conservation and community management of natural resources, securing community use rights to land and resources. The Corridor has already been approved in principle by the Council of Ministers as part of the TFCA project.

Regarding the current MSR Buffer zone, Decree nr. 2904 of August 9th 1969, established an area called "Regime de Vigilancia Especial" as the buffer zone of the MSR. It is situated from the southern border of the MSR and along the boundary area of the Maputo River on the west, the coastline on the east, and the South African boundary in the south. The Wildlife and Forestry Law establishes 5km width for buffer zones of parks and reserves. While this effectively establishes the MSR buffer zone, it is important to note that the concept of *buffer zone* has not been extensively used for the MSR, and its limits are not widely known and recognised by stakeholders. The buffer zone must thus be formalised.

Priority animals for conservation include:

- *elephant*: a population of about 350, local genotype;
- *suni*: small population of local genotype, regionally rare;
- *four-toed elephant shrew*: current status unknown;
- *pangolin*: current status unknown;
- *red squirrel*: rare;

- *birds*: several species which are CITES listed, including greater and lesser flamingo, and pink-backed pelican, and known endemics;
- *reptiles*: Nile crocodile (large population of local genotype); rock python (current status unknown); marine turtles; endemics; and
- *fish*: Croilia mossambica (rare, near-endemic to Maputaland Center), Serranochromis meridianus (rare, near-endemic to Maputaland Center), Aplocheilichtys myaposae (endemic to Maputaland Center).

Threats to the wildlife populations of the MSR include:

- *Illegal hunting*: this is the main threat to the MSR's large mammals. The species most affected are common and red duiker, suni, elephant, common reedbuck, and leatherback and loggerhead turtles. Hunting includes subsistence hunting by local communities, commercial/sport hunting by people with vehicles from outside the MSR, and hunting by people who come by boat from Maputo to the north of the MSR. Animal numbers are at extremely low levels at present because of poaching during and since the war;
- *Uncontrolled fires*: these can have a negative impact on large mammals by reducing the amount of available forage. Effects are particularly serious when very large areas burn, and small, less mobile animals suffer direct effects of fire; and
- *Fishing*: impacts of commercial and subsistence fishing in Lake Piti and other coastal lakes are currently unknown.

The MSR's vegetation has a remarkably high biodiversity value in terms of species diversity, endemism, and variety of vegetation types. Priority plant communities and species in the MSR include:

- coastal dune forest;
- swamp forest;
- sand (licuati) forest;
- wetlands including the Futi and Maputo River flood plains;
- mangrove communities;
- unique endemic-rich dwarf savanna (woody grassland); and
- rare and endemic plant species.

The major perceived threats to the vegetation are:

- indiscriminate cultivation of the swamp vegetation and soils associated with the Futi channel; there is a risk that the channel will undergo long-term alterations resulting in further drying up of the river, with implications for communities and wildlife dependent on this water source, and for the inland delta of the Futi River;
- loss of woodland and forest and spatial pattern in the grasslands and savannahs through indiscriminate, extensive and frequent burning, with consequent impacts on forage availability and habitats for large mammals, and scenic impacts;
- damage to coastal dune forest and dune front colonising communities, due to insensitive tourism development, damage by vehicles and trampling along the dune front, with risk of dune blow-outs and fragmentation of the forest;
- damage to vegetation due to overuse of roads in areas of steep slopes and fragile soils, resulting in soil erosion;
- cultivation of valley bottom wetlands and wetland fringes including Lake Piti and Lake Maunde, with loss of some of this habitat type and possible long-term hydrological changes, and disturbance to wild animals;
- unquantified impacts on the mangroves from cutting poles for markets in Maputo; overexploitation of the mangrove could result in loss of breeding grounds for prawns and fish, and erosion of sediments; and,
- risk of establishment of Chromolaena odorata, an invasive shrub which could threaten the coastal forest and riverine vegetation of the MSR, and possibly other areas with high water table.

Most soils in the MSR are very fragile, especially:

- dune slopes in savannah and coastal grasslands where sand is large-grained, single-sized and loose, and basal cover of the vegetation is low;
- the ecotone between seasonally wet grassland and dry forest, in the white sand areas; and
- fore-dunes above the beach, and the large coastal dunes especially on the seaward side.

In wet areas near rivers and lakes, repeated cultivation exposes the organic peat layer which oxidises, resulting in:

- eventual loss of soil fertility;
- likelihood of erosion; and
- greatly reduced capacity to retain water and therefore maintain dry season water-table levels locally.

The main threats to the soils of the MSR are from:

- use of roads in excess of their carrying capacity, as has happened in the past year in the Gala-Machangulo road;
- off-road driving;
- overgrazing by livestock or wildlife;
- trampling by people (e.g. in coastal dunes or other sensitive places where tourists might concentrate);
- inappropriate development of tourism installations; and
- machambas both in the wetter areas with higher soil organic matter, and on sandy soils.

The flow of the Futi River has declined in the past few decades. In the MSR the Futi River maintains the riverine vegetation along its course, and the wetlands of its inland delta. It also provides water for people and animals. Possible reasons the

changes are:

- the presence of the Futi eucalyptus plantations;
- the regional decline in annual rainfall as a result of climate change (though the flow of the Futi is thought to have started to decrease before the present decline in rainfall);
- destruction of the peat layer in parts of the river valley by fire some years ago which might have destroyed the sponge effect of the river bed and resulted in disruption of dry season downstream flow; and
- cultivation of the river bed and banks.

More recently the levels of the lakes have dropped, probably because of the recent drought years. Despite good rains the levels have not recovered. It may be that aquifer recharge is taking place, leaving surface water levels low. In the longer term, habitat changes will occur if the recent trend continues. Bands of mangrove have already died on higher ground, presumably because of the drought.

The ecology of the Maputo River as it flows past the MSR is poorly understood. The estuary is thought to be an important feeding area for young prawns and fish, which are probably being over-fished. The river has high potential for tourism. Various developments are planned on this section of the river and upstream which could have impacts for the MSR. Since the river currently lies outside the MSR it has never been incorporated in its management.

The various strategies required to ensure the effective functioning of the MSR ecosystems include the following and are detailed below:

Strategy 1. Research
Strategy 2. Defining and establishing ecosystem linkages
Strategy 3. Fire Management
Strategy 4. Management of threatened plant species and vegetation types
Strategy 5. Conservation of threatened animal species
Strategy 6. Protection of vegetation which maintains critical ecological processes
Strategy 7. Futi eucalyptus plantations
Strategy 8. Management of exotic plants in the MSR
Strategy 9. Control of exotic animals in the MSR (Domestic livestock)
Strategy 10. Wildlife restocking
Strategy 11. Soil protection and conservation
Strategy 12. Hydrological Management

Strategy 1:	*Research*

Regarding research, monitoring and evaluation, a large amount of information about the MSR, its biodiversity, management, socio-economic situation, uses of natural resources, boundaries and threats, was recorded in the early 1970s. Since then a few studies have been made, notably by UEM, but there remain large gaps in existing knowledge about the current status of the MSR's biodiversity, ecological trends and community issues. Marine aspects are particularly poorly understood, apart from the work done by the Oceanographic Research Institute and some work on fisheries, and subsequent work between Ministry of Coordination and Environmental Affairs (MICOA) and UEM. There is however no sound, comprehensive baseline data on which monitoring can be based.

Priority will be given to research with direct application to MSR management, including inventory work since there are still many gaps in basic knowledge about the MSR. Some research in the MSR may form part of larger research programmes covering wider areas (e.g. LTFCA, or coastal zone). All management-oriented research to be implemented under this plan has already been described as an integral part of management under previous sections. Networking should be promoted with UEM, KZNNCS and other institutions to share research results and avoid duplication. Requests to undertake other research (i.e. without direct relevance to MSR management priorities) by other institutions will also be considered. If they are self-funded and inputs are not required from MSR management or Research Section they will generally be approved. All research undertaken in the MSR must be done with the approval and knowledge of the Management Board, Biologist and Administrator. All results and reports must be presented in two copies, for the MSR library and DNAC.

Baseline data will be collected and monitoring systems established to monitor priority aspects of vegetation, fires, hydrology, fauna, demography, use of natural resources, tourism, and management interventions. These have already been specified in sections above. Trends will be evaluated and feedback provided to modify management interventions where necessary.

Action Projects	**Indicators**	**Responsibility**
RM1. Develop a database for monitoring of biodiversity, physical environment, community aspects, natural resource use, tourism and management interventions, to be located in the main camp with backup elsewhere	Database and backup system	MSR Ecologist
RM2. Prepare a research priority programme and link with interested research institutions	Research priority programme	MSR Ecologist & Manager
RM3. Develop a network of contacts for other research	Network of research contacts	MSR Manager
RM4. Develop a library for the MSR in the main camp	Library	MSR Manager

Strategy 2:	*Defining and establishing ecosystem linkages*

Historically, protected areas were established prior to the establishment of IUCN standards and assessing national conservation targets and often the protected area merely represented land set aside as a buffer, because it was marginal or because it protected a specific species or place, uncontextualised with the ecological systems that sustain it.

The MSR has a history of changing its core focus, from initially protecting elephant, to now being an integrated protected area responsible for both a terrestrial and marine component as well as the ecological systems that sustain these areas, and the specific habitats that they support.

Defining and establishing ecosystem linkages based on new knowledge and understanding, as well as through innovative methodologies such as co-management agreements would be essential if the protected area is to attain its overall ecological, social and economic objectives.

Government approved a Conservation Policy in November 2009 which includes the re-categorisation of conservation areas – it should be recognised that the MSR may be re-categorised to a more restricted conservation level.

Action Projects	**Indicators**	**Responsibility**
RM5. Assess & demarcate important marine and terrestrial habitats, and determine ecological systems that influence the habitat dynamics within MSR	Report on ecological dynamics. Important habitats demarcated and protected through the appropriate management strategies	MSR Ecologist and PPMR Biologist
RM6. Assess the value of Ecosystem goods and services, and develop a monitoring programme for the functioning of the ecological systems	Value of ecosystems determined though report; Monitoring report established and regular reports available	MSR Ecologist / PPF GIS
RM7. Develop co-management agreements with surrounding communities to ensure that the functioning of ecosystems is attained	Concluded co-management agreements for areas contiguous to the MSR	MSR Manager

Strategy 3:	*Fire Management*

Fire will be used as a management tool, to:

- maintain or enhance spatial heterogeneity of the vegetation;
- ensure adequate fodder throughout the year to support the large wild mammal populations;
- retard woody plant growth where appropriate; and
- reduce the risk of an accidental or arson fire occurring that will threaten the survival of plant species or destroy the composition or structure of a priority vegetation community.

Fire, both lightning- and man-induced, is thought to have played a major role in the development of the MSR's vegetation. In applying fire as a management tool, it is intended that natural processes are allowed to prevail over those that are obviously artificial. For this reason, no attempt is made to apply a rigidly defined burning programme with specific frequencies and block boundaries. The following prescriptions will be followed:

- wild and arson fires should not be extinguished unless a priority plant community or installation is being threatened;
- between a third and two thirds of the grassland and savannah vegetation types should be burnt annually;
- fire that is intended to create green flush can be burnt in any month of the year, 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;
- no controlled burning should be implemented prior to the implementation of protective measures around infrastructure and boundaries; and
- the distribution and extent of each fire should be mapped 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.

A fire campaign will be developed as part of the ongoing community programme, looking at the range of reasons for burning, and working out ways of adapting communities' needs for fire within the burning programme, or if necessary developing viable alternatives to fire with the local people.

Action Projects	**Indicators**	**Responsibility**
RM8. Develop Fire Management Programme	Fire Management Programme designed, approved and implemented	MSR Ecologist (Consultancy)
RM9. Before the rains start prepare a burning map for areas of the MSR that have been burned during the previous dry season, using a GPS and GIS	Burning Map	MSR Manager and Ecologist
RM10. As part of the community consultation, work closely with local communities to determine their reasons for burning, the areas concerned and the times of year for each purpose	Community consultation reports	Community Liaison Officer
RM11. Assess how compatible or otherwise this burning pattern is with the ideal regime for the MSR	Compatibility assessment report	MSR Manager and Ecologist
RM12. Explain to local communities the MSR's ideal regime and the reasons for it; discuss with them the feasibility of any adaptations needed to their burning to fit in with this, and seek viable alternatives to burning where there is incompatibility	Community consultation reports	Community Liaison Officer, MSR Manager and Ecologist
RM13. Maintain consultation with the communities and explain burning plans each year; adapt plans to suit their use of natural resources where feasible; let them implement parts of the burning programme if appropriate	Community consultation reports Revised burning plans	Community Liaison Officer and MSR Manager
RM14. Implement the annual burning plan, at the start of each calendar year examine the burning map from the previous year and identify areas that were not burnt during this period; inspect each of the identified areas in the field and assess the desirability of burning. If	Burning plan audit and report	MSR Manager & Ecologist

Action Projects	Indicators	Responsibility
desirable, determine what type of fire (high or low intensity)		
RM15. Select ignition points with due regard for the direction of the prevailing winds, so that each of these areas can be burnt	Ignition points included in burning plan Burning plan audit report	MSR Ecologist
RM16. 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	Burning plan audit report	MSR Administrator
RM17. Record fire data on a recording form and on a new map for each year, showing the extent of the burn and date	Fire database Revised burning plan and map	MSR Ecologist

Strategy 4:	*Management of threatened plant species and vegetation types*

A biodiversity inventory will be undertaken in the MSR to identify endemic, endangered and rare species and rare or threatened vegetation types. Priority taxa are:

- plants;
- invertebrates;
- fish; and
- small mammals.

Hot spots for endemic and rare species, and priority vegetation types will be identified so that appropriate management measures can be taken to ensure their conservation. Specific management prescriptions will be developed once results of the inventory are available.

Action Projects	Indicators	Responsibility
RM18. Plan and undertake biodiversity inventory and include recommendations for management in the report	Biodiversity inventory and management recommendations	MSR Ecologist
RM19. Complete the vegetation map for the MSR started for the Mosa Florestal environment impact assessment	Vegetation map for MSR	MSR Ecologist
RM20. Review the need for further management prescriptions based on the recommendations of the inventory, and incorporate them in annual work programmes for the MSR	Revised annual work programmes	MSR Manager and MSR Ecologist

Strategy 5:	*Conservation of threatened animal species*

Special attention will be paid to elephants, given their status and regional conservation importance, and the fact that they were the primary reason for the proclamation of the MSR. They will be protected in the MSR, and prevented from damaging crops outside the MSR as much as possible. Other species will generally be conserved through normal MSR management; as more information becomes available on them specific management practices may be implemented for a given species during the period of the plan if necessary. These include suni; four-toed elephant shrew, pangolin, red squirrel; nyala; oribi; dugong; roan; Lichtenstein's hartebeest, black and white rhino, crocodile; flamingo; pelican; etc

Action Projects	**Indicators**	**Responsibility**
RM21. Ongoing bird monitoring is to be encouraged, with field cards returned to the Mozambique Bird Atlas Project which can supply data summaries to the MSR. Tourists interested in bird watching should be advised about the Bird Atlas Project.	Bird monitoring system and reports Tourism brochures on Bird Atlas Project	MSR Ecologist
RM22. Undertake inventory of priority animal biodiversity in MSR and Futi Corridor and incorporate recommendations in management programmes if feasible	Priority animal biodiversity inventory Management recommendations	MSR Ecologist
RM23. Develop specific conservation programmes for each of the species of conservation significance	Conservation programmes	MSR Ecologist
RM24. Monitor efficacy of specific conservation programmes	Conservation programme monitoring system and reports	MSR Manager

Strategy 6:	*Protection of vegetation which maintains critical ecological processes*

Restoration of areas of coastal forest damaged by man will be promoted, focusing on Milibangalala where there is a severe risk of the continuity of the coastal forest being severed due to clearance for camping sites in very sensitive areas. Some action will also be taken at Dobela, where a wide footpath opened to the top of the forest is unaesthetic and risks damage to the exposed forest opening due to salt spray. The dynamic equilibrium of dune erosion and changes in the dune forest cover associated only with natural forces on this unstable coastline will be left to follow their own course unless the conservation status of the forest is threatened.

Cultivation of the floor and banks of the Futi Channel inside the MSR will be gradually phased out, in negotiation with local communities and with development of alternatives for them. This might include, for example, promotion of organic farming techniques outside the boundaries of the MSR to the west, perhaps using regulated quantities of water from the Futi channel for this purpose. However, the problem of elephant damage would have to be resolved. Other alternatives could involve the promotion of other benefits for the communities, including use of the Fund (see community section below).

In general, other degraded areas will be assessed to determine how important they are in terms of ecological processes (e.g. old machamba sites and roads). Those which are not critical will be left to recover naturally, unless they are very unsightly and their recuperation through intervention is relatively easy. Any that are critical will merit priority action.

Action Projects	**Indicators**	**Responsibility**
RM25. Rehabilitate the area of the existing Milibangalala campsite taking the following measures: • no more sweeping, camping or fires (camping should be confined to the grassland of the dune, taking care not to start fires); • protect the ground with brushwood branches to exclude people and prevent trampling; • protect and encourage the growth of sprouts from remaining trees; • if necessary germinate seedlings of the forest tree species occurring near the beach from seed and transplanted,	Milibangalala rehabilitation plan and report	MSR Manager

Action Projects	Indicators	Responsibility
with protection of the brushwood; • the small entrance to the beach from the large, recently cleared area should be closed off using thorn branches and brushwood to protect the strand vegetation which will prevent more sand from blowing in; strand species should be germinated from seed if necessary and planted at the top of the beach in front of the path; and • visitor access to the entrance of the large area from the beach at the far end of this site should be closed; action should be taken as above if it shows signs of fresh erosion.		
RM26. At Dobela allow the recently cleared path from the camp to the top of the dune to narrow naturally, and monitor the opening to the viewpoint for signs of salt or wind damage; if this occurs take remedial action	Dobela rehabilitation and monitoring plan and reports	MSR Manager
RM27. Continue discussions and negotiations with the community of Massohoane to stop cultivating the Futi valley	Massohoane Community consultation reports CAP reports	Community Liaison Officer andMSR Manager
RM28. Jointly with the community, seek alternative means of livelihood for the people; this could include other forms of cultivation elsewhere and promotion of other economic activities and benefits from the MSR	CAP reports	Community Liaison Officer
RM29. Inventory and assess the seriousness of other degraded sites	Assessment and inventory report of degraded sites	MSR Ecologist
RM30. Develop recuperative measures when merited	Rehabilitation plans	MSR Manager

Strategy 7:	*Futi eucalyptus plantations*
The presence of these plantations in the area of the Futi Channel and the MSR is ecologically undesirable. The Matutuine District Plan does not permit the planting of exotic species in 'protected areas' (it does not state whether the "vigilance area" is considered to be a protected area).	

Action Projects	Indicators	Responsibility
RM31. Verify the legal status of the plantation	Report on legal status of plantation	MSR Manager
RM32. Undertake an inventory of the standing stock of the plantation and develop a cutting plan if economically viable	Inventory of standing stock Cutting plan	Reserve Administrator
RM33. Contract out any logging by public tender; if possible retain revenue for investment in the MSR and law enforcement in the region	Public tender documentation Logging contract Revenue sharing agreement/s	Reserve Administrator
RM34. Draw up a plan for the future management of the area (to be incorporated at a later date into the Futi Corridor management plan)	Management plan for Futi plantations and incorporation into the Futi Corridor	Reserve Administrator

Strategy 8:	*Management of exotic plants in the MSR*
Exotic (alien) plant species such as eucalyptus, cassias and fruit trees growing in the MSR which are not used by local communities will be systematically removed, after consultation with communities if appropriate. No new exotic plants will be introduced by the Reserve Administration. Collaboration will be promoted with communities to discourage the introduction of new exotic species, especially those which might cause problems. A careful watch will be kept for the presence of Chromolaena in the Futi Corridor and MSR, and if detected action will be taken immediately to control it. It is probably not feasible to control exotic aquatic weeds such as Eichhornia and Pistia in the MSR.	

Action Projects	**Indicators**	**Responsibility**
RM35. Invasive Alien Species Management Programme developed	Invasive & Alien Species Management Programme developed and implemented	MSR Ecologist
RM36. Warn MSR staff of the risk of Chromolaena, provide with identification chart and request to report any incidence in the MSR or Corridor	Capacity building programme Identification chart Monitoring reports	MSR Manager and Community Liaison Officer
RM37. Discuss control methods with UEM, and prepare methodology for control action (including identification of sources of supplies of equipment and chemicals required)	Meeting report/s Control methodology and procedures	MSR Manager and Ecologist
RM38. Control any occurrence of Chromolaena in the MSR as soon as possible	Implementation and monitoring reports	MSR Administrator
RM39. Inventory of the occurrence of all other exotic plants in the MSR outside machambas and settlements. As part of ongoing community consultation, ask communities if they use these plants or if they have owners; explain reasons for wanting to remove them	Inventory of exotic plans in MSR Community consultation programme and reports	MSR Ecologist and Community Liaison Officer
RM40. Systematically remove exotic plants which are not of value to communities	Implementation and monitoring reports	MSR Manager
RM41. Hold discussions with communities to monitor whether they plan to introduce new exotic plants; if possible assess beforehand whether there will be negative impacts, and seek alternatives in this case	Participatory Monitoring and Evaluation reports	Community Liaison Officer

Strategy 9:	*Control of domestic livestock within the MSR*
In principle no domestic animals such as goats, cattle, pigs, sheep, cats and dogs will be permitted in the MSR. Poultry will be permitted provided it is kept within settlements. Care will be taken to avoid introduction of any other species of exotic animal. Routine monitoring will record the presence of new exotic species and appropriate action will be taken.	

Action Projects	**Indicators**	**Responsibility**
RM42. Alert MSR personnel to watch for new exotic species and include in the patrol report forms; take appropriate action if exotic species are discovered	Capacity building programme Identification chart Monitoring reports	MSR Manager
RM43. Prepare a strategy aimed at removing all domestic livestock from the MSR, aligned with the game restocking plan	Domestic livestock management strategy	MSR Manager
RM44. Monitor presence and impact of domestic livestock within the MSR	Monitoring programme and reports	MSR Ecologist

Strategy 10:	*Wildlife restocking and reinforcement*

Wildlife restocking and reinforcement will follow the IUCN guidelines and will focus on introduction of historically occurring species.

Re-establishment of large mammal community and a dynamic ecological equilibrium with its habitat is a priority of the MSR. Reintroductions of game should only be made into the MSR when illegal hunting is under control. Only species which occurred historically in the area should be translocated to the MSR. Discussions will be held with local people beforehand about proposals for and implications of restocking of the MSR with indigenous large mammal species.

Ascertain status of large mammal species and recommendations for re-introductions. Animal counts can be done partly by air census but should be combined with direct and indirect ground surveys. Monitoring should use techniques which will be affordable in the future after donor support terminates. Methodology should take into account the likely increase in animal species and numbers due to re-introductions. Monitoring will also assess animal impacts on vegetation

Species recommended initially for introduction are: zebra, ostrich, warthog, oribi, kudu, nyala, waterbuck, , wildebeest, Lichtenstein's hartebeest and buffalo. Numbers recommended for introduction are up to half of the estimated carrying capacity of each species. Species such as Black and White rhino could be introduced in a second stage if their security can be assured. The predators which are known to have occurred in the MSR in the past should not be introduced until prey populations have achieved numbers which allow their exploitation. Scavenger populations will be maintained at a level which is at equilibrium with the amount of carrion available. The inter-relationship between animal community and vegetation will also be monitored, with the aim of attaining a dynamic equilibrium between the two. The over-riding purpose should be to maintain populations at levels which retain the indigenous species richness of the MSR. Management interventions should be made if the survival of a particular species or vegetation type is threatened. In practice decisions will have to be made to define the ideal balance, with likely trade-offs in vegetation damage, game-viewing quality etc. Interventions could include reduction or limiting of levels of certain species, for example by live sales, culling and venison production or perhaps translocation to community conservation areas contiguous with the MSR. However, it is unlikely that this situation will occur during the period of this plan.

Action Projects	**Indicators**	**Responsibility**
RM45. Design & implement wildlife introduction programme	Wildlife reintroduction programme implemented; number of animals reintroduced	MSR Ecologist
RM46. Initiate dialogue with communities on the possibility of re-introductions and future benefits for them	Community consultation reports	Community Liaison Officer
RM47. Undertake census of large mammals and assessment of habitat status to provide baseline data and develop a monitoring system.	Large mammal census Habitat status assessment Monitoring system and programme	MSR Ecologist, (DNAC and Biology Department of UEM)
RM48. Seek sources of animals which are genetically as similar as possible to historically occurring stock, and seek funding for animal purchase and translocations	Seed stock reports Funding raising programme and reports	MSR Ecologist (LTFCA Regional Administrator, , Head of Protected Areas (DNAC), UEM representative)
RM49. Investigate and arrange logistics of translocations including veterinary clearance	Translocation plan and reports	MSR Ecologist (LTFCA Regional Administrator, DNAC Protected Areas Specialist)
RM50. Introduce herbivores	Herbivore introduction plan and reports	MSR Ecologist
RM51. Monitor success of establishment, survival and growth of introduced herbivore populations, interactions with existing populations and impacts on vegetation	Monitoring programme and systems Monitoring reports	MSR Ecologist
RM52. Reintroduce carnivores and scavengers when herbivores reach a satisfactory level	Carnivore introduction plan and reports	MSR Ecologist
RM53. Monitor the balance between herbivores and carnivores, and vegetation and herbivores	Monitoring programme and reports	MSR Ecologist

Strategy 11:	*Soil protection and conservation*

General vegetation management protects soils, however certain activities such as overstocking of wildlife or a build-up of domestic animals must be avoided. Expansion of machambas will be actively discouraged; cultivation in the Futi Valley will be phased out, and impacts from tourism development must be monitored. Vehicle impacts will be controlled by:

- minimising the use of roads within the MSR, encouraging tourists to walk and use hides rather than drive;
- if feasible promoting access to Machangulo by boat;
- upgrading frequently used roads in susceptible places;
- prohibiting off-road driving;
- tourist use of vehicles in the MSR will be largely restricted to transport in operators' vehicles; and
- realigning and upgrading roads where appropriate in sensitive areas.

In realignment, general principles are to follow dune ridges and avoid steep slopes. If possible no new roads should be cut through forests. In fragile ecotone areas between seasonally wet areas and forest (e.g. Membe) it may be advantageous to have separate dry season and wet season routes, so that the fragile areas can be rested in the dry season when lower lying routes are passable. Material for upgrading roads should be brought from outside the MSR if possible. Attention should be paid to road drainage to avoid accelerated erosion. Any wetland crossing should not impede drainage.

Action Projects	**Indicators**	**Responsibility**
RM54. Study problems in existing road system using remote sensing and field visits, making proposals for realignment and upgrading where appropriate, always minimizing adverse impacts	Road system assessment and maintenance plan and programme	MSR Ecologist
RM55. Undertake realignment and upgrading	Maintenance programme reports	MSR Manager
RM56. Monitor the use of roads and impacts, and take further remedial action as required	Monitoring programme and system	MSR Manager and MSR Ecologist

Strategy 12:	*Hydrological Management*

The flow of the Futi River, the level of the main lakes in the MSR and water quality will be monitored, with particular reference to elephants. Any further development of the plantations will be kept well away from the Futi River and other areas of high water-table to avoid reduction of stream flow, and through the Futi Corridor programme adverse upstream developments will be avoided. Pumping water from the Maputo River to the Futi should not be implemented. The water quality of the two rivers is quite different (e.g. the Maputo has a high silt load and is nutrient rich; the Futi is low in silt and has acid peat), and the Futi system would suffer considerable ecological changes should this be done.

Regarding the Maputo River studies will be undertaken to gain a better understanding of the biodiversity, ecology and natural resources of this lowest section of the Maputo River. The study will take into account existing and planned developments along the western bank (e.g. rice factory and sewage disposal in Bela Vista) and developments upstream (e.g. quarry, lime factory, sewage disposal and other developments in Salamanga), and make recommendations for Reserve management and impact mitigation.

Collaboration between Reserve Administration, the National Directorate of Waters and any other appropriate initiatives will be promoted to ensure that the needs of the MSR are taken into account in decisions affecting management of the Maputo River. This will extend to future developments which will affect discharge volumes and flow patterns.

Action Projects	**Indicators**	**Responsibility**
RM57. Establish and implement a water monitoring system, building on work already undertaken by UEM	Water monitoring system	MSR Ecologist
RM58. Undertake a study of the biodiversity and ecology of the Maputo River, consult with existing and future river users and those undertaking impacting activities, and identify major threats	Maputo River study	MSR Ecologist
RM59. Incorporate findings into management strategy aligned with Inco-Maputo Agreement	Revisions to management strategy	MSR Manager
RM60. Promote dialogue and collaboration with impacting sectors to minimise adverse impacts, working through Government where relevant	Stakeholder consultation programme and reports	MSR Manager

Table 2: Adequate resources for the effective and efficient management of MSR

Objective	*To secure adequate staffing, infrastructure and equipment that enable effective and efficient management of MSR*
Rationale: Without adequate staff, infrastructure and equipment it will not be possible to effectively and efficiently management both the terrestrial and marine components of the MSR, and thus these three aspects must be planned, budgeted and implemented.	
Strategy	Law Enforcement Strategy
Monitoring and remedial action will be undertaken to avoid overuse of plant resources by local communities or illegal use by people from further away. The latter includes law enforcement to prevent commercial logging of timber in the MSR. Hunting of large mammals and other illegal activities in the MSR by both local communities and people from outside will be brought under control by the Reserve Administration. The Administration will also be responsible for controlling illegal forest and wildlife use in the Futi Corridor, focusing on illegal commercial and sporting activities there. Within the MSR the number of law enforcement posts will be increased by up to 5 (the number of posts and their location will be kept flexible, depending on where pressures are greatest and on available resources). The mobile team and posts in the west of the MSR and in the corridor will also undertake crop protection work. Law enforcement will be strengthened through intensified patrolling from the network of posts and by the central mobile team. The law enforcement section will be adequately equipped, trained and supported to ensure an efficient operation. Law enforcement efforts in the MSR will concentrate on non-residents. At the same time, dialogue will be promoted with local communities in the MSR to explore alternative benefits from the MSR, instead of hunting (see community section). Collaboration will be promoted between law enforcement and community personnel to ensure that their activities are harmonised with regard to the communities. The number of posts per unit area in the MSR is very high, mainly because of the need for problem animal control. This may be reduced as a result of the electric fence along the west of the MSR. In the longer term it should become possible to dispense with some of the posts once illegal activities are reduced to a low level: for example if other control methods are developed for problem animals, and if the mobile brigade succeeds in undertaking some of the work of the posts. Alternatively, once the new system has become effective and illegal operators realise that there is a serious management force in place it may be possible to dispense with a permanent mobile brigade. All new guard post developments should be either simple rustic buildings made from local materials or tents. Investment should be minimised as far as possible while at the same time ensuring reasonable working conditions for the guards. A detailed strategy for law enforcement for the MSR and in particular the Futi Corridor needs to be developed, and undertaken by MSR staff. (Refer Appendix 1).	

Action Projects	**Indicators**	**Responsibility**
RM61. Develop a Law Enforcement Strategy for MSR to inform staffing, infrastructure and equipment needs.	Law enforcement strategy	Reserve Manager
RM62. Update MSR staff needs assessment	Staff plan & budget	Reserve Manager
RM63. Lobby for the develop of a protected area career path policy	Staff careers and salary grade implemented	Reserve Manager
RM64. Develop an equipment needs assessment, and procure additional equipment	Equipment acquisition and replacement plan. Acquire equipment	Reserve Manager
RM65. Ascertain the MSRs infrastructure requirements.	Infrastructure development and maintenance plan/budget	Reserve Manager
RM66. Identify sources of funding and develop a fundraising strategic document, for MSR Management.	Produce MSR funding strategy. Signature of financial agreements with partners for the implementation of the Management Plan	Reserve Manager
RM67. Recruit and staff training according to MSR staff needs assessment	Additional staff recruited and trained	Reserve Manager

Table 3: Review of existing and development of new legislation and policies

Objective	*To lobby for the review of existing and where necessary develop new legislation and policies in order to facilitate the development of MSR and the LTFCA*
Rationale: To effectively manage the MSR, both from a terrestrial and marine perspective, it is imperative that the legislative and policy environment empowers the management staff to execute their requisite actions.	
Strategy	Policy and law reform
Following the preparation of a database regarding all the relevant policies and legislation, it is necessary to assess the appropriateness and efficacy of these for both the MSR, form both a marine and terrestrial perspective, as well as the TFCA. Specific areas that require addressing include protected area management within Mozambique, resettlement policy, plans and programmes regarding the core area of the MSR, land use planning, and the harmonization of the Mozambican policies with those of the LTFCA partner countries.	

Action Projects	**Indicators**	**Responsibility**
RM68. Collect & collate all relevant legislation, regulations & policies	To have all files as legal reference library.	Reserve Manager
RM69. Identify legislative & policy gaps and lobby for change	New or amended legislation and policy available	Reserve Manager
RM70. Establish a transfrontier protocol for security issues	Security Protocol signed trilaterally	TFCA Unit
RM71. Compile and harmonise community conservation structure (in the 3 countries)	Implementation structures approved and an action plan designed and under implementation	TFCA Unit
RM72. Establish resettlement policy & establish policy to manage internal MSR settlements	Resettlement Policy approved and implemented; Settlement Policy approved	MSR Manager
RM73. Define land use patterns/practices within MSR Buffer zones (East of Rio Maputo)	Land use patterns/practises established and approved	MSR Manager

Table 4: Promote and ensure sustainable utilisation of cultural resources

Objective	*To promote and ensure sustainable utilisation of cultural resources*
Rationale: Despite knowing that the MSR contains various Early Iron Age sites, Stone Age Sites, and a strong cultural importance for local communities, including the existence of cemeteries and ceremonial sites, its cultural, historical and archaeological values have not yet been comprehensively documented or given full attention in management strategies to ensure protection of all sites and rights of communities to continue traditional practices.	
Strategy	Cultural Heritage Management (CHM)
Surveys will be undertaken to add to existing knowledge on archaeological and cultural sites. Important sites will be given special protected status through zoning. Certain sites may be opened up to visitors if appropriate	

Action Projects	**Indicators**	**Responsibility**
RM74. Complete the ongoing survey work as part of a larger anthropological survey of the southern Mozambique coastline through fieldwork by experts and collaboration with MSR guards in locating sites; sites will be documented and recommendations will be made for their conservation	Cultural heritage survey Management recommendations	Community Liaison Officer
RM75. Undertake any necessary additional work as part of the environmental impact assessments for tourism developments, particularly on the coastal sites	Environmental impact assessment reports	MSR Ecologist
RM76. Take any management measures necessary to ensure preservation of archaeological and cultural sites, including control of tourist access	Management protocols	Reserve Manager
RM77. Collect existing information on recent local history and use it to help in understanding traditional resource management systems	Inventory of information	Community Liaison Officer

Table 5: Promote and ensure sustainable utilisation of natural resources

Objective	*To promote and ensure sustainable utilisation of natural resources*
Rationale: Sustainable utilisation as an option to provide tangible benefits to communities affected by protected areas has been proven as a viable and feasible option, and includes aspects such as fishing, grass, timber and reed collecting. Levels need to be set, based on current available levels for these if the yields are to be monitored and sustained. The acceptable methods regarding utilisation must be promoted based on clearly defined policies.	
Strategy	Ascertain sustainable resource utilisation levels and promote the use thereof based on clearly defined policies.
Numerous methods of natural resource utilisation take place within the MSR, and includes grass, timber and reed collection, fishing, and agriculture. Fishing activities undertaken by local communities continue within the MSR, in the coastal lakes, estuary and ocean targeting both prawn and fish species. This must be monitored to ensure that catches are sustainable. Sanctioned off-take of large mammals is unlikely to occur within the five year period of this management plan, but will be important in the longer term to prevent overstocking. Benefits from any harvesting in the future will go at least in part to local communities. A policy on ownership of wildlife to be introduced to the MSR should be clearly defined and understood by all stakeholders. This could become an alternative to livestock, and can lead to the inclusion of community owned protected areas being established and incorporated into the MSR.	

Action Projects	**Indicators**	**Responsibility**
RM78. Finalise Community Action Plan (CAP)	CAP	Reserve Manager
RM79. Promote collaboration between the MSR and the District Directorate of Agriculture and Rural Development on issuing of fishing licences only to local communities for the MSR and Futi Corridor	Meeting reports and memorandum of understanding	Reserve Manager
RM80. Monitor the impacts of fishing, both in terms of sustainability for target species and in terms of impacts on rare and endemic species. Incorporate any recommendations resulting from this work into management programmes, in collaboration with the local communities	Monitoring programme and reports	MSR Ecologist
RM81. Develop a policy on ownership and use rights to wildlife in the MSR in collaboration with all stakeholders before wild animals are introduced	Policy on wildlife ownership and use rights	Reserve Manager
RM82. Develop and implement sensitization programme for sustainable natural resource utilisation	Awareness programme designed and approved	Community Liaison Officer
RM83. Survey natural resource utilisation; including grazing and field crops	Database established and in use	Community Liaison Officer
RM84. Determine sustainable yields	Rational use database established; Resource use monitoring sheets established: MSR rules and regulations adapted to rational resource use	MSR Ecologist and Community Liaison Officer
RM85. Monitor sustainable utilisation levels	Use levels verified against	MSR Ecologist

Table 6: Promote community and political awareness regarding conservation

Objective	*To promote community and political awareness regarding conservation as a viable land use option*
Rationale: Conservation is not yet recognised and utilised by local communities within Mozambique as a viable and sustainable land use option, probably because it has not been understood as a business option either by the communities affected by protected areas, nor by the political leadership providing communities support and advice.	
Strategy	Conservation Awareness and Sensitisation
After ascertaining the economic value and impact of conservation within the region, and determining the value chain of conservation as a viable business option, it will be possible to compare conservation as a land use option against other options currently available within the region. A sensitization programme promoting conservation as a viable land use option, detailing specific areas and acceptable land use practices within the communities surrounding the MSR, as well as methodologies regarding the establishment of community enterprises based on the best land use practices, yet with compliance monitored through an enhanced law enforcement programme.	

Action Projects	**Indicators**	**Responsibility**
RM86. Ascertain the economic value and impact of the MSR to Mozambique	Present a report on the economic contribution of the MSR to the Gross Nation Product	Reserve Manager
RM87. Determine the value chain of conservation and compare to other Land Use Practices (LUP)	Analysis of economic value chain of conservation versus other LUP	Reserve Manager
RM88. Develop and implement sensitization programme that promotes conservation as an LUP	A sensitization programme implemented at national level	Community Liaison Officer
RM89. Develop community enterprises based on sustainable land use practices	Community Enterprises established (to be defined further)	Community Liaison Officer
RM90. Enhance Law Enforcement Capabilities	Reduction in poaching incidences; (spatial monitoring tools)	Law Enforcement Officer

4.5.2 KPA 2: Business Management

The rationale, strategies and key action projects for the following business management objectives are set out in the tables below:

- To empower MSR through the development of policy and the revision of the legal framework that promotes the devolution of power and revenue retention.
- To create an environment conducive to investment.
- To improve and develop a diverse tourism product.

Table 7: Empower MSR through the development of policy and revision of the legal framework

Objective	*To empower MSR through the development of policy and the revision of the legal framework that promotes the devolution of power and revenue retention*
Rationale: To generate income to fund MSR management and create benefits for local communities living in and adjacent to the MSR, it is necessary to empower the MSR management through the development and implementation of a policy, linked to a revised legal environment, that promotes the devolution of power as well as enabling the partial retention of revenue generated within the MSR.	
Strategy	MSR Empowerment – devolution and revenue retention
By establishing an autonomous entity with financial and administrative authority, aimed at implementing the devolution of power policies of the GoM, it will be possible ensure that revenue generated within the MSR can be retained, and systems implemented to improve guest satisfaction.	

Action Projects	**Indicators**	**Responsibility**
BUS1. Compliance of the policy for greater retention and use of revenue generated in the MSR	Motivation Document	Reserve Manager
BUS2. Participate in the establishment of an autonomous entity with financial and administrative authority	Motivation Document	Reserve Manager
BUS3. Improve revenue collection system with attention to security and prompt customer service	Increased revenue	Reserve Manager

Table 8: Create an environment conducive to investment

Objective	*To create an environment conducive to investment within the MSR*
Rationale: The MSR has tremendous potential to generate sufficient income from tourism, both in the form of investment in concessions as well as from gate revenues, yet this will only be possible if an environment conducive to investment within the MSR's tourism potential is created.	
Strategy	Establish an environment conducive to investment
By ensuring that tourism development occurs in a planned and controlled fashion, which does not have unacceptable social, socio-economic or environmental impacts, it will be possible to establish an environment conducive to investment.	

Action Projects	**Indicators**	**Responsibility**
BUS4. Increase tourism potential of the MSR through the improvement of the tourist experience including both the marine and terrestrial components	Increased Tourism revenue Satisfaction levels	Reserve Manager
BUS5. Improve basic MSR infrastructure (roads, communication, electrification)	Improved infrastructure	MSR Manager
BUS6. Increase capacity of promotion through more efficient marketing	Improved visitor statistics and satisfaction	MSR Manager
BUS7. Establish key partnerships with agencies involved in Tourism investment: INATUR, tour operators	Establish a strategic tourism framework	Reserve Manager
BUS8. Create a Position for Transaction Advisor/ Concession Manager	Refer back to the above position motivated	Reserve Manager
BUS9. Establish public relations programme	Refer back to the above	Public Relations Officer
BUS10. Investigate available fiscal incentives to encourage investment	Increased Regional Investment Operations	Transaction Advisor
BUS11. Design the Tourism Opportunities identified in the MSR Management Plan; select business partners/ investors for the establishment of additional tourism products according to Strategic Plan for Commercialisation (SPC) guidelines (refer Appendix 2)	Investors for Block Concessions and Activity Concessions	MITUR Reserve Manager
BUS12. Publicise tourism potential	Refer to above PR Programme	Transaction Advisor
BUS13. Establish guidelines for tourism products in the area;	Production of tourism best practise booklet	Transaction Advisor
BUS14. Establish specific licence conditions for Operators inside the MSR for selected activities	Develop Licence Guidelines	Reserve Manager

Table 9: Improve and develop a diverse tourism product

Objective	*To improve and develop a diverse tourism product*

Rationale:

The MSR has never been well developed for tourism, though it has extremely high potential. Unique attributes and attractions within and surrounding the MSR include:

- Indian Ocean coast with outstanding scenery, clear waters and opportunities for water and beach activities;
- Inland areas with high scenic value and good potential for game-viewing, 4x4 eco-trails; wilderness walking and other activities;
- Maputo River and Maputo Bay with opportunities for boating, bird watching and game viewing;
- Wide variety of bird species and plants; and
- Cultural attractions including archaeological sites and local community traditions.

The location of the MSR close to Maputo and the borders with South Africa and Swaziland, and the planned upgrading of the Salamanga - Ponta do Ouro road make it accessible to large national and regional markets. This is being enhanced by the development of the Maputo Corridor and promotion of regional economic growth through the Lubombo Spatial Development Initiative (LSDI) between Mozambique, Swaziland and South Africa. The national tourism policy zones this area for the upper and middle market sectors, and the identified markets include:

- *Mozambique*: Mozambicans in the top and medium income brackets, particularly from Maputo; foreigners resident in Mozambique, and their visiting friends and relatives; other tourists to Mozambique (e.g. business people);
- *South Africa and Swaziland*: top, middle and lower segments of the market; and
- *International:* top and middle segments.

The main limiting factors are:

- Fragility of many of the ecosystems ;
- Access problems related to fragility and maintenance of wilderness character ;
- Climatic limitations (very hot and wet in the summer months); and
- Current low number of large mammals.

Strategy	Diversify opportunities for Mozambicans and others to appreciate the natural values of the MSR, for the purposes of enjoyment, recreation and awareness creation

Ecotourism in its true sense will be promoted rather than nature tourism. The MSR's scenery, wilderness, coast and biodiversity will be emphasised in the tourist experience. Game-viewing will play a larger role later on when animal numbers increase. Cultural and traditional uses of the MSR will also be covered. Most activities will be by boat or on foot, because of the fragile environment. Facilities for day visitors will be provided on the west side of the MSR; the east side and central areas will cater more for overnight visitors. The upper segment of the market will be focused in the east and center; other segments will be in the west and center.

A detailed Tourism Development Strategy will be prepared, inclusive of the concessioning process for the Lodges at Ponta Chemucane, Ponta Milibangala, and Ponta Dobela have all been aligned with the concessioning process being facilitated by the International Finance Corporation (IFC).

Tourism developments include:

- small, up-market, high-cost lodges at Milibangalala (up to 100 beds), Dobela (up to 120 beds) and Chemucane (up to 60 beds) on the coast, and at Lago Nela. These sites are within exclusive-use concession areas;
- Safari camp sites – spread throughout the reserve ;
- boat trips on the Maputo River, Bay, and coastal lakes (maximum 10 boats on the river, and 2 on any lake for aesthetic reasons);
- wilderness walking in north and south;
- Open game drive vehicle concessions: near the Futi River/Planicie dos Changos (maximum 6 vehicles); and
- nature trails and an interpretation center near the main camp.

Private sector involvement will be sought to promote tourism on a concession basis. Benefits for communities will be promoted. Mechanisms will be developed to retain at least part of the tourism revenues in the MSR, for reinvestment in MSR management and benefit of communities inconvenienced by the existence of the MSR. The ultimate aim is for the MSR (including the Futi Corridor) to become financially self-sustaining.

Tourism development will follow the detailed proposals developed in the management plan which have tried to ensure compatibility with other management objectives. Consultation will be carried out in depth with communities before any developments take place. Tourism development and operation will be monitored to ensure that unacceptable impacts do not occur.

Action Projects	Indicators	Responsibility
BUS15. An interpretation centre will be developed, on a small scale at first and later expanded, near to the main camp. Displays will cover history, terrestrial, aquatic and marine ecology, biodiversity, community aspects, management including fires, law enforcement, restocking and crop protection, community participation, and current issues and threats	Interpretation centre	Reserve Manager
BUS16. Other interpretation facilities will be developed, including trained guides, interpretation by the concessionaires and possibly written materials; tourists will be encouraged to understand how they contribute to the MSR and how they can help to conserve it	Interpretation facilities and media	Reserve Manager
BUS17. Trail networks and facilities will be planned and developed	Trails master and detail plans Facilities	Reserve Manager
BUS18. A system will be planned and implemented for operating the trails and activities, including booking, itineraries, guiding	Trails management and operating system and reports	MSR and PPMR Managers
BUS19. Monitoring systems will be established and implemented for: • monitoring impacts of tourism, with feedback mechanism for management; • monitoring of visitor use of MSR, including collection and analysis of tourism statistics; and • monitoring of visitor satisfaction.	Monitoring systems	Ecologist and Biologist
BUS20. Establishment of tourism facilities and services (boat launching sites, sanitation facilities, reception, parking sites, etc.	Improved Facilities	Reserve Manager

4.5.3 KPA 3: Benefit Flow Management

The rationale, strategies and key action projects for the following benefit flow management objectives are set out in the tables below (also refer to the MSR CAP):

- To develop and implement interventions that reduce human and wildlife conflict.
- To ensure equitable benefits to communities through increased tourism opportunities.
- Broaden understanding of the benefits of wildlife conservation.
- To support local and socio-economic development.

Table 10: Develop and implement interventions that reduce human-wildlife conflict

Objective	*To develop and implement interventions that reduce Human-Wildlife Conflict (HWC)*
Rationale: Local communities who lived in the MSR before the war are moving back again. Population numbers are estimated at approximately 1,000-1,300 individuals, which are much lower than the pre-war 5,000-10,000 estimate. Any social services created inside the MSR could act as an attraction to people from outside and refugees who have not returned, increasing the pressure on the MSR. Communities cultivate small machambas (farms) in the MSR, mostly on a basis of shifting cultivation which damages the vegetation. Cultivation in more fertile areas near lakes and rivers is having serious impacts on the Futi River. Since the productivity of the valley is relatively high, communities are unwilling to stop the practice. There is a risk of serious social and ecological implications. Long-term ambitions of the communities are to re-establish their large livestock herds, which formerly caused severe overgrazing in parts of the MSR, and competition with wild animals. Human Wildlife Conflict as a result of crop damage occurring both within and outside the MSR, mainly by elephant but also by hippos and wild pigs is a concern of the MSR Management and the GoM. The MSR boundaries cut across the traditional range of the elephant population, and breeding groups leave the MSR to use Sand Forest and other areas south of Salamanga. Traditionally they may have moved to the Maputo River floodplain for more nutritious feeding. Bulls traditionally moved along the Futi River, meeting up with breeding herds which use an area close to the Tembe Elephant Park and formerly used the floodplain of the Maputo River just north of the international border. This route is now closed by an electric fence along the border, and by an Elephant restraining line along the western boundary of the Futi Corridor. Elephant damage crops when they leave the MSR, particularly to the west of the Futi River near to Salamanga, but also within and adjacent to other areas of the MSR. This conflict has existed for decades, and before the war a series of guard posts in the Futi Corridor had the function of scaring elephants back to the MSR and trying to protect crops. Crop damage is currently the major cause of conflict between local people and the MSR. Damage by bush pigs is less serious to communities. This may be because they control the pigs themselves, thereby obtaining a source of animal protein. The elephant restraining line stretching from the core area of the MSR to the South African border serves as a first initiative to reduce HWC and mitigate the impact thereof. The local economy is based on subsistence agriculture and use of natural resources, including those within the MSR. Local communities also use certain sacred forests for ceremonies and burials. With the return of people to the MSR the area is again being burnt extensively each year with various impacts, and in general, subsistence use of natural resources in the MSR is currently localised in the proximity of the settlements and on a relatively small scale. It is therefore generally considered to be sustainable at present levels, with the exception of hunting, cultivation of ecologically sensitive areas and burning. If the number of people living in the MSR increases, if greater commercialisation of terrestrial and marine resources occurs, or if the general standard of living and wealth of the people improves and they build up livestock inside the MSR, people will start to have significant adverse impacts on the MSR and its biodiversity again.	
Strategy	HWC Management and mitigation
The problem of crop damage requires addressing, yet the strategies will differ depending on where the impact occurs. In the short-term, efforts to scare elephants away from crops, with MSR staff working in collaboration with communities, as well as the use of a elephant restraining line along the boundaries of the MSR. Scaring will continue to involve use of fires and noise, as well as other techniques including experimentation with chilli fences and smoke bombs. If possible, no further elephant should be shot. Hippos should be controlled with low thorn fences around machambas. MSR Park Management will assist with problem animal control including wild pigs. The game fence along the western boundary, started by the Blanchard Sodetur concession, has proved largely successful in lessening human-elephant conflicts, however community problems regarding access through the fence to parts of the MSR remain. The use of a full game fence along the southern boundary of the MSR, and along the western and eastern boundary of the Futi Corridor has been proposed to establish an ecological linkage between the MSR and the Tembe Elephant Park, while reducing the opportunity for HWC.	

Action Projects	Indicators	Responsibility
BFM1. Continue the ongoing study of elephant movements by collaring new animals, to gain a greater understanding of reasons for movements and their extent, including distribution of watering points used by elephants.	Elephant movement study reports	MSR Ecologist
BFM2. Establish baseline data on crop damage and elephant crop raiding patterns building on existing work, the development of a regular monitoring and database management system	Monitoring programme and reports Database and management system	MSR Ecologist and Community Liaison Officer
BFM3. Draw up a detailed strategy for future control measures based on these studies	Detailed management and control strategy	MSR Ecologist
BFM4. Implement resettlement policy, including mitigation policy and measures for HWC in accordance to the World Bank Resettlement Guidelines	Number of families resettled over the period	Reserve Manager
BFM5. Undertake land use patterns/practices study within MSR Buffer zones	Zoning plan concluded and implemented	MSR Ecologist
BFM6. Implement settlement policy within the MSR	Report on settlement trends within the MSR	Reserve Manager
BFM7. Plan and construct barriers to separate people and wildlife	Enclosures/ enclaves, game fences established	MSR Manager
BFM8. Promote attractions & incentive developments for settlement outside the MSR	New development sites identified, projects submitted and approved by the competent authority	Reserve Manager
BFM9. Promote Family Planning and AIDS education	Communities sensitized about family planning and HIV-AIDS education programmes	Community Liaison Officer
BFM10. Promote Conservation Farming Practices	Communities practising environmental friendly activities	Community Liaison Officer

Table 11: Equitable benefits to communities through increased tourism opportunities

Objective	*To ensure equitable benefits to communities through increased tourism opportunities (To promote the sustainable use of natural resources by local communities)*

Rationale:

Through a process of dialogue, co-management agreements will be negotiated with target communities, identified by the following criteria:

- expressed desire of community to develop co-management approach; and
- potential for conflict.

These communities will be encouraged to form associations with a membership list of households and a representative decision-making structure, which will be the basis for participation in MSR management. Part of the association agreement will be a commitment on the part of the community to adhere to the basic regulations of the MSR. In order to ensure biodiversity conservation, the primary objective of the MSR, the following restrictions on natural resource use are inevitable:

- no hunting of large mammals in the MSR;
- no livestock shall be kept within the MSR except poultry;
- no cultivation shall be permitted in ecologically sensitive areas or outside the community use zones; and
- no social services shall be permitted inside the MSR.

These restrictions and other costs associated with the MSR will be compensated through a range of direct and indirect benefits, including continued access to sacred sites, the sustainable harvesting of certain natural resources within the MSR and sharing of MSR revenues.

Within the above restrictions, communities will be encouraged to continue customary resource use and management using existing or former traditional control mechanisms. They will be supported by the MSR Administration, for example in controlling pressures from outside. Community use zones and extensive use zones will be identified through participatory mapping techniques, and demarcated. Systems will be established for joint monitoring of natural resource use. This process will enable communities themselves to become aware if resource use becomes unsustainable, and increase their sense of ownership of the resource, as well as generating useful information for MSR management. For example, no further licences for fishing in Lake Piti should be granted to outsiders. In collaboration with MSR staff, the fishing community will be responsible for monitoring and regulating fish catches. Controlled burning programmes will be established in conjunction with communities living inside MSR, accommodating communities' genuine needs for burning within the MSR's fire programme requirements.

Peer monitoring and self-regulation by local communities will be encouraged. Infringements by registered users will imply loss of certain direct benefits for the entire community for a fixed period. Further penalties will be the responsibility of the community. Non-registered users will be dealt with directly by MSR staff. Implementation of the above strategy will need to be both gradual and flexible, and in particular responsive to the expressed concerns of local communities.

Strategy	Equitable benefit flow management

Three Regional Community Fora have been established and it is recommended that each forum has a Community Development Fund through which the benefits emanating from the 20% Revenue mechanism can be channelled.

A percentage of MSR revenues will be allocated to these Funds, for use in financing projects defined and developed by community associations. These Community Development Funds may be used to improve social services outside the MSR, which should gradually attract households out of the MSR. It may also be used to strengthen community associations, through skills development and community exchanges.

As mentioned above, in order to form an association and be eligible for this Fund, communities must commit themselves to adhere to the basic regulations of the MSR. Infringements may be penalised by a reduction or withdrawal of these benefits for a fixed period, or any other measures found to be appropriate. The value of the Fund will be linked directly to MSR revenues, thus integrating local development with MSR management. Some community members will also receive indirect benefits from the MSR through employment opportunities, and linkages between the MSR and the local economy. Communities will be encouraged to develop small enterprises linked to conservation or tourism activities.

However, these benefits will only become significant in the long term, and there is a short term need to offset direct costs, in terms of wildlife damage and restrictions on livelihoods, and to provide incentives to local communities to adhere to the basic regulations of the MSR. Consideration may be given to creating a special fund as subcomponent of these Community Development Funds specifically to offset the additional costs that people in the MSR face, while longer term solutions and developments are being sought.

Action Projects	**Indicators**	**Responsibility**
BFM11. Establish the Community Development Funds as a legal entities	Community Development Funds	Reserve Manager
BFM12. Consult with communities as to how these Funds should function, and establish operating mechanisms within the associations	Meeting reports and agreements	Community Liaison Officer
BFM13. Assist communities to identify priorities for funding and prepare proposals	Project priority lists Project proposals	Community Liaison Officer

Action Projects	Indicators	Responsibility
BFM14. Assess training needs within associations and develop community training programme	Community training assessment Community training programme	Community Liaison Officer
BFM15. Distribute funds and monitor	Fund management protocol Monitoring reports	MSR Manager and Community Liaison Officer
BFM16. Monitor all settlements in and adjacent to the MSR and establish number of households	Census and settlement Monitoring Programme and reports	Community Liaison Officer
BFM17. Hold workshops and field visits with target communities to do participatory mapping: • to identify resources used by communities, and identify the areas concerned so that community zones and extensive use zones can be delimited in detail; • to identify traditional resource management systems including resource use and control, whether they are still operating, and their degree of effectiveness; • to identify with the communities the current status and trends of the resources they use, with a view to determining whether current use is sustainable; and • if resource use is unsustainable or otherwise inappropriate, initiate discussions to find alternatives.	Community meeting and field visit reports	Community Liaison Officer
BFM18. Support communities in promoting improved resource use where needed	Community support and extension programme and reports	Community Liaison Officer
BFM19. Establish community resource use monitoring systems	Community resource use monitoring systems	Community Liaison Officer; MSR Ecologist and PPMR Biologist
BFM20. Discuss with communities the possibility of creating associations to enable participation in new benefits from the MSR	Community meeting reports and agreements	Community Liaison Officer
BFM21. Support the formation of associations, including the production of a register of members by the associations and definition of associations' resource base	Community support and extension programme and reports	Community Liaison Officer
BFM22. Establish baseline data (where they do not already exist) and monitor: • the number of households in the MSR, and in particular new settlement ; • economic well-being of communities; • changes in their socio-economic condition; • community attitudes to the MSR; • use of the MSR for agriculture; and • the presence of livestock (including impacts of dogs and cats if possible).	Monitoring system and reports	Community Liaison Officer
BFM23. To monitor compliance and enforce contractual employment protocols, opportunities within tourism facilities in the MSR and promote the use of local skills and knowledge	Increase of local people employed in tourism facilities in the reserve; Community Concession Sites	Transaction Advisor

Action Projects	Indicators	Responsibility
BFM24. Develop a Programme in partnership with Government and the Southern Africa Wildlife College and SA College for Tourism to train in tourism and hospitality for communities affected by the MSR	Co-management Community Concessions adjacent to MSR	Reserve Manager
BFM25. Promote Community Public Private Partnerships (CPPP) with tourism operators within and adjacent to the MSR; Increase revenues collected from tourism	Contract Management	Transaction Advisor
BFM26. Promote the development of Community Based Enterprises offering services/products to the tourism sector; Promote the use of the 20% revenue for the establishment of Community Based Enterprises	Development Database of local service providers; undertake GAP analysis of local service provision; Community Forums approve 20% revenue for the establishment of community based enterprises	Reserve Manager
BFM27. Undertake study to identify sites and events of cultural heritage significance and promote these to tourism operators in the region. Culture Resource Management Plan	Inventory Cultural Resource Management Plan	Community Liaison Officer

Table 12: Broaden understanding of the benefits of wildlife conservation

Objective	*To broaden understanding of the benefits of wildlife conservation (To promote understanding and awareness of the MSR, issues affecting it and the local communities, and possible future solutions)*

Rationale:

Since DNAC recognises the Preliminary Guidelines and Action Plan for Communities Natural Resource Management (World Bank 1996) in Mozambique and elsewhere in southern Africa and the world, moves towards co-management of natural resources by states and local communities have reflected the growing realisation by conservation managers that this approach is more cost-effective, sustainable and equitable than conventional approaches to biodiversity conservation.

The poorest and most vulnerable sectors of rural populations are often the most dependent on renewable natural resources for income generation and risk management strategies. Rural communities often bear direct and indirect costs from living in or near conservation areas, in terms of loss of access to resources, and damage to or loss of crops, livestock and human life caused by wildlife. To become partners in biodiversity conservation, local communities must derive sufficient benefits from it to compensate for these costs, and participate in and share responsibility for MSR management.

Awareness promotion will be required for many different stakeholder audiences in order to gain their cooperation in plan implementation and since this management plan involves many concepts not hitherto applied in the MSR, for example ecotourism, community participation and benefits, revenue retention, tourism concessions, marine and riverine extensions to the MSR, inclusion and development of the Futi Corridor and marine component, and controlled burning programme.

Strategy	To broaden understanding of the benefits of wildlife conservation

Most of the awareness promotion required for this plan will be integrated with actions under other sections of this plan to ensure that accurate and appropriate messages are channeled directly to the target audiences. However, a few actions remain which are not covered in other sections.

Key target audiences and messages are:

- *local communities*: concepts of shared management, community benefits, development of associations, acceptance of restrictions on certain activities and promotion of control mechanisms; development of new economic and subsistence activities;
- *commercial resource users from outside the area*: new control measures, including those likely to result from MSR extension;
- *government and political decision makers at local, provincial and national levels*: concepts and strategies of plan, enlisting their cooperation in their implementation;
- *impacting sectors, both government and private including tourism industry, agricultural sector, fisheries sector, mining sector, forestry sector, water sector*: direct and indirect impacts which their activities may have on the MSR and its biodiversity, in order to promote mitigating measures;
- *tourism concessionaires*: detailed understanding and acceptance of conservation strategies of MSR, in order to promote their full cooperation;
- *tourists*: understanding of values of the MSR and conservation issues, to enhance their experience and enlist their collaboration in minimising their impacts;
- *MSR staff*: detailed understanding and acceptance of conservation and management strategies for the MSR, in order to promote their full collaboration; and
- *school children*: appreciation of the various values of the MSR and its biodiversity in order to promote environmental awareness in these decision-makers of tomorrow (school children in general), and enforce the environmental messages to their parents (children in local communities).

Action Projects	**Indicators**	**Responsibility**
BFM28. When new terms are drawn up for resource use in the MSR and extension, this information will be communicated to users from outside the immediate area	Communication and awareness programme and reports	Community Liaison Officer
BFM29. Management strategies and detailed actions will be explained and discussed with local, provincial and national government and political decision makers as appropriate, in order to gain their understanding and cooperation	Communication and awareness programme and reports	Reserve Manager
BFM30. Concepts of conservation will be taught to school children living near the MSR, including ways in which they and their families can benefit from and work with the MSR	Communication and awareness programme and reports	Community Liaison Officer and Public Relations Officer
BFM31. Implement awareness raising strategy on importance of wildlife conservation	Communication and awareness programme and reports	Public Relations Officer

Action Projects	Indicators	Responsibility
BFM32. Establish public relation programme	Development of Programme; Implementation of Programme	Public Relations Officer
BFM33. Implement an environmental education programme	Development of the Programme; Implementation of the Programme	Public Relations Officer
BFM34. Establish an environmental education and interpretative centre in the MSR	Environmental education and interpretative centre – plans, approvals and construction	Public Relations Officer
BFM35. Promote MSR (through brochures, www, and other media)	Communication and awareness programme and reports	Public Relations Officer

Table 13: Support local socio-economic development

Objective	*To support local socio-economic development*
Rationale: One of the most effective ways to lobby support for conservation initiatives is to ensure local socio-economic development as a benefit to the region and its people, through the effective utilisation of community public private partnerships.	
Strategy	Establish mechanisms for local socio-economic development
Through the promotion of participation by the local communities in the unlocking of the ecotourism potential of the MSR, it will be possible to ensure that the management of the MSR can effectively take place. This requires a strategy aimed at ensuring that the resettlement needs of the MSR is aligned with the regional IDDP, and utilises CPPPs as an option to solicit support for the effective establishment of ecotourism operations within the MSR. Additionally, by mitigating conflicts as a result of HWC and resettlement through the integration of local development with MSR management and CPPPs, support for conservation can be gained.	

Action Projects	Indicators	Responsibility
BFM36. Align the resettlement needs of MSR with that of the Regional IDDP and establish CPPPs as an option for sustainable development	Inclusion of the action plan into the regional IDDP	Reserve Manager

4.5.4 KPA 4: Governance

The rationale, strategies and key action projects for the following objectives are set out in the tables below:

- To establish appropriate institutional arrangements and coordination regarding the MSR and PPMR and empower and capacitate management though the provision of adequate resources.
- To lobby for the review and revision of policy and legislation regarding biodiversity business and benefits beyond borders.
- Support in the provision of requisite infrastructure to improve to the MSR and TFCA.

Table 14: Institutionalisation, coordination and empowerment of management

Objective	*To establish appropriate institutional arrangements and coordination regarding the MSR and PPMR and empower and capacitate management though the provision of adequate resources*
Rationale: Without appropriate institutional arrangements, it will be difficult to effectively attain the objectives of either the terrestrial or marine components in a cost effective manner. The MSR and PPMR management capacity is limited generally by both numbers and level of personnel, and training is required for existing staff. Other limiting factors include transport, equipment and operational funds. Management is currently supported by DNAC, and the role of DNAC, and degree of autonomy of specifically the MSR, are issues that are being clarified under the TFCA Project. Consultation with and involvement of other stakeholders in management, especially the local communities, has been limited. Additionally, it is imperative that private sector involvement, specifically aimed at unlocking the ecotourism potential in the MSR and PPMR progresses according to the objectives of the management plan, is secured.	
Strategy	Establish appropriate institutional arrangements and management structure for the MSR and PPMR, involving the principal stakeholders
A Management Board will be established to guide the management of the MSR and PPMR, composed of government, communities, private sector and NGOs. This Board will oversee the adaption and alignment of the current structure to the proposal contained in Figure 14 and Appendix 4. Personnel will be appointed accordingly and empowered through resourcing, delegations and training.	

Action Projects	**Indicators**	**Responsibility**
GOV1. Formally establish the MSR and PPMR Management Board with legal recognition, after consultation with stakeholders	MSR Management Board	MITUR, DNAC
GOV2. Adapt and align current structure and appoint a Reserve Manager	New institutional structure established Reserve Manager appointed	Management Board
GOV3. Develop the departments within the Reserve Administration, including recruitment of new staff	Reserve Administration institution arrangements finalised Human resources	Reserve Manager
GOV4. Implement HR; equipment; infrastructure; tourism and revenue retention programmes to ensure efficient management	HR; equipment; infrastructure; tourism and revenue retention programmes Audit and reports	Reserve Manager
GOV5. Draw up a realistic staff and community training programme using existing courses, short custom-built courses, workshops, on-the-job training and study tours	Staff and community training programme	Human Resource Manager
GOV6. Implement staff training programme	Staff and community training programme implementation reports	Reserve Manager
GOV7. Finalise institutional arrangements for the CAP	Institutional arrangements for CAP	Community Liaison Officer
GOV8. Establish common channels for communication	Joint Radio Research Communications IT related	Public Relation Officer
GOV9. Establish a TFCA joint management entity	JMB Working Groups	Reserve Manager

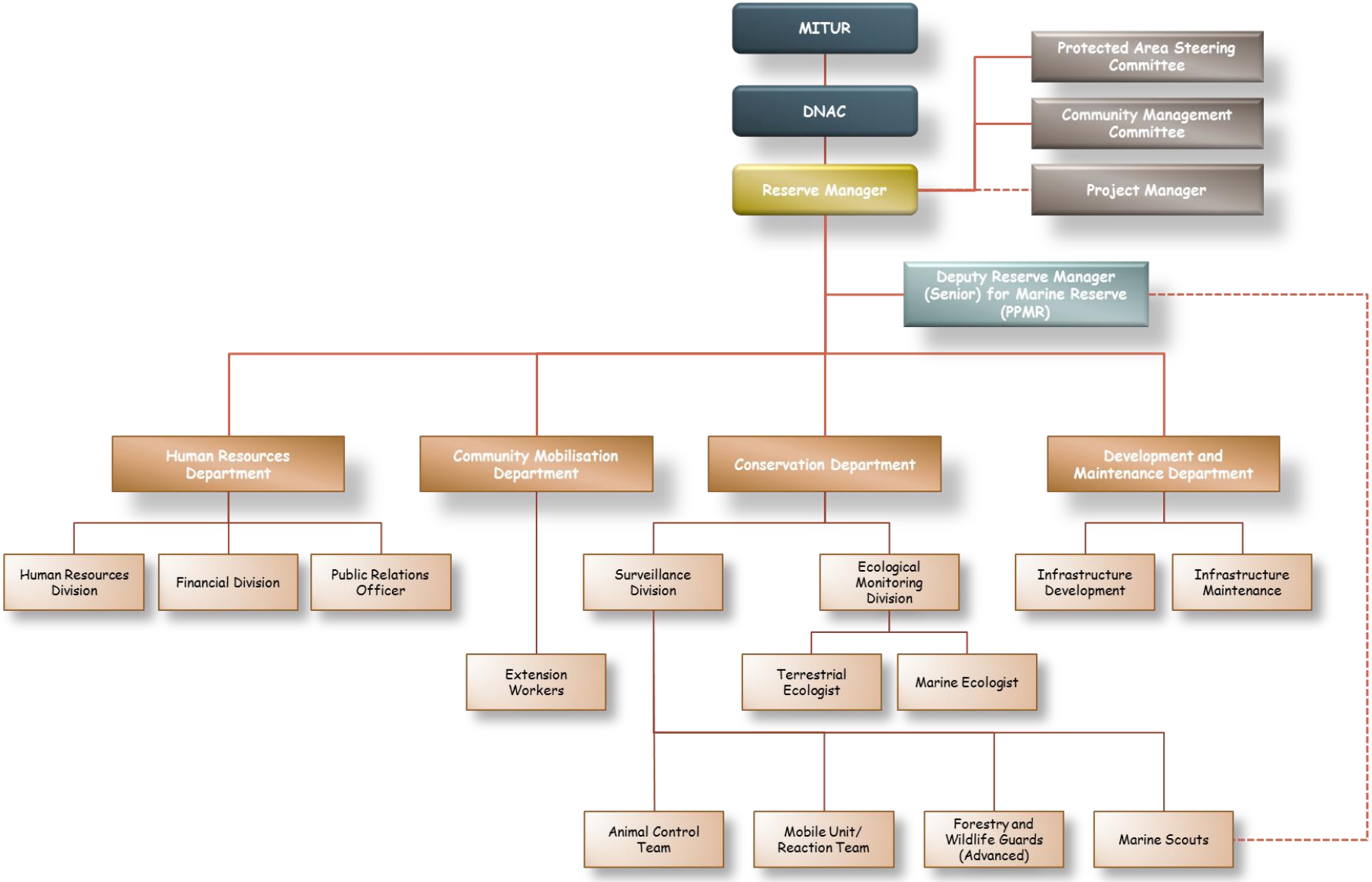


Figure 14: MSR and PPMR Institutional Arrangements

Table 15: Review and revision of policy and legislation regarding biodiversity, business and benefits beyond borders

Objective	*To lobby for the review and revision of policy and legislation regarding biodiversity, business and benefits beyond borders*

Rationale:

Levels of tourist charges and revenue collection need to be legalised. Ideally the Protected Area should be able to grade its fee structure within general DNAC guidelines, rather than being pegged to national levels. The quality of experience, availability of facilities and access to markets is so variable between protected areas that the flexibility of individual pricing is important.

The current legislation does not cover the following factors of relevance to the MSR:

- a category of protected area which enables biodiversity conservation through both protection and sustainable use, with community involvement in resource and MSR management, with some communities resident inside the MSR; and
- community access rights to sacred sites.

Regulations specific to the MSR should be finalised and legalised to enable their enforcement (refer Appendix 3).

Strategy	Policy and legislation review

Active participation will be promoted in the planning and decision/making processes for activities which will enhance the conservation of the MSR and Futi Corridor, and those which could impact negatively on them. This includes developments in many different sectors to ensure that adequate consideration is given to conservation and community aspects, and also covers mitigating measures to minimise adverse impacts. Some areas of participation are indicated below in the actions, though this list will change rapidly as new initiatives occur.

Collaboration will also be sought with other projects in the region which have relevance to the MSR and Futi Corridor, to promote exchange of experiences and other forms of mutual benefit. This includes conservation, community and tourism projects. In cases where communities living inside the MSR are encouraged to undertake certain activities outside the MSR (e.g. livestock husbandry), adequate land and other facilities

must be ensured for them.

Consideration will be given to seeking Ramsar status for the wetlands of the MSR, Machangulo and the vigilance area. The MSR together with the coastline from Inhaca to Ponta do Ouro has, in collaboration with national and international conservation organisations, been identified by DNAC as an area for which World Heritage Status will be sought in order to strengthen national and international recognition of the importance of these areas.

Action Projects	**Indicators**	**Responsibility**
GOV10. Finalise and gazette MSR regulations	Gazetted MSR Regulations	Reserve Manager
GOV11. Participate actively in planning/decision making/ensuring mitigation measures for: • any follow-on from the district land use plan, including more Matutuine detailed planning ; • Spatial Development Initiative between Mozambique, Swaziland and South Africa Maputo Corridor; • SADC initiatives for international agreements on river management, specifically for the Maputo River and possibly Futi ; • regional project planned with Swaziland and South Africa for the integrated management of the Maputo River basin • local initiatives for the implementation of the new Land Law once gazette; and • environmental impact assessments of any proposed developments which would have impacts on the MSR or Corridor.	Active participation in local and regional development initiatives	Reserve Manager
GOV12. Collaborate with other projects	Active participation in local and	Reserve Manager

Action Projects	Indicators	Responsibility
and developments including: • Licuati Forest community biomass project; • private game reserve developments adjacent or nearby to the MSR or Futi Corridor ; and • other tourism developments.	regional development initiatives	
GOV13. Collaborate with KwaZulu Natal authorities for joint management of shared biodiversity resources, and to benefit from their experience, through the LTFCA and Coastal and Marine Biodiversity Project (CMBMP) Projects	Active collaboration with local and regional authorities relating to conservation initiatives	Reserve Manager
GOV14. Ensure that resource use needs of communities resident in the MSR are met in terms of the CAP	CAP	Reserve Manager
GOV15. Consult with MICOA over the possibility of gaining Ramsar status for the wetlands and continue with current plans to apply for World Heritage Site status for the MSR and adjoining areas	Meeting reports and memorandum of understanding	Reserve Manager
GOV16. Secure the establishment and continuity of the Maputaland Component of the LTFCA	IDP and related documentation	Reserve Manager
GOV17. Initiate TFCA joint management programmes	Conservation Programmes Private Local Investment Collaboration	MSR and PPMR Managers
GOV18. Promote revenue sharing and joint tourism operations between TFCA partner countries	TFCA Revenue Sharing Protocol	MSR & PPMR Managers

Table 16: Provision of requisite infrastructure to improve to the MSR and TFCA

Objective	*Support in the provision of requisite infrastructure to improve to the MSR and TFCA*
Rationale: Much of the MSR infrastructure is in a rundown state, including parts of the main camp, outposts, roads, bridges, culverts and boundary fence. This severely limits the effectiveness of MSR management, capacity for tourism, and recognition of MSR boundaries by local communities.	
Strategy	Infrastructure provision
MSR infrastructure will continue to be developed, rehabilitated, upgraded and maintained. Rehabilitation required includes guard posts, roads, bridges and culverts inside the MSR, and main camp installations. A detailed plan for the development of the main camp will be drawn up, to make best use of existing installations, cater for required expansion and ensure that future developments are harmonised and integrated. In principle, the social services serving local communities (school, health post) will remain in the short term so that people see direct benefits from MSR, but in long term they will move outside the MSR boundary nearer to the communities, keeping the camp for management. It is recommended that careful consideration is given to use of the old shop building. A shop might be better located on the other side of the Futi within the communities; the building might be used as a community cooperative to sell handicrafts to tourists. Consideration must be given to location of tourism facilities including information and interpretation facilities and toilets. In principle these should be adjacent and not inside the current camp, with a separate entrance, to maintain privacy for management and staff quarters. The old training school buildings will be used for community training, environmental education, workshops and occasional training of MSR personnel. If possible they should be screened from the staff housing. The terrestrial boundaries will be re-demarcated with beacons and other appropriate means (e.g. the fence along boundary), while the marine boundaries be appropriately signposted, visible from the sea, and clear information provided to skippers at launch sites. Where appropriate discussions will be held with communities to confirm the location of the boundary. In principle the MSR should continue to sort refuse, disposing of it by composting biodegradable wastes, recycling/reusing other wastes where possible, disposing of the remainder in the most appropriate and environmentally friendly manner, outside the MSR. This applies to both management and tourism operations. It is likely that the main camp will continue to use pit latrines for some time. These must be located away from the well and the Futi River. When the piped water system is rehabilitated correctly sited septic tanks must be installed.	

Action Projects	**Indicators**	**Responsibility**
GOV19. Prepare a proposal for main camp development	Proposal for main camp development	MSR Manager
GOV20. Undertake the rehabilitation and development of the main camp	Rehabilitation and development	Maintenance Officer
GOV21. Undertake road and bridge upgrading/rehabilitation	Road and bridge upgrades	Maintenance Officer
GOV22. Undertake rehabilitation of posts	Posts rehabilitated	Maintenance Officer
GOV23. Establishment of common ranger posts between and within countries	Joint Law Enforcement Strategy	MSR and PPMR Managers
GOV24. Investigate the possibility of tourist movement across international border	Joint Study by Countries	Reserve Manager
GOV25. Establish common tourist routes (roads and bridges)	Refined Tourism Strategy of TFCA Proposed Circuits, Linkages, Hubs and Nodes	Reserve Manager
GOV26. Identify the line of the boundary of the MSR on the ground and record the coordinates accurately	Boundary delineation	MSR Manager
GOV27. Discuss the limits with local communities	Community consultation reports	Community Liaison Officer
GOV28. Demarcate the boundary and document it	Boundary demarcation	MSR Manager
GOV29. Prepare a waste management strategy, plan and programme for the MSR	Waste management strategy, plan and programme	MSR Ecologist and PPMR Biologist

Table 17: Participation in planning of local and regional developments impacting on biodiversity and communities

Objective	To participate actively in the planning of local and regional developments impacting on biodiversity and communities to ensure that development is appropriate and compatible with the MSR, including the Futi Corridor

Rationale:

Numerous regional initiatives are being implemented, providing several opportunities for the MSR, and include, *inter alia*:

- *biodiversity*: location in a globally important biodiversity region, and current favorable political climate for cooperation with neighbouring countries in management of shared biodiversity and natural resources. Relatively healthy state of ecosystems in adjacent areas within Mozambique. The MSR lies within the LTFCA, which as a regional conservation initiative greatly enhances the inherent ecological value of the MSR. Conservation proposals and private sector interests from some quarters which would ensure its conservation;
- *tourism*: high potential for ecotourism in the MSR and in the region, due to the proximity to Maputo, South Africa, Swaziland, and regional developments such as LSDI and the Maputo Corridor; which could ensure financial support for the MSR in the future; and
- *sustainable development*: it is an expressed concern of the Mozambique government that development occur in a responsible and sustainable manner, as demonstrated in the recent district land-use planning which tries to ensure that land uses and developments in the district are compatible with MSR management objectives.

Actual or potential constraints arising from regional influences include:

- *upgrading of main road*: pressures resulting from upgrading of the road from Bela Vista to Ponta do Ouro, including increased illegal activities and increased conflict due to possible increase of settlements adjacent to the Futi Corridor;
- *access to Machangulo*: if the MSR is used as a major access route this could have large impacts, including localised vegetation degradation, illegal activities, and aesthetic values. Options for water taxis and a shallow-draught ferry from Maputo and Catembe should be encouraged;
- *proposed port at Ponta Dobela*: a port has been proposed at Ponta Dobela, incorporating a 20,000 ha. development area (port, industry, residential), as well as an application from the developers for the eastern third of the MSR. This is the most serious threat ever to face the MSR, and could fatally compromise its ecological integrity as well as the objectives and activities of the LTFCA and the LSDI;
- *electrification of Machangulo and Inhaca*: an extension to the national grid through the MSR above ground, has had various aesthetic and visual impacts on the ecotourism potential of the MSR, yet does improve the provision of bulk services for potential concessions. Any further reticulation should however be underground;
- *other industrial developments*: if other industrial developments occur in the future, for example on the west bank of the Maputo River or further upstream, there could be impacts for the MSR;
- *water extraction and quality of Maputo River*: increased upstream extraction of water and manipulation of flows of the Maputo River in the future could have severe impacts on the estuary of the Maputo River, its mangroves and fauna, and potential for tourism. There is a large water shortage in this region of Southern Africa, and it is certain that further demands will be made on it, both within Mozambique and upstream in Swaziland and South Africa. There may also be impacts on water quality, for example from industrial developments and from runoff in commercial agriculture areas;
- *impacts on the Futi River*: upstream developments including changes in land use and water extraction, both inside Mozambique and in South Africa, could have impacts on the Futi valley, its delta, and the communities and wildlife dependent on it. The Futi Corridor aims to conserve the Futi within Mozambique but the country has no control over upstream use, necessitating a close working relationship with South Africa, based on the SADC Protocol regarding Shared Water Courses;
- *unsustainable tourism pressures*: if a high demand develops for the MSR as a result of its strategic location and attractions, there is a risk that ecological carrying capacity will be exceeded and degradation may result. Positive actions would be needed, for example to control tourist numbers and activities in sensitive areas, and steer visitors to other areas (e.g. Futi Corridor, Machangulo, and other parts of the coast); and
- *livestock*: if livestock numbers increase to high levels in nearby areas there is a risk that in drought years there will be pressure to graze inside the MSR.

Strategy	Ensure the alignment of the MSR objectives with local and regional developmental initiatives

To ensure that the objectives of the MSR are incorporated into the local and regional developmental initiatives it is imperative that the MSR Management actively participates in regional and local planning activities, and that the objectives of the MSR are clearly understood and respected by the participants, as well as local stakeholders and politicians at large.

Action Projects	**Indicators**	**Responsibility**
GOV30. Ascertain the range of planning initiatives at international, regional, national and local level that influence the MSR	Inventory of planning initiatives (local and regional)	Reserve Manager
GOV31. Develop a strategy for the active involvement of the MSR management in these	Participation strategy	Reserve Manager

Action Projects	Indicators	Responsibility
planning initiatives as well as the advocacy of the MSR objectives		
GOV32. Develop and implement plans and programmes to promote the objectives of the MSR	Communication and awareness programme	MSR Manager

4.5.5 Summary of Actions

Below find summary schedules of actions per KPA (refer Tables 19-22). These actions will be detailed in Reserve management strategic and annual business plans (i.e. time frames, budget, responsibilities, and performance indicators).

Table 18: KPA1 - Biodiversity and Resource Management Summary of Actions

Objective:	*To ensure the functioning of ecological processes and systems*
Strategy 1:	*Research*
Action Projects	
RM1. Develop a database for monitoring of biodiversity, physical environment, community aspects, natural resource use, tourism and management interventions, to be located in the main camp with backup elsewhere	
RM2. Prepare a research priority programme and link with interested research institutions	
RM3. Develop a network of contacts for other research	
RM4. Develop a library for the MSR in the main camp	
Strategy 2:	*Defining and establishing ecological linkages*
Action Projects	
RM5. Assess & demarcate important marine and terrestrial habitats, and determine ecological systems that influence the habitat dynamics within MSR	
RM6. Assess the value of Ecosystem goods and services, and develop a monitoring programme for the functioning of the ecological systems	
RM7. Develop co-management agreements with surrounding communities to ensure that the functioning of ecosystems is attained	
Strategy 3:	*Fire Management*
Action Projects	
RM8. Develop Fire Management Programme	
RM9. Before the rains start prepare a burning map for areas of the MSR that have been burned during the previous dry season, using a GPS and GIS	
RM10. As part of the community consultation, work closely with local communities to determine their reasons for burning, the areas concerned and the times of year for each purpose	
RM11. Assess how compatible or otherwise this burning pattern is with the ideal regime for the MSR	
RM12. Explain to local communities the MSR's ideal regime and the reasons for it; discuss with them the feasibility of any adaptations needed to their burning to fit in with this, and seek viable alternatives to burning where there is incompatibility	
RM13. Maintain consultation with the communities and explain burning plans each year; adapt plans to suit their use of natural resources where feasible; let them implement parts of the burning programme if appropriate	
RM14. Implement the annual burning plan, at the start of each calendar year examine the burning map from the previous year and identify areas that were not burnt during this period; inspect each of the identified areas in the field and assess the desirability of burning. If desirable, determine what type of fire (high or low intensity)	
RM15. Select ignition points with due regard for the direction of the prevailing winds, so that each of these areas can be burnt	

RM16. 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	
RM17. Record fire data on a recording form and on a new map for each year, showing the extent of the burn and date	
Strategy 4:	*Management of threatened plant species and vegetation types*
Action Projects	
RM18. Plan and undertake biodiversity inventory and include recommendations for management in the report	
RM19. Complete the vegetation map for the MSR started for the Mosa Florestal environment impact assessment	
RM20. Review the need for further management prescriptions based on the recommendations of the inventory, and incorporate them in annual work programmes for the MSR	
Strategy 5:	*Conservation of threatened animal species*
Action Projects	
RM21. Ongoing bird monitoring is to be encouraged, with field cards returned to the Mozambique Bird Atlas Project which can supply data summaries to the MSR. Tourists interested in bird watching should be advised about the Bird Atlas Project.	
RM22. Undertake inventory of priority animal biodiversity in MSR and Futi Corridor and incorporate recommendations in management programmes if feasible	
RM23. Develop specific conservation programmes for each of the species of conservation significance	
RM24. Monitor efficacy of specific conservation programmes	
Strategy 6:	*Protection of vegetation which maintains critical ecological processes*
Action Projects	
RM25. Rehabilitate the area of the existing Milibangalala campsite taking the following measures: • no more sweeping, camping or fires (camping should be confined to the grassland of the dune, taking care not to start fires); • protect the ground with brushwood branches to exclude people and prevent trampling; • protect and encourage the growth of sprouts from remaining trees; • if necessary germinate seedlings of the forest tree species occurring near the beach from seed and transplanted, with protection of the brushwood; • the small entrance to the beach from the large, recently cleared area should be closed off using thorn branches and brushwood to protect the strand vegetation which will prevent more sand from blowing in; strand species should be germinated from seed if necessary and planted at the top of the beach in front of the path; and • visitor access to the entrance of the large area from the beach at the far end of this site should be closed; action should be taken as above if it shows signs of fresh erosion.	
RM26. At Dobela allow the recently cleared path from the camp to the top of the dune to narrow naturally, and monitor the opening to the viewpoint for signs of salt or wind damage; if this occurs take remedial action	
RM27. Continue discussions and negotiations with the community of Massohoane to stop cultivating the Futi valley	
RM28. Jointly with the community, seek alternative means of livelihood for the people; this could include other forms of cultivation elsewhere and promotion of other economic activities and benefits from the MSR	
RM29. Inventory and assess the seriousness of other degraded sites	
RM30. Develop recuperative measures when merited	
Strategy 7:	*Futi eucalyptus plantations*
Action Projects	
RM31. Verify the legal status of the plantation	
RM32. Undertake an inventory of the standing stock of the plantation and develop a cutting plan if economically viable	

RM33. Contract out any logging by public tender; if possible retain revenue for investment in the MSR and law enforcement in the region	
RM34. Draw up a plan for the future management of the area (to be incorporated at a later date into the Futi Corridor management plan)	
Strategy 8:	*Management of exotic plants in the MSR*
Action Projects	
RM35. Invasive Alien Species Management Programme developed	
RM36. Warn MSR staff of the risk of Chromolaena, provide with identification chart and request to report any incidence in the MSR or Corridor	
RM37. Discuss control methods with UEM, and prepare methodology for control action (including identification of sources of supplies of equipment and chemicals required)	
RM38. Control any occurrence of Chromolaena in the MSR as soon as possible	
RM39. Inventory of the occurrence of all other exotic plants in the MSR outside machambas and settlements. As part of ongoing community consultation, ask communities if they use these plants or if they have owners; explain reasons for wanting to remove them	
RM40. Systematically remove exotic plants which are not of value to communities	
RM41. Hold discussions with communities to monitor whether they plan to introduce new exotic plants; if possible assess beforehand whether there will be negative impacts, and seek alternatives in this case	
Strategy 9:	*Control of domestic livestock within the MSR*
Action Projects	
RM42. Alert MSR personnel to watch for new exotic species and include in the patrol report forms; take appropriate action if exotic species are discovered	
RM43. Prepare a strategy aimed at removing all domestic livestock from the MSR, aligned with the game restocking plan	
RM44. Monitor presence and impact of domestic livestock within the MSR	
Strategy 10:	*Wildlife restocking and reinforcement*
Action Projects	
RM45. Design & implement wildlife introduction programme	
RM46. Initiate dialogue with communities on the possibility of re-introductions and future benefits for them	
RM47. Undertake census of large mammals and assessment of habitat status to provide baseline data and develop a monitoring system.	
RM48. Seek sources of animals which are genetically as similar as possible to historically occurring stock, and seek funding for animal purchase and translocations	
RM49. Investigate and arrange logistics of translocations including veterinary clearance	
RM50. Introduce herbivores	
RM51. Monitor success of establishment, survival and growth of introduced herbivore populations, interactions with existing populations and impacts on vegetation	
RM52. Reintroduce carnivores and scavengers when herbivores reach a satisfactory level	
RM53. Monitor the balance between herbivores and carnivores, and vegetation and herbivores	
Strategy 11:	*Soil protection and conservation*
Action Projects	
RM54. Study problems in existing road system using remote sensing and field visits, making proposals for realignment and upgrading where appropriate, always minimizing adverse impacts	
RM55. Undertake realignment and upgrading	
RM56. Monitor the use of roads and impacts, and take further remedial action as required	

Strategy 12:	*Hydrological Management*
Action Projects	
RM57. Establish and implement a water monitoring system, building on work already undertaken by UEM	
RM58. Undertake a study of the biodiversity and ecology of the Maputo River, consult with existing and future river users and those undertaking impacting activities, and identify major threats	
RM59. Incorporate findings into management strategy aligned with Inco-Maputo Agreement	
RM60. Promote dialogue and collaboration with impacting sectors to minimise adverse impacts, working through Government where relevant	
Objective	*To secure adequate staffing, infrastructure and equipment that enable effective and efficient management of MSR*
Strategy	Law Enforcement Strategy
Action Projects	
RM61. Develop a Law Enforcement Strategy for MSR to inform staffing, infrastructure and equipment needs.	
RM62. Update MSR staff needs assessment	
RM63. Lobby for the develop of a protected area career path policy	
RM64. Develop an equipment needs assessment, and procure additional equipment	
RM65. Ascertain the MSRs infrastructure requirements.	
RM66. Identify sources of funding and develop a fundraising strategic document, for MSR Management.	
RM67. Recruit and staff training according to MSR staff needs assessment	
Objective	*To lobby for the review of existing and where necessary develop new legislation and policies in order to facilitate the development of MSR and the LTFCA*
Strategy	Policy and law reform
Action Projects	
RM68. Collect & collate all relevant legislation, regulations & policies	
RM69. Identify legislative & policy gaps and lobby for change	
RM70. Establish a transfrontier protocol for security issues	
RM71. Compile and harmonise community conservation structure (in the 3 countries)	
RM72. Establish resettlement policy & establish policy to manage internal MSR settlements	
RM73. Define land use patterns/practices within MSR Buffer zones (East of Rio Maputo)	
Objective	*To promote and ensure sustainable utilisation of cultural resources*
Strategy	Cultural Heritage Management (CHM)
Action Projects	
RM74. Complete the ongoing survey work as part of a larger anthropological survey of the southern Mozambique coastline through fieldwork by experts and collaboration with MSR guards in locating sites; sites will be documented and recommendations will be made for their conservation	
RM75. Undertake any necessary additional work as part of the environmental impact assessments for tourism developments, particularly on the coastal sites	
RM76. Take any management measures necessary to ensure preservation of archaeological and cultural sites, including control of tourist access	
RM77. Collect existing information on recent local history and use it to help in understanding traditional resource management systems	
Objective	*To promote and ensure sustainable utilisation of natural resources*
Strategy	Ascertain sustainable resource utilisation levels and promote the use thereof based on clearly

	defined policies.
Action Projects	
RM78. Finalise CAP	
RM79. Promote collaboration between the MSR and the District Directorate of Agriculture and Rural Development on issuing of fishing licences only to local communities for the MSR and Futi Corridor	
RM80. Monitor the impacts of fishing, both in terms of sustainability for target species and in terms of impacts on rare and endemic species. Incorporate any recommendations resulting from this work into management programmes, in collaboration with the local communities	
RM81. Develop a policy on ownership and use rights to wildlife in the MSR in collaboration with all stakeholders before wild animals are introduced	
RM82. Develop and implement sensitization programme for sustainable natural resource utilisation	
RM83. Survey natural resource utilisation; including grazing and field crops	
RM84. Determine sustainable yields	
RM85. Monitor sustainable utilisation levels	
Objective	*To promote community and political awareness regarding conservation as a viable land use option*
Strategy	Conservation Awareness and Sensitisation
Action Projects	
RM86. Ascertain the economic value and impact of the MSR to Mozambique	
RM87. Determine the value chain of conservation and compare to other Land Use Practices (LUP)	
RM88. Develop and implement sensitization programme that promotes conservation as an LUP	
RM89. Develop community enterprises based on sustainable land use practices	
RM90. Enhance Law Enforcement Capabilities	

Table 19: KPA2 – Business Management Summary of Actions

Objective	*To empower MSR through the development of policy and the revision of the legal framework that promotes the devolution of power and revenue retention*
Strategy	MSR Empowerment – devolution and revenue retention
Action Projects	
BUS1. Compliance of the policy for greater retention and use of revenue generated in the MSR	
BUS2. Participate in the establishment of an autonomous entity with financial and administrative authority	
BUS3. Improve revenue collection system with attention to security and prompt customer service	
Objective	*To create an environment conducive to investment within the MSR*
Strategy	Establish an environment conducive to investment
Action Projects	
BUS4. Increase tourism potential of the MSR through the improvement of the tourist experience including both the marine and terrestrial components	
BUS5. Improve basic MSR infrastructure (roads, communication, electrification)	
BUS6. Increase capacity of promotion through more efficient marketing	
BUS7. Establish key partnerships with agencies involved in Tourism investment: INATUR, tour operators	
BUS8. Create a Position for Transaction Advisor/ Concession Manager	
BUS9. Establish public relations programme	
BUS10. Investigate available fiscal incentives to encourage investment	
BUS11. Design the Tourism Opportunities identified in the MSR Management Plan; select business partners/ investors for the establishment of additional tourism products according to Strategic Plan for Commercialisation (SPC) guidelines (refer Appendix 3)	
BUS12. Publicise tourism potential	
BUS13. Establish guidelines for tourism products in the area;	
BUS14. Establish specific licence conditions for Operators inside the MSR for selected activities	
Objective	*To improve and develop a diverse tourism product*
Strategy	Diversify opportunities for Mozambicans and others to appreciate the natural values of the MSR, for the purposes of enjoyment, recreation and awareness creation
Action Projects	
BUS15. An interpretation centre will be developed, on a small scale at first and later expanded, near to the main camp. Displays will cover history, terrestrial, aquatic and marine ecology, biodiversity, community aspects, management including fires, law enforcement, restocking and crop protection, community participation, and current issues and threats	
BUS16. Other interpretation facilities will be developed, including trained guides, interpretation by the concessionaires and possibly written materials; tourists will be encouraged to understand how they contribute to the MSR and how they can help to conserve it	
BUS17. Trail networks and facilities will be planned and developed	
BUS18. A system will be planned and implemented for operating the trails and activities, including booking, itineraries, guiding	
BUS19. Monitoring systems will be established and implemented for: • monitoring impacts of tourism, with feedback mechanism for management; • monitoring of visitor use of MSR, including collection and analysis of tourism statistics; and • monitoring of visitor satisfaction.	
BUS20. Establishment of tourism facilities and services (e.g. boat launching sites, sanitation facilities, reception, parking)	

Table 20: KPA3 – Benefit Flow Management Summary of Actions

Objective	*To develop and implement interventions that reduce human-wildlife conflict*
Strategy	HWC Management and mitigation
Action Projects	
BFM1. Continue the ongoing study of elephant movements by collaring new animals, to gain a greater understanding of reasons for movements and their extent, including distribution of watering points used by elephants.	
BFM2. Establish baseline data on crop damage and elephant crop raiding patterns building on existing work, the development of a regular monitoring and database management system	
BFM3. Draw up a detailed strategy for future control measures based on these studies	
BFM4. Implement resettlement policy, including mitigation policy and measures for HWC in accordance to the World Bank Resettlement Guidelines	
BFM5. Undertake land use patterns/practices study within MSR Buffer zones	
BFM6. Implement settlement policy within the MSR	
BFM7. Plan and construct barriers to separate people and wildlife	
BFM8. Promote attractions & incentive developments for settlement outside the MSR	
BFM9. Promote Family Planning and AIDS education	
BFM10. Promote Conservation Farming Practices	
Objective	*To ensure equitable benefits to communities through increased tourism opportunities (To promote the sustainable use of natural resources by local communities)*
Strategy	Equitable benefit flow management
Action Projects	
BFM11. Establish the Community Development Funds as a legal entities	
BFM12. Consult with communities as to how these Funds should function, and establish operating mechanisms within the associations	
BFM13. Assist communities to identify priorities for funding and prepare proposals	
BFM14. Assess training needs within associations and develop community training programme	
BFM15. Distribute funds and monitor	
BFM16. Monitor all settlements in and adjacent to the MSR and establish number of households	
BFM17. Hold workshops and field visits with target communities to do participatory mapping: • to identify resources used by communities, and identify the areas concerned so that community zones and extensive use zones can be delimited in detail; • to identify traditional resource management systems including resource use and control, whether they are still operating, and their degree of effectiveness; • to identify with the communities the current status and trends of the resources they use, with a view to determining whether current use is sustainable; and • if resource use is unsustainable or otherwise inappropriate, initiate discussions to find alternatives.	
BFM18. Support communities in promoting improved resource use where needed	
BFM19. Establish community resource use monitoring systems	
BFM20. Discuss with communities the possibility of creating associations to enable participation in new benefits from the MSR	
BFM21. Support the formation of associations, including the production of a register of members by the associations and definition of associations' resource base	
BFM22. Establish baseline data (where they do not already exist) and monitor: • the number of households in the MSR, and in particular new settlement ; • economic well-being of communities; • changes in their socio-economic condition;	

• community attitudes to the MSR; • use of the MSR for agriculture; and • the presence of livestock (including impacts of dogs and cats if possible).	
BFM23. To monitor compliance and enforce contractual employment protocols, opportunities within tourism facilities in the MSR and promote the use of local skills and knowledge	
BFM24. Develop a Programme in partnership with Government and the Southern Africa Wildlife College and SA College for Tourism to train in tourism and hospitality for communities affected by the MSR	
BFM25. Promote Community Public Private Partnerships (CPPP) with tourism operators within and adjacent to the MSR; Increase revenues collected from tourism	
BFM26. Promote the development of Community Based Enterprises offering services/products to the tourism sector; Promote the use of the 20% revenue for the establishment of Community Based Enterprises	
BFM27. Undertake study to identify sites and events of cultural heritage significance and promote these to tourism operators in the region. Culture Resource Management Plan	
Objective	*To broaden understanding of the benefits of wildlife conservation (To promote understanding and awareness of the MSR, issues affecting it and the local communities, and possible future solutions)*
Strategy	To broaden understanding of the benefits of wildlife conservation
Action Projects	
BFM28. When new terms are drawn up for resource use in the MSR and extension, this information will be communicated to users from outside the immediate area	
BFM29. Management strategies and detailed actions will be explained and discussed with local, provincial and national government and political decision makers as appropriate, in order to gain their understanding and cooperation	
BFM30. Concepts of conservation will be taught to school children living near the MSR, including ways in which they and their families can benefit from and work with the MSR	
BFM31. Implement awareness raising strategy on importance of wildlife conservation	
BFM32. Establish public relation programme	
BFM33. Implement an environmental education programme	
BFM34. Establish an environmental education and interpretative centre in the MSR	
BFM35. Promote MSR (through brochures, www, and other media)	
Objective	*To support local socio-economic development*
Strategy	Establish mechanisms for local socio-economic development
Action Projects	
BFM36. Align the resettlement needs of MSR with that of the Regional IDDP and establish CPPPs as an option for sustainable development	

Table 21: KPA 4 - Governance Summary of Actions

Objective	*To establish appropriate institutional arrangements and coordination regarding the MSR and PPMR and empower and capacitate management though the provision of adequate resources*
Strategy	Establish appropriate institutional arrangements and management structure for the MSR and PPMR, involving the principal stakeholders
Action Projects	
GOV1. Formally establish the MSR and PPMR Management Board with legal recognition, after consultation with stakeholders	
GOV2. Adapt and align current structure and appoint a Reserve Manager	
GOV3. Develop the departments within the Reserve Administration, including recruitment of new staff	
GOV4. Implement HR; equipment; infrastructure; tourism and revenue retention programmes to ensure efficient management	
GOV5. Draw up a realistic staff and community training programme using existing courses, short custom-built courses, workshops, on-the-job training and study tours	
GOV6. Implement staff training programme	
GOV7. Finalise institutional arrangements for the CAP	
GOV8. Establish common channels for communication	
GOV9. Establish a TFCA joint management entity	
Objective	*To lobby for the review and revision of policy and legislation regarding biodiversity business and benefits beyond borders*
Strategy	Policy and legislation review
Action Projects	
GOV10. Finalise and gazette MSR regulations (refer Appendix 3)	
GOV11. Participate actively in planning/decision making/ensuring mitigation measures for: • any follow-on from the district land use plan, including more Matutuine detailed planning ; • Spatial Development Initiative between Mozambique, Swaziland and South Africa Maputo Corridor; • SADC initiatives for international agreements on river management, specifically for the Maputo River and possibly Futi; • regional project planned with Swaziland and South Africa for the integrated management of the Maputo River basin; • local initiatives for the implementation of the new Land Law once gazette; and • environmental impact assessments of any proposed developments which would have impacts on the MSR or Corridor.	
GOV12. Collaborate with other projects and developments including: • Licuati Forest community biomass project; • private game reserve developments adjacent or nearby to the MSR or Futi Corridor; and • other tourism developments.	
GOV13. Collaborate with KwaZulu Natal authorities for joint management of shared biodiversity resources, and to benefit from their experience, through the LTFCA and Coastal and Marine Biodiversity Project (CMBMP) Projects	
GOV14. Ensure that resource use needs of communities resident in the MSR are met in terms of the CAP	
GOV15. Consult with MICOA over the possibility of gaining Ramsar status for the wetlands and continue with current plans to apply for World Heritage Site status for the MSR and adjoining areas	
GOV16. Secure the establishment and continuity of the Maputaland Component of the LTFCA	
GOV17. Initiate TFCA joint management programmes	
GOV18. Promote revenue sharing and joint tourism operations between TFCA partner countries	
Objective	*Support in the provision of requisite infrastructure to improve to the MSR and TFCA*

Strategy	Infrastructure provision
Action Projects	
GOV19. Prepare a proposal for main camp development	
GOV20. Undertake the rehabilitation and development of the main camp	
GOV21. Undertake road and bridge upgrading/rehabilitation	
GOV22. Undertake rehabilitation of posts	
GOV23. Establishment of common ranger posts between and within countries	
GOV24. Investigate the possibility of tourist movement across international border	
GOV25. Establish common tourist routes (roads and bridges)	
GOV26. Identify the line of the boundary of the MSR on the ground and record the coordinates accurately	
GOV27. Discuss the limits with local communities	
GOV28. Demarcate the boundary and document it	
GOV29. Prepare a waste management strategy, plan and programme for the MSR	
Objective	To participate actively in the planning of local and regional developments impacting on biodiversity and communities to ensure that development is appropriate and compatible with the MSR, including the Futi Corridor
Strategy	Ensure the alignment of the MSR objectives with local and regional developmental initiatives
Action Projects	
GOV30. Ascertain the range of planning initiatives at international, regional, national and local level that influence the MSR	
GOV31. Develop a strategy for the active involvement of the MSR management in these planning initiatives as well as the advocacy of the MSR objectives	
GOV32. Develop and implement plans and programmes to promote the objectives of the MSR	

4.6 CONCEPT DEVELOPMENT PLAN

4.6.1 Introduction and Methodology

Ensuring the sustainability of the MSR as a conservation area depends on the degree to which a harmonious balance can be achieved between human impacts, albeit from tourism, commercial or subsistence use, and resource quality objectives. Ecotourism requires relatively undisturbed natural and cultural resources as a base for sustainable development, necessitating careful planning and decision making to ensure that this balance can be attained and sustained. Any negative impacts either from a resource management, tourism development or local utilisation perspective could result in fundamental flaws which could negate any beneficiation.

The concept development planning process (refer Figure 15) seeks to incorporate the inherent character of the environment within the planning process, yet guide decisions regarding access, use, development and infrastructure within planning constraints emanating from habitat value, landscape sensitivity, agricultural suitability, cultural value and visual sensitivity.

The planning framework is based on an analysis of the current environmental character, which is a reflection of audio-visual impacts within a landscape. This provides a benchmark against which planning decisions can be made, culminating in guidelines towards the attainment and maintenance of a future desired state.

Decisions are based on the inputs from the various communities of interest that exist within the broad stakeholder group. By requesting information based on each group's specific needs and requirements, focused on planning parameters such as access, use, development and infrastructure requirements, a good understanding of future requirements can be attained.

Synergies and conflicts can be addressed at this stage, ensuring an aligned vision between all the stakeholders, based on a common understanding of their individual requirements. In an effort to sustainably unlock the ecotourism potential of the area the following critical aspects were discussed and addressed by stakeholders during the workshop series that were held. Discussions and mapping exercises focused on aspects such as access; use; requisite developments and infrastructure to make the MSR succeed. Analysing these proposals against a wide spectrum of indices will allow for informed decisions, guiding the initial planning parameters towards the attainment of sustainability, and accountability.

The broad spectrum of indices addresses aspects such as:

- Habitat value;
- Landscape sensitivity;
- Agricultural suitability;
- Cultural value; and
- Visual sensitivity.

This spectrum removes bias commonly associated with conservation planners and ensures that the planning process also addresses other aspects necessary for integrated solutions within a region with strong conservation focus. Integration is essential to ensure equitable access to resources, both natural and cultural, while allowing for controlled access, development and the provision of requisite infrastructure.

Based on these tempered and informed decisions a master plan can be prepared to guide development, and implementation programmes and plans. Cognisance must continually be taken of the future desired state regarding the landscape, and not compromise or change any of the environmental characteristics set by stakeholders. In this way, not only will the developmental objectives be attained, but the environmental aesthetics of the maintained and improved in a controlled and planned manner.

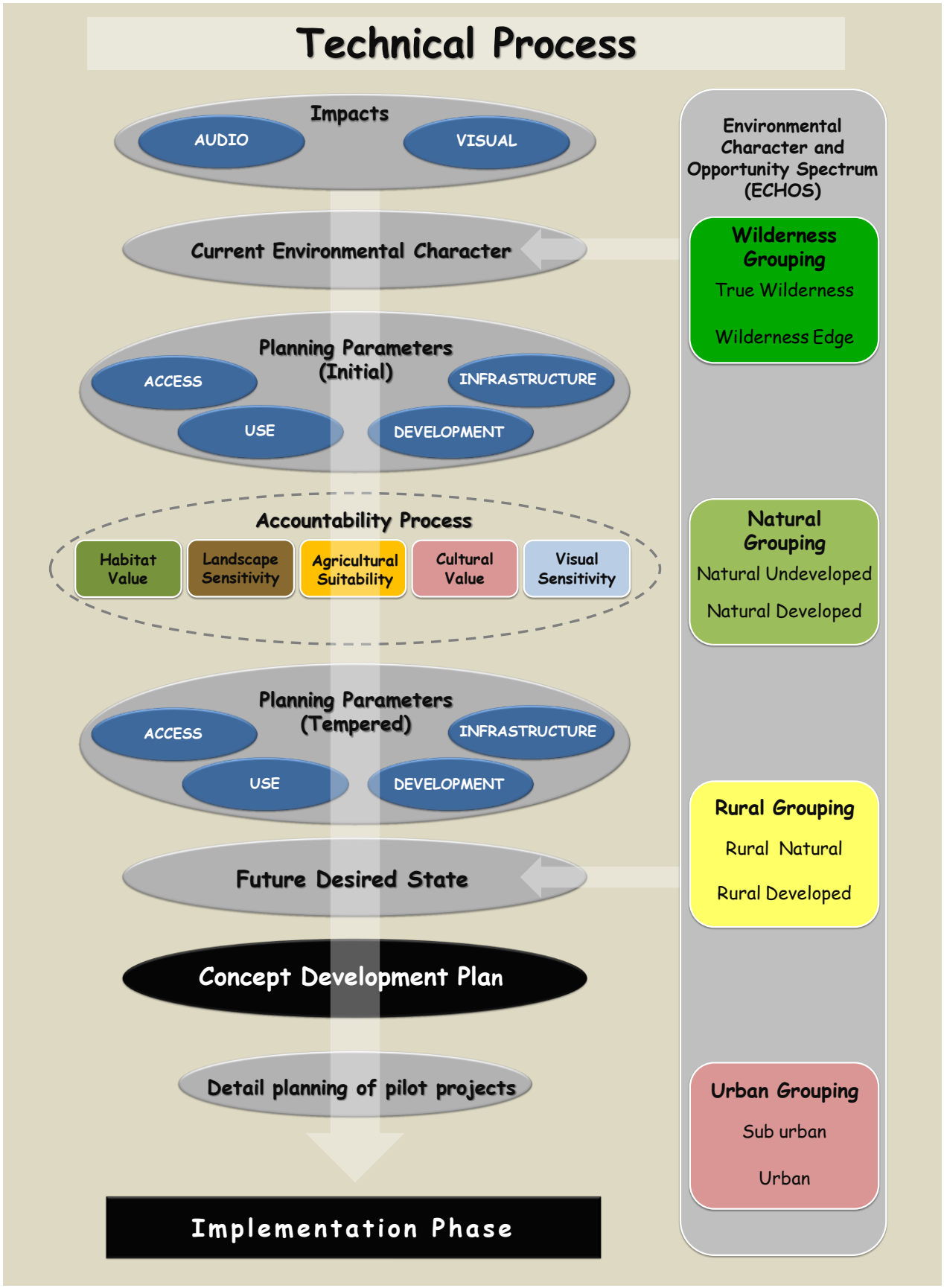


Figure 15: CDP Planning Process

4.6.2 Current Environmental Character

Ascertaining the Current Environmental Character (CEC) of an area provides clear guidelines for decision-making regarding the impact of proposed development and management interventions on the aesthetic, visual and audio characteristics of the area. By combining these factors into a zonation map, using a spread of characteristics ranging from Wilderness to Urban, it is possible to provide a summary of the current environmental character of the MSR.

Despite the impression that most of the area is wilderness, most of the study area is characterised as natural undeveloped, with a few portions being natural developed due to the presence of roads, tracks and tourism infrastructure. The areas surrounding the MSR are mostly rural undeveloped, yet the area surrounding Ponta do Ouro is urban in character (refer Map 32).

4.6.3 Planning the Concepts

To systematically guide development proposals for the MSR based on the conservation objectives and stakeholder needs and expectations, four broad developmental aspects, referred to as Access, Use, Development and Infrastructure (AUDI) Concepts, are addressed, namely:

- **Access** – where and how do visitors gain access to the MSR;
- **Utilisation** – What activities will be taking place where (spatial distribution) e.g. Forestry, agriculture, wildlife and tourism;
- **Development** - identification of development nodes and sites e.g. Wildlife augmentation and natural dispersal nodes, lodge and tourism activity sites, and wildlife management hubs; and
- **Infrastructure** – Identification and placement of bulk services and related infrastructure required to unlock the potential of the region in an equitable and sustainable manner e.g., roads, power lines, airfields etc.

During the consultative process the management team was requested to prepare AUDI Concepts, a request that culminated in a broad spectrum of concept maps being prepared for the MSR, each map representing the specific ideas of the relevant managers, albeit Resource managers; Business, Benefit Flow managers, and Government.

Despite the differing perspectives and views, the various maps showed similarities with very few conflicting ideas or concepts. The hand drawn concept maps have been converted into concept diagrams summarising and simplifying the concepts into four distinct diagrams.

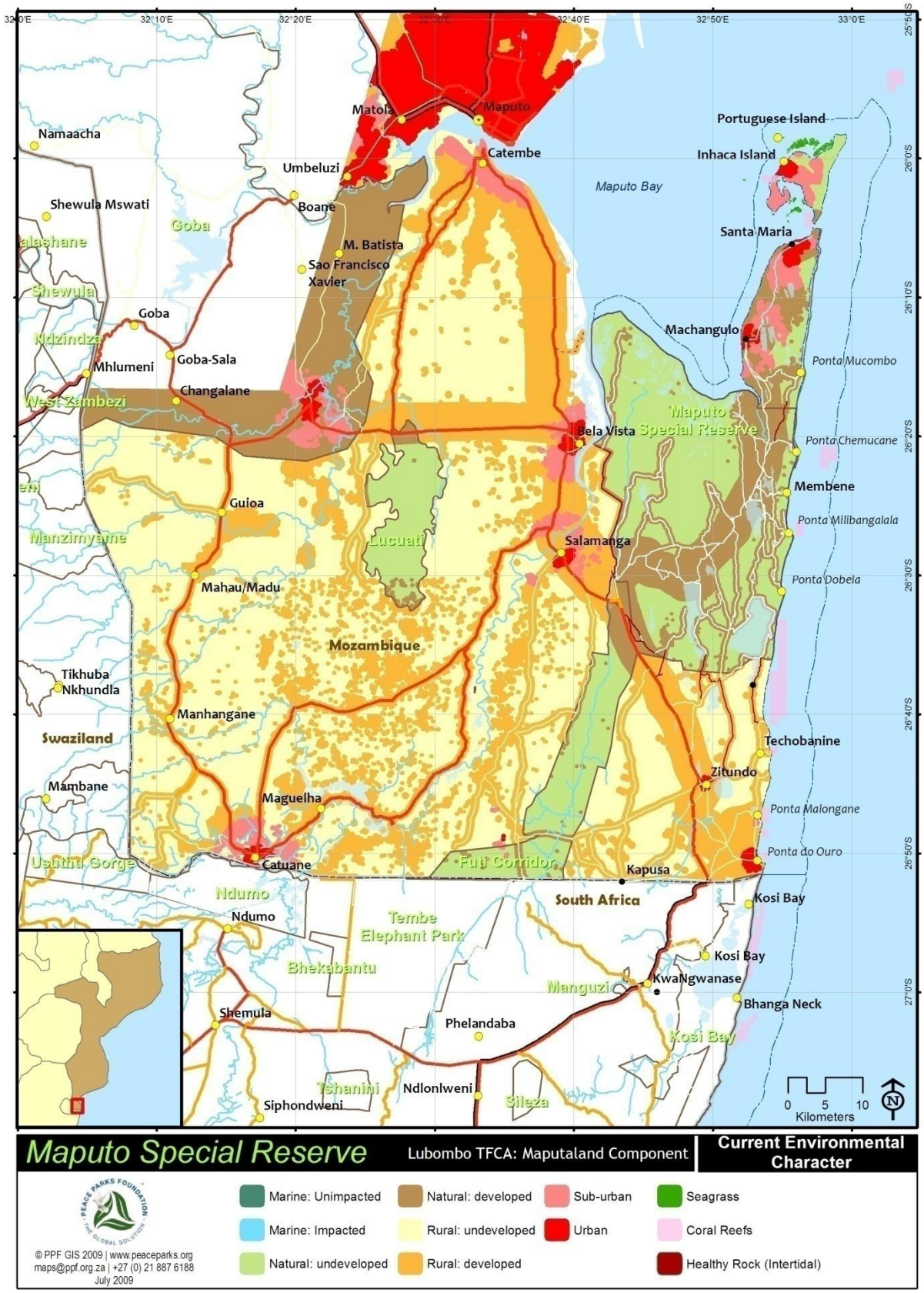
Through sector specific and plenary discussion sessions it is possible to ensure consensus and the development of collective insight necessary to sustainably develop the MSR. To ease understanding, the concepts are presented in the same format as that discussed during the workshops, and as presented by the management team, depicting the Master Plan for the entire protected area. This master plan constitutes the spatial presentation of the Management Plan for the MSR, and as actions and development initiatives roll out, the master plan will need to be updated.

Detail maps, based on the concepts drafted and presented by stakeholders, and tempered on the environmental sensitivities and specific recommendations regarding alignment and placement, have also been prepared and presented on higher resolution maps of the MSR. Fine scale maps for various portions – protected areas; chiefdoms, forests etc. – will be prepared once approval for the development concepts have been attained from the GoM.

The various accountability indices, based on the sensitivity analyses that have been prepared for the MSR were utilised in the decisions regarding the spatial positioning of these various access; use; development and infrastructural options and must be utilised as a guideline for finer scale planning interventions.

Based on the sensitivity indices, accountable decisions regarding access, use, development and infrastructural requirements can be motivated both for MSR Management interventions as well as other developmental goals within the region in an aligned and coordinated manner, culminating in informed, defendable and accountable decisions.

Details pertaining to the various sensitivity analyses are discussed as well as the concepts, followed by the detailed mapping of each concept.



Map 32: Current Environmental Character

4.6.5 Ensuring Accountable Decision Making – Sensitivity Analyses

To ensure accountability regarding decisions pertaining to the acceptability and appropriate placement of the interventions within the MSR pertaining to the access, use, development, and infrastructure planning parameters, decisions need to be based on:

- Habitat value;
- Landscape sensitivity;
- Agricultural suitability; and
- Visual sensitivity.

Essential to accountable decisions is a summary map combining habitat value with landscape sensitivity, effectively producing a combined ecosystem sensitivity map which incorporates many aspects of environmental goods and services providing an indicator of the value of the habitats that sustain the ecosystems and the resilience of the landscape (refer Map 33 and Figure 16).

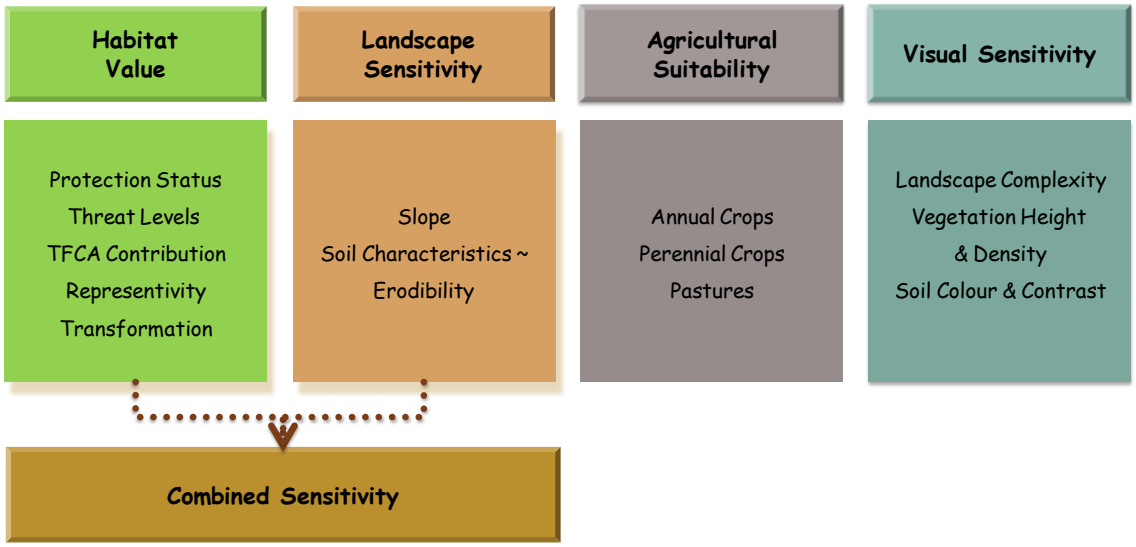


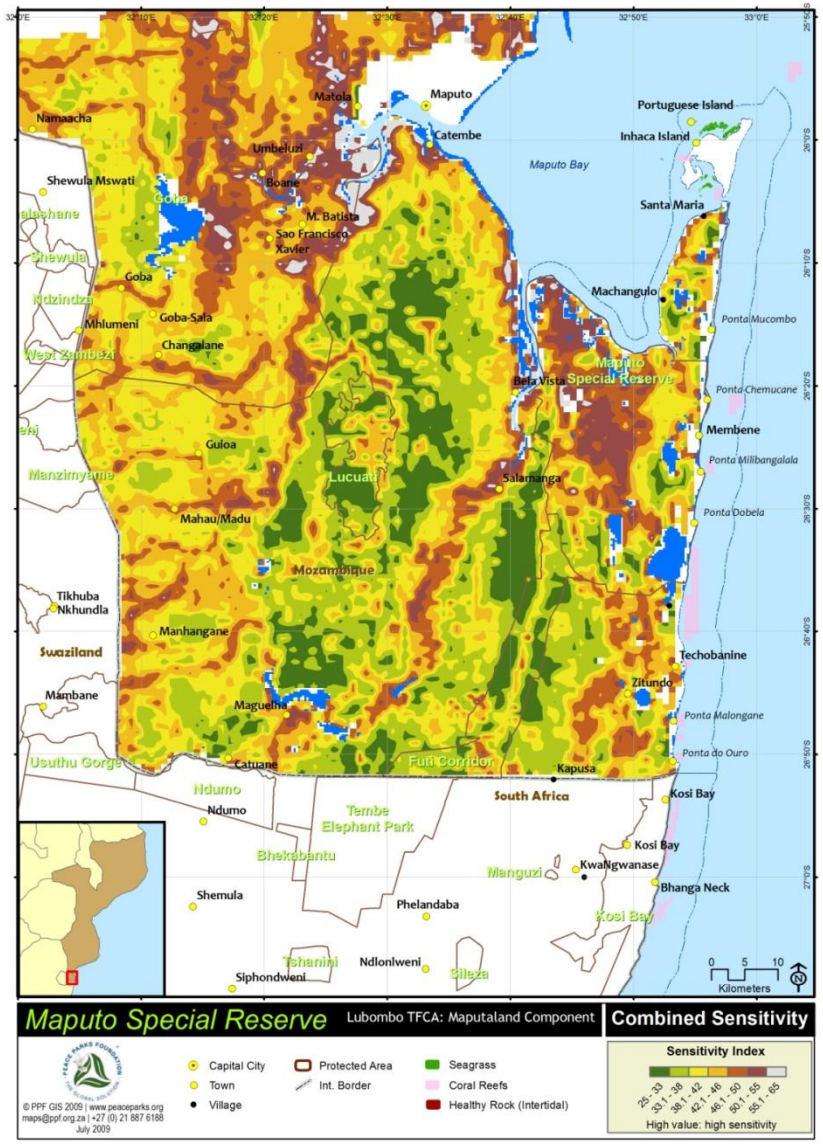
Figure 16: Sensitivity Analyses

4.6.5.1 Habitat Value

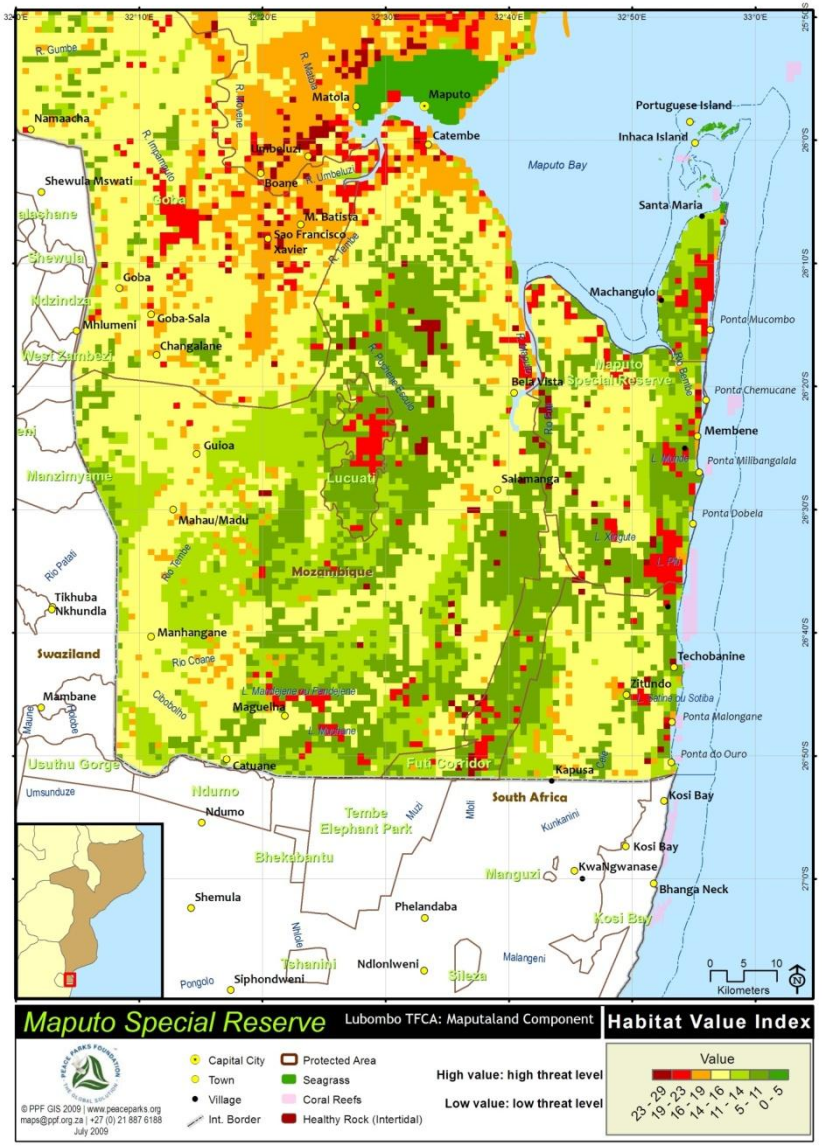
The habitat value reflects the status of a habitat based on the habitat's contribution to national conservation targets by analysing the representivity of the habitat in the study area, the percentage of each vegetation type within a national context and the level of transformation, inclusive of the terrestrial and marine components.

Using the vegetation layer as a proxy for biodiversity, an analysis reflecting a range of habitat value, from untouched and intact ecosystems to severely impacted and degraded systems was prepared, where the high value habitat is distinguished from low value habitat, based on the degree of impact and significant alteration.

The conservation status of vegetation within the study area is based on the IUCN categories, was used to classify vegetation types in the IDP study area according to its threatened status (refer Maps 34 and 35, also Maps 4-8).

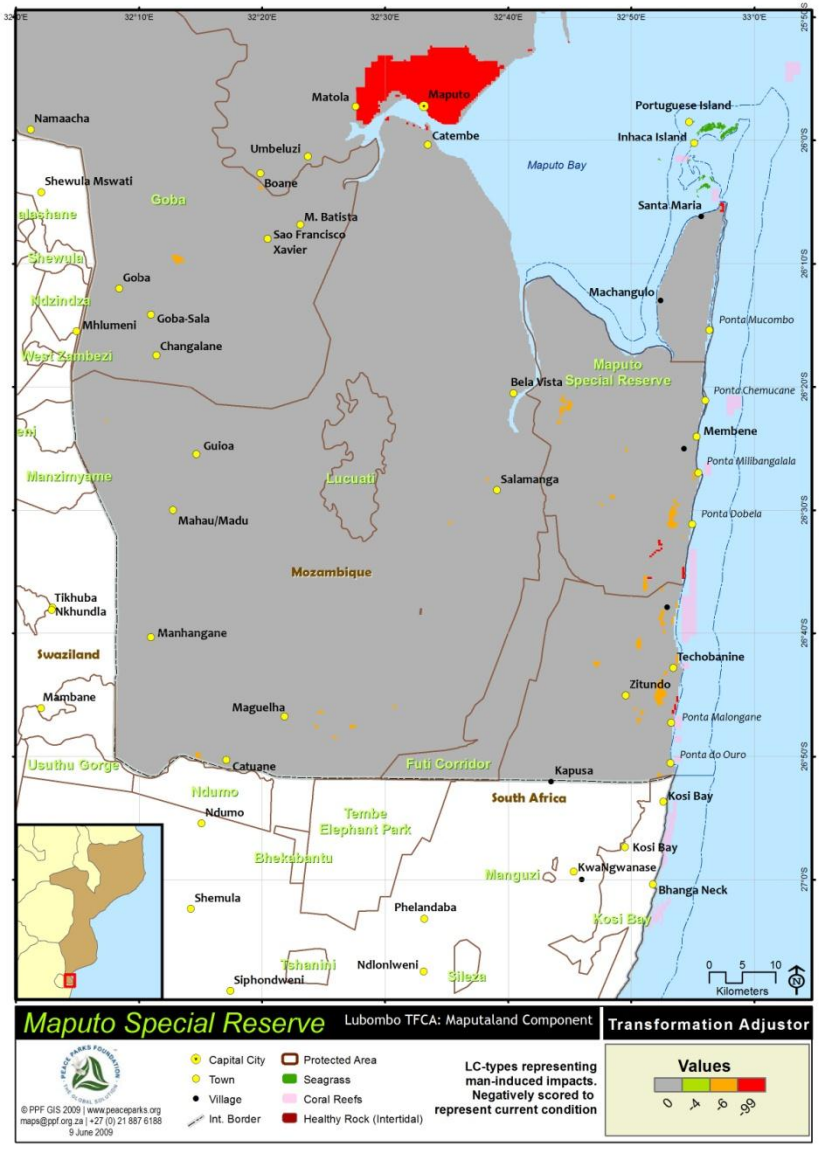


Map 33: Combined Sensitivity



Map 34: Habitat Value

Map 35: Resilience



Map 36: Transformation Adjustor

4.6.5.2 Landscape Sensitivity

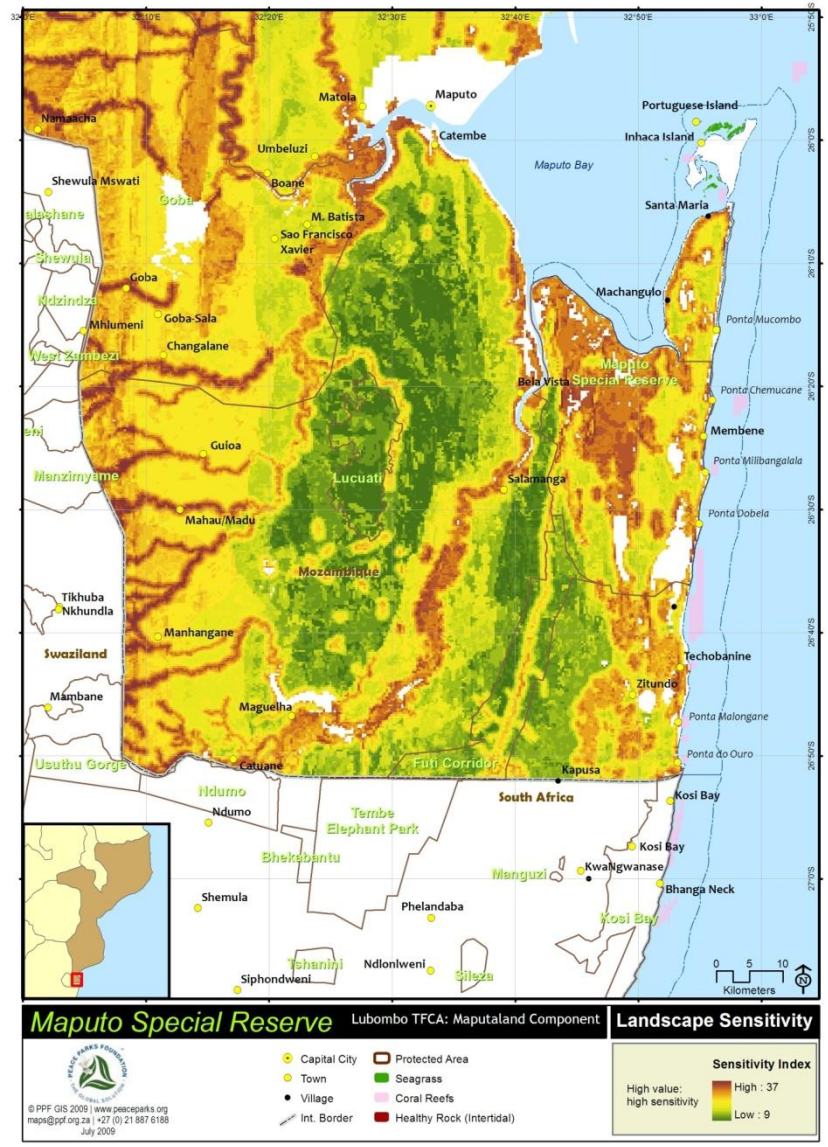
Landscape sensitivity (refer Map 37) provides an indication of the resilience of landscapes regarding impacts and interventions, and is an index of sensitivity based on erodibility, slope, soil texture, rainfall, vegetation vulnerability, hydrological sensitivity, and construction suitability.

Slope is important within landscapes since it influences aspects such as erodibility, construction suitability, access etc., while hydrology is required to ascertain areas important for the maintenance of hydrological processes, as well as areas where infrastructure could be affected by fluvial action.

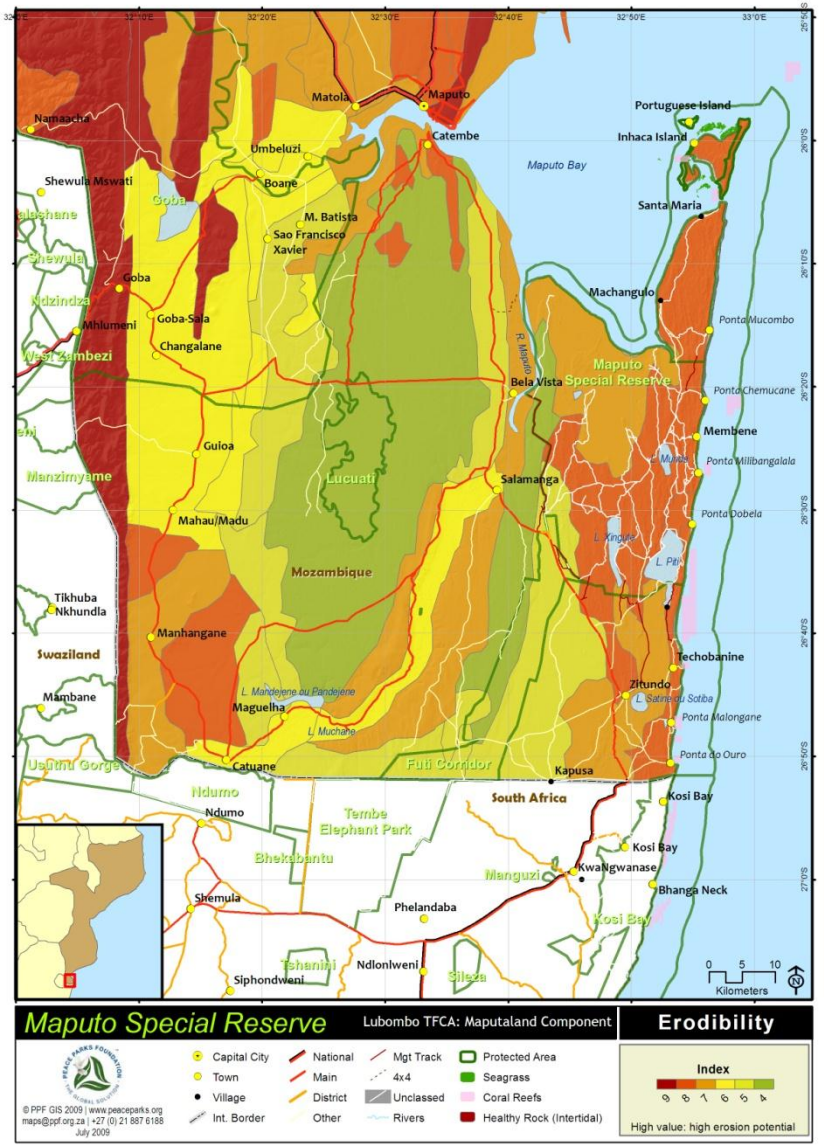
Soil characteristics influence and guide planning decisions in various ways:

- *Soil depth:* Important to guide decisions regarding suitability for agriculture as well as erosion potential. Deeper soils are better suited for agriculture dependant on the texture and drainage capability, while shallow soils on steeper slopes are more susceptible to erosion;
- *Soil texture:* Provides an indication of the clay content of the soil, dependant on the relevant proportion of grain size particles. This provides an indication of the suitability for all weather road development, details pertaining to building construction technique, suitability for agricultural development and livestock or wildlife stocking potential;
- *Soil drainage:* Drainage capacity of soils influences the retention of water influencing soil fertility as a result of leaching, as well as presence of permanent water required by water dependant wildlife; and
- *Soil colour:* Important from a development planning perspective since lighter soils contrast more with dark vegetation than dark soils once disturbed through development initiatives.

Clay content, soil texture, slope and rainfall all impact on the erodibility index required to ascertain landscape sensitivity. The recoverability of vegetation influences how susceptible a landscape is to change as a result of human or other impacts. Construction suitability is an indication of the impact that soil and slope has on the cost of construction. Soils with high clay content require special foundations, as do soils of a very sandy nature. Linked to slope, these aspects influence the ease with which construction can take place (refer Map 38).



Map 37: Landscape Sensitivity

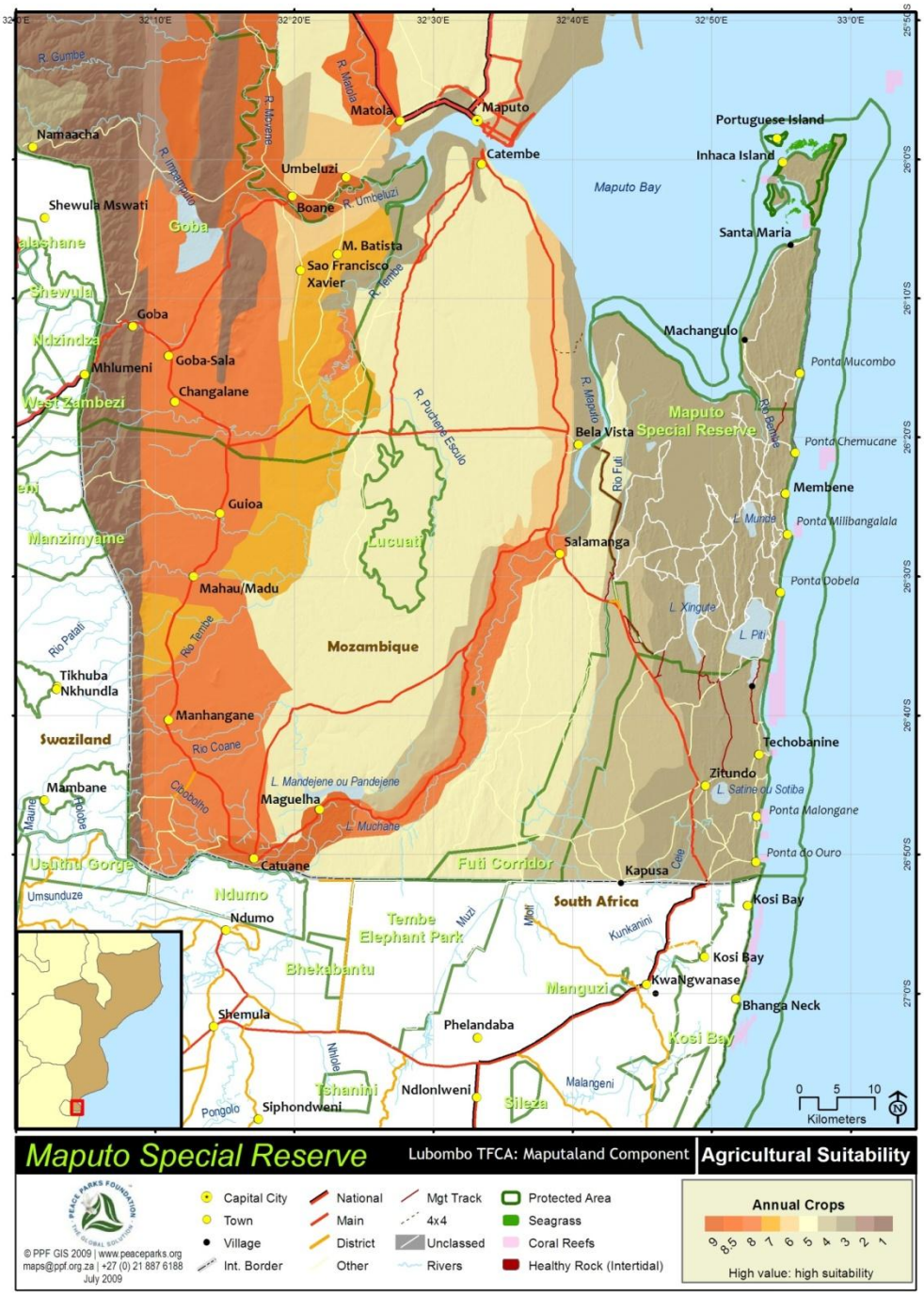


Map 38: Erodibility

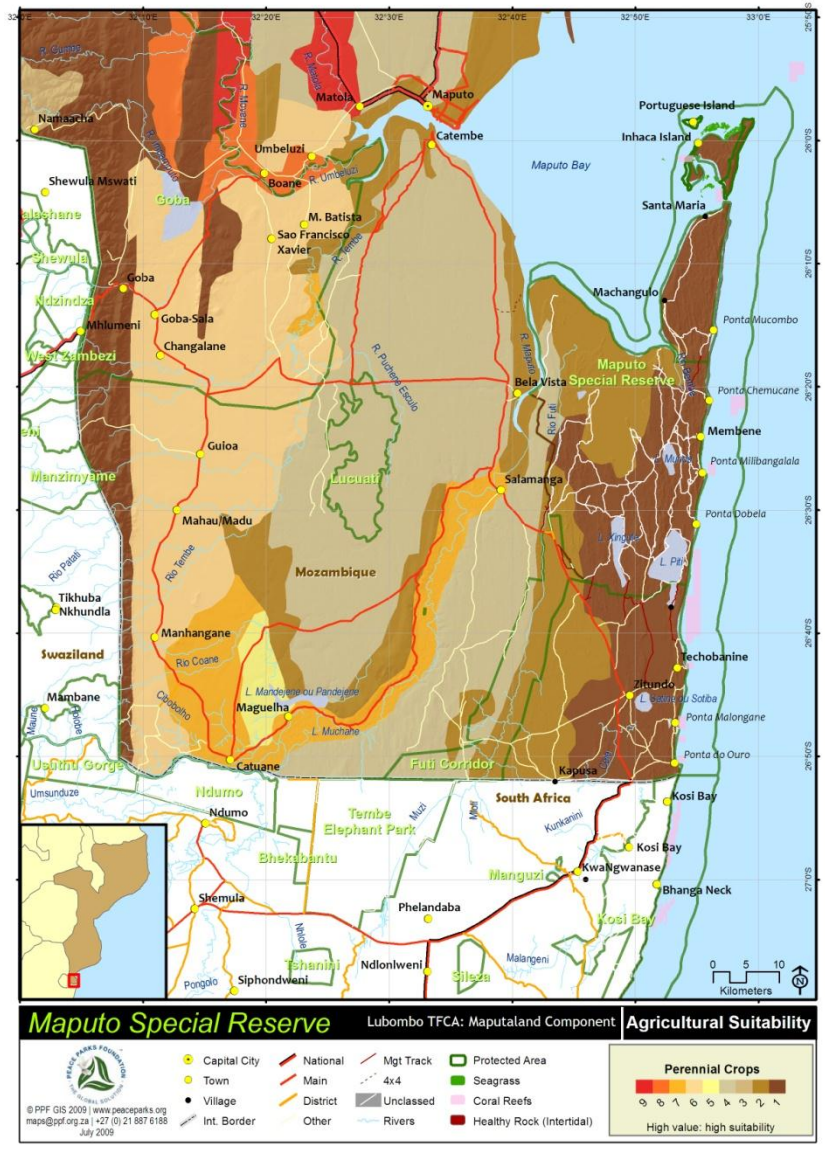
4.6.5.3 *Agricultural Suitability*

Agriculture plays an essential role in the livelihoods of the region, and while most agriculture is based on annual crops, most of the area is better suited to pastures and even then only marginally. With the prevalence of livestock diseases in the area, the full benefit of pastures cannot be realized, other than with game which is perfectly adapted to survive with these diseases. The western portion of the study area, dominated by the Maputo River and the higher nutrient soils on the Lebombos, is marginally better suited to agriculture, with higher fertility soils and better drainage, however when seen in a national context the entire study area ranks low.

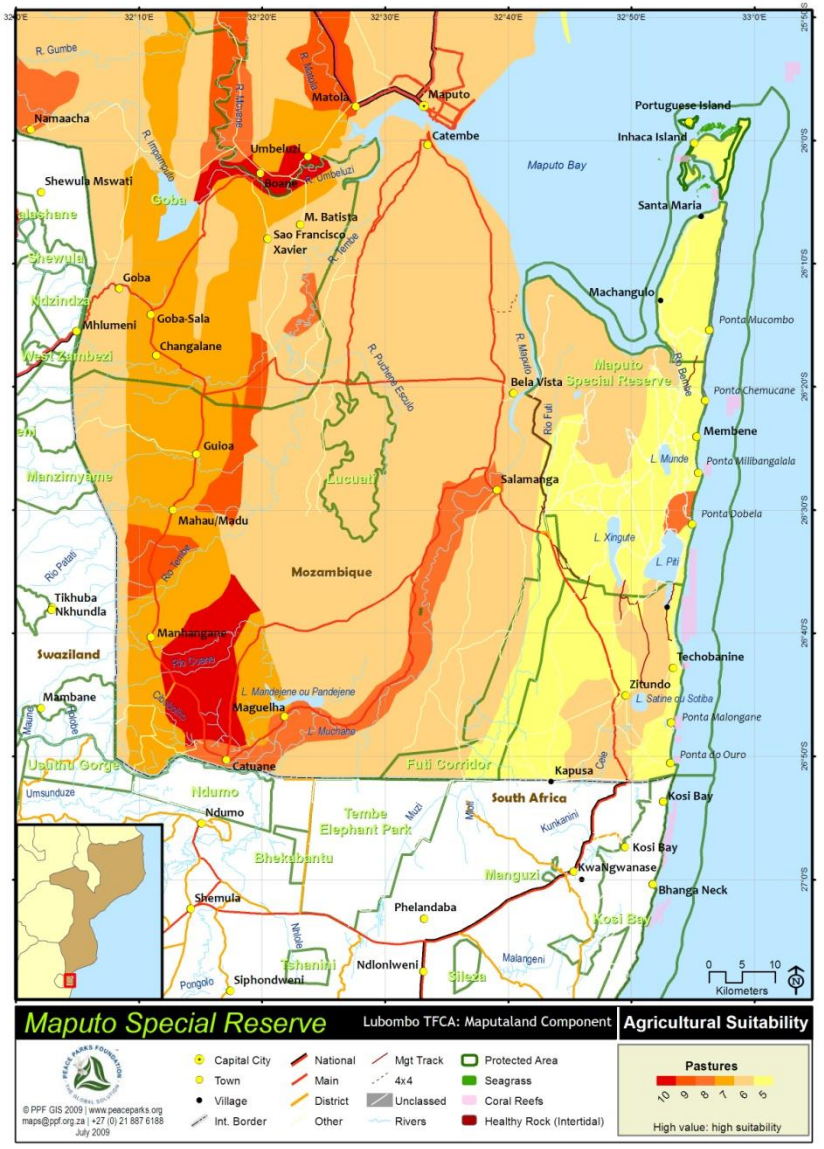
Annual, perennial, and pastures potential maps are provided to guide decisions regarding support programmes for agricultural development (Maps 39-41).



Map 39: Agricultural Suitability – Annual Crops



Map 40: Agricultural Suitability – Perennial Crops



Map 41: Agricultural Suitability – Pastures

4.6.5.4 Visual Sensitivity

Often within planning the concept of visual sensitivity is forgotten or neglected, despite the huge importance that aesthetic value can play in ecotourism. Visual sensitivity is an indication of the aspects that positively or negatively influence the aesthetic value of landscapes by contributing to, or detracting from the beauty of the area.

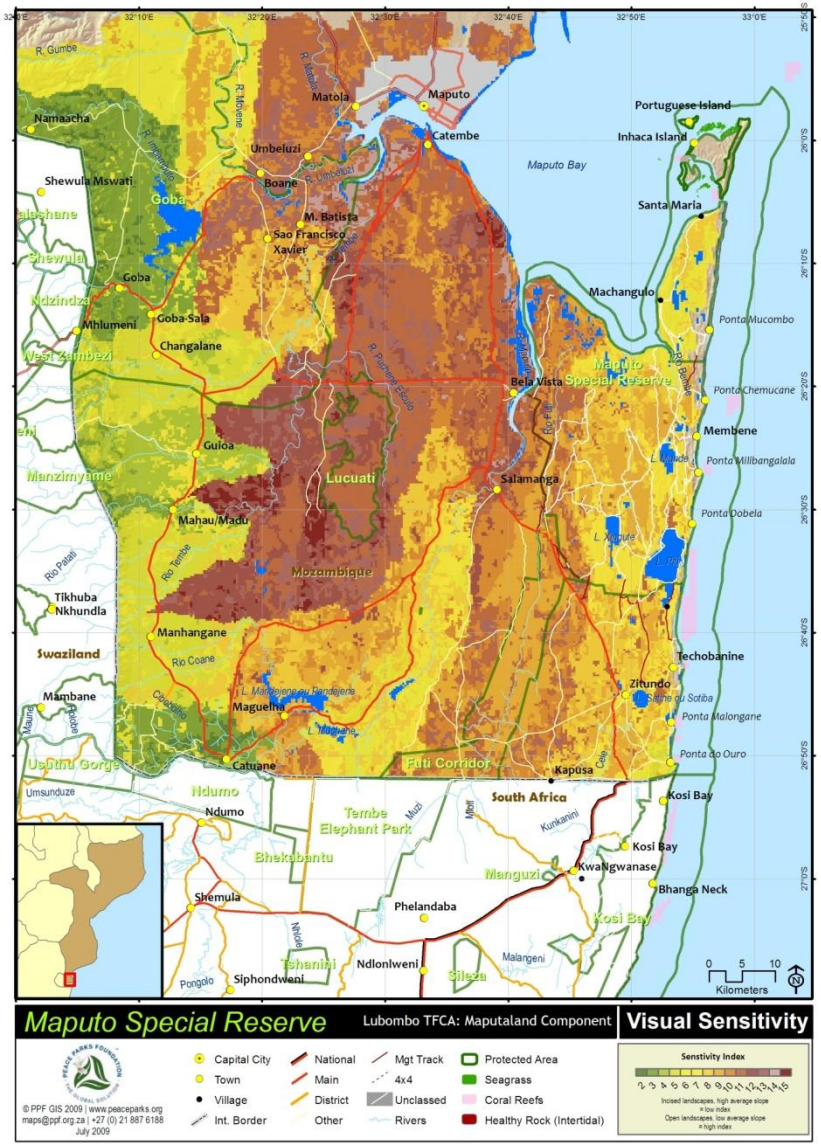
This aspect can however lead to immense conflict since developing communities value initiatives such as power lines, roads and civil engineering structures as tangible signs that development is taking place. However, international visitors, especially eco-tourists, place value on relatively untransformed landscapes, devoid of visual and audio intrusions, and are willing to pay a premium to enjoy such landscapes.

By planning large areas such as the MSR from an integrated perspective, and consciously incorporating visual sensitivity (Map 42) into the planning process, as part of an accountable decision making framework, it is possible to attain a harmonious balance between environmental, social, agricultural, cultural and visual parameters.

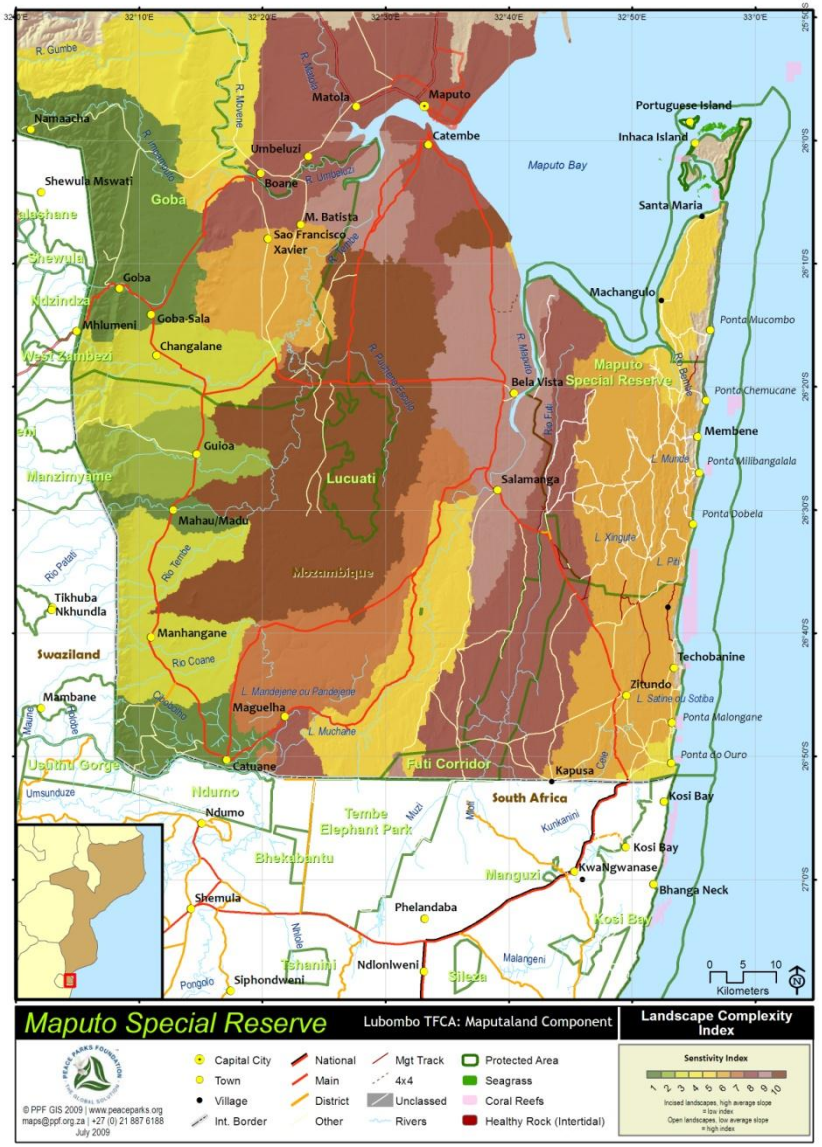
Visual sensitivity is a combination as several factors, including:

- Landscape complexity (Map 43)– it is easier to hide developments and infrastructure in complex landscapes than on open flat surfaces slope since clearings and developments on flat surfaces are less visible than on slopes; skylines and ridges, and development along skylines and ridges is more visual than in valleys;
- Vegetation height and density (Map 44)– provides an indication of the ability to 'hide' infrastructure and development amongst plants; and
- Soil colour and contrast – contrast between vegetation colour and soil colour results in visual intrusions (refer Map 15).

Despite being a complex concept, visual sensitivity is a critical and integral component of planning. Decisions must incorporate this concept into the planning process to ensure that developments do not materially change the environmental character of the area.



Map 42: Visual Sensitivity



Map 43: Landscape Complexity

Map 44: Vegetation Height and Density

4.6.6 Designing and Mapping the Concepts

The Concept Development Plan (CDP) for the MSR is spatially represented by Access, Use, Development and Infrastructure components. The CDP has been prepared with a view on guiding the attainment of the management objectives and key actions, yet considering environmental sensitivities.

4.6.6.1 *Access*

Access to the exceptional natural resources of the MSR are controlled through several gates strategically placed to allow for easy access both from Maputo in the north and South Africa in the south (refer Figure 17 and Map 45). Additionally, it is proposed that two checkpoints be established at the perimeter of the Futi Corridor to serve as control points for people transiting the protected area en-route between Ponta do Ouro, Maputo and Catuane. Access gates are at Main Camp; Gala; Futi Corridor; and Machangulo.

Road access within the Reserve will be limited to a single main transit route between Main Camp and Machangulo gates, and this route will also serve as the main access for guests bringing boats into the reserve. A secondary access will be between Gala gate and the main access route. Game drives within the reserve will utilise a network of 4x4 tracks negating the need to upgrade all the roads.

Access to the marine resources will be via a series of launch sites, some of which are available for the general public, subject to certain rules and regulations, while others will be limited to concessionaires.

Aerial access will be via a centralised airstrip, which if possible, could have immigration facilities negating the need to fly via Maputo, and enabling direct access the reserve. Inhaca Island already has aerial access, as do Ponta do Ouro and Machangulo. Boat accesses from Maputo will be limited to Inhaca, Santa Maria, Ponta Milibangala and Ponta Mucombo at designated areas.

The border post at Ponta do Ouro enables visitors from South Africa to access Mozambique from the south and can be enhanced to serve as an information centre for both the MSR and the Maputaland TFCAs.

Figure 17: Access Concept

Map 45: CDP - Access

4.6.6.2 Use

As the main conservation initiative within the region the MSR forms the anchor for conservation based land use options, and it is proposed that the area directly contiguous to the Reserve be utilised as a multiple use zone where the focus is on natural resource conservation and sustainable utilisation, with the main focus of agriculture being to the west of the Maputo River. These multiple use zones will also serve as buffer zones to the MSR.

Use within the MSR will be limited to ecotourism and associated compatible uses. Four exclusive use concession areas have been proposed for the MSR, three of which have formed part of the concessioning process that has been facilitated by the IFC via the Mozambique Tourism Anchor Investment Program, namely, Ponta Chemucane, Ponta Milibangalala, and Ponta Dobela. The Sanctuary Concession will only be released once the wildlife product has been improved (refer to the Development component of the CDP).

The main focus for general tourism development within the MSR will be around Lago Nela (rest camp), Ponta Membene (tented camp), and eight safari campsites strategically placed throughout the reserve. Around Zitundo, Salamanga, and Bela Vista the areas should be managed as multiple use with a focus on agriculture and tourism support for the MSR. Within the Machangulo Peninsula and the area between Ponta do Ouro and Techobanine, high density tourism development is currently taking place, and it is recommended that these developments be limited to these areas.

This approach to broad land use zoning allows for the establishment of compatible land use practices as well as opportunities to reduce HWC conflict through the establishment of community owned conservation areas, where consumptive utilisation can be an option in addition to ecotourism activities and facilities.

The PPMR affords the opportunity to control the utilisation of marine resources within the area, as well as serving as an ecological linkage to the marine protected areas within South Africa and the Inhaca Island, based on the strategies that have been developed for these areas, including the *Management Plan and Development Strategy for the Inhaca Archipelago* (refer Figures 18 and Map 46).

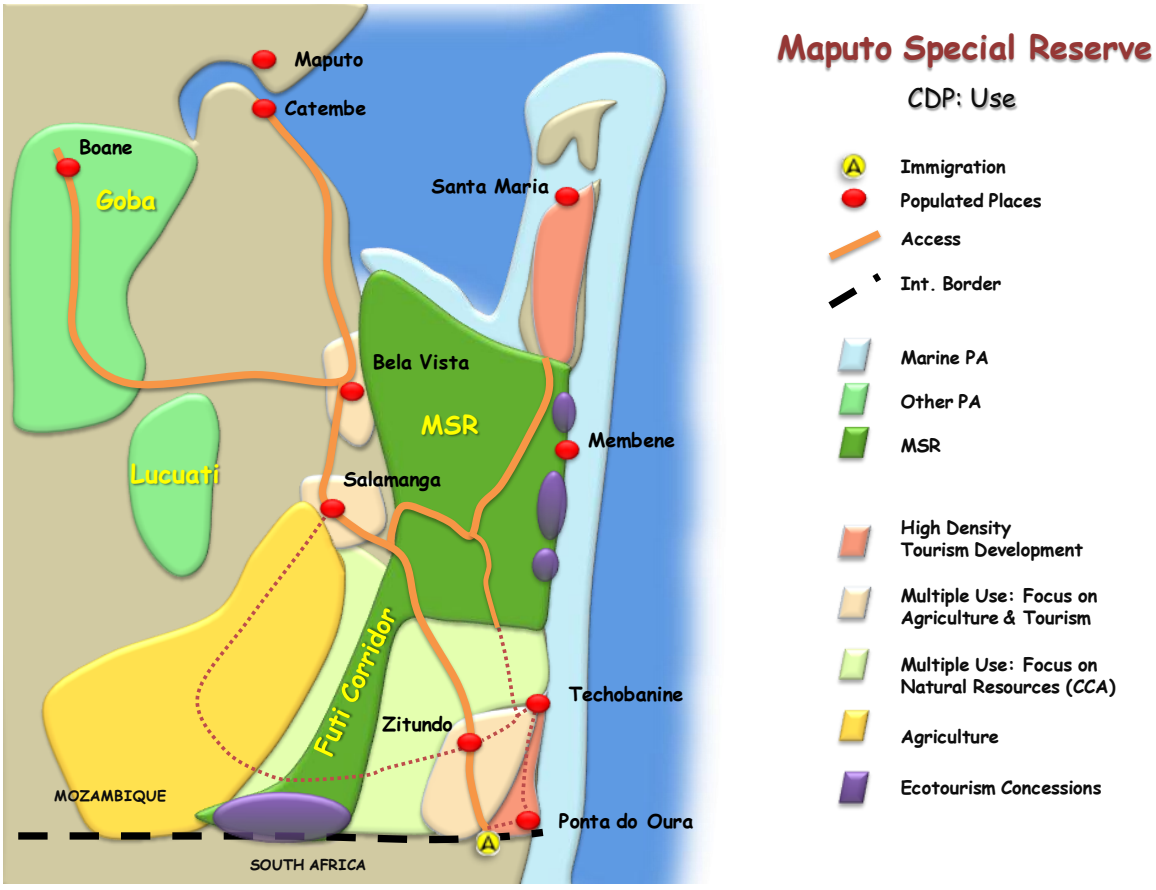
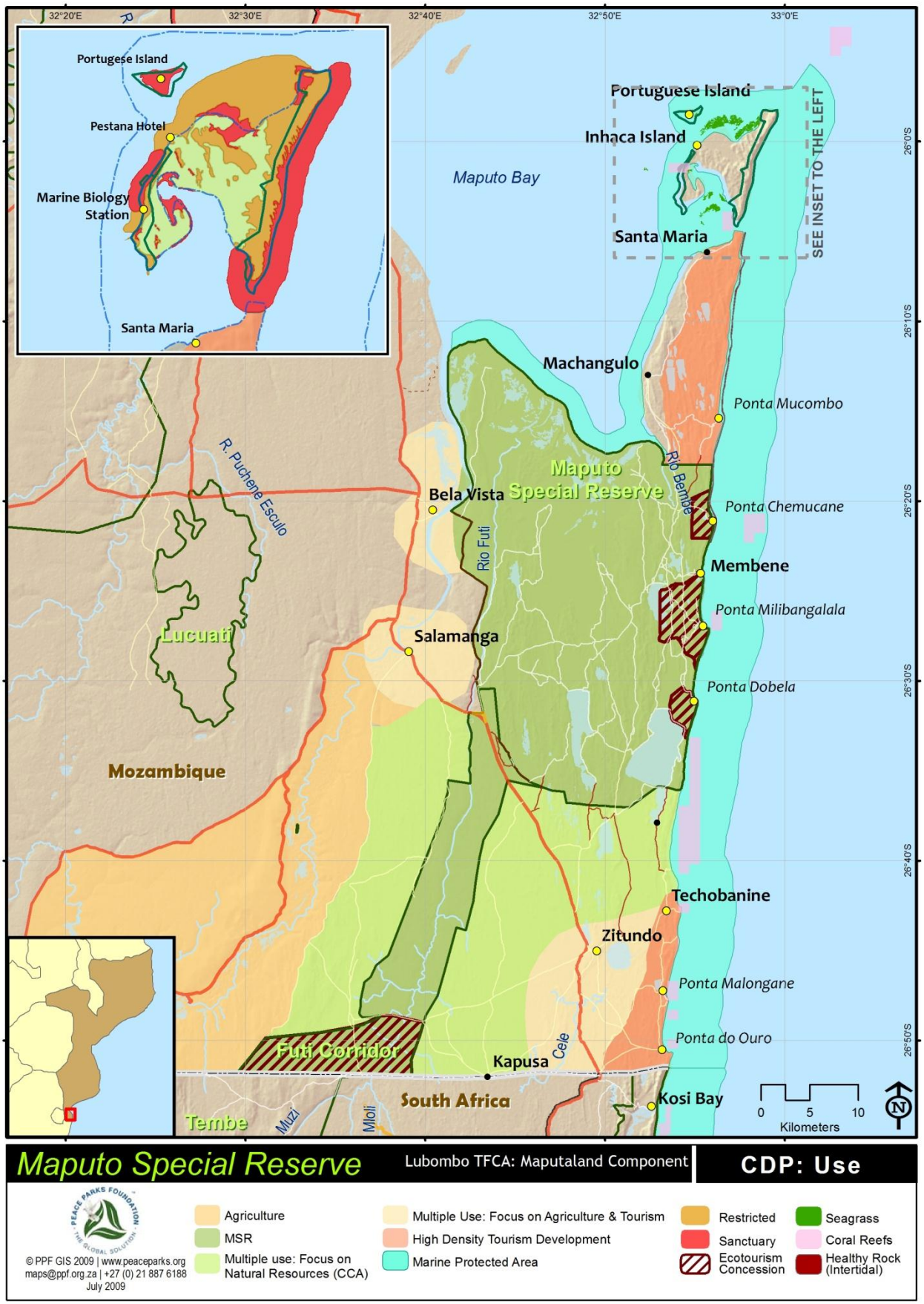


Figure 18: Use Concept



Map 46: CDP - Use

4.6.6.3 Development

To sustainably unlock the ecotourism potential of the MSR, as well as enable effective and efficient management of the natural and cultural resources of the region, several development nodes have been identified (refer Figure 19). These include:

- Management Head Quarters - situated at the MSR Main Camp, and includes the Main Gate, tourism support facilities and staff accommodation to enable effective management);
- Chemucane-Dobela coastal cluster – which includes the three coastal concessions, the airstrip; the Ponta Membene tented camp, a safari camp, the Machangulo Gate and related staff accommodation and management infrastructure;
- Eastern Grassland cluster – which includes the radio communication tower, several safari campsites, and the Lago Nela Rest Camp;
- Buffalo breeding cluster – situated on the western side of the reserve and includes the intensive game management enclosure, two pickets and safari campsites;
- Gala Cluster – situated on the south eastern side of the reserve and includes the Gala Gate, several safari campsites, and pickets;
- Futi Sanctuary cluster – situated along the South African border directly adjacent to the Tembe Elephant Park, and includes the Futi Gate, staff accommodation, check point, concession and support facilities; and,
- Western Futi cluster – situated along the western boundary of the Futi Corridor and includes several pickets.

In the immediate area surrounding the MSR several additional development nodes have been identified as critical for the successful development of the reserve, and include:

- Tourism Support (MSR Main Camp and Ponta do Ouro); and,
- Rural Growth (Bela Vista; Salamanga; and Zitundo).

Map 47 shows the proposed development nodes, while Map 48 shows details pertaining to the ecotourism development of the MSR (areas 2, 3, and 4 representing the concession areas forming part of the Tourism Anchor Investment Program as per the MSR Investment Procurement Strategy).

Each of the concession sites will have an exclusive use area surrounding it ranging in size from approximately 800ha to more than 3000ha. The description of these areas has been included in the request for proposals prepared for each site. The releasing of the remaining two concession sites will be linked to an improvement of the game experience within the MSR.

Area 1 refers to the Futi Sanctuary which will initially serve as the pilot project for cross border management of dangerous game, and the first fully stocked game lodge development in the reserve.

Area 5 is the Lago Nela Rest Camp which will serve as the primary game viewing base of the reserve, as well as the hub around which the Safari trail experiences will be based.

Area 6 represents a possible co-management area between the GoM and a surrounding private game management area, while area 7 is the intensive game management area within which the Buffalo breeding programme will take place.

Area 8 – 10 are all community initiatives identified within the CAP, and include a handcraft, chilli and a horse trail project.

The safari campsites will all be developments of the MSR, even though they could be managed by a service provider if the Reserve deems this necessary. These camps can also be utilised by operators as bases for mobile safaris, wilderness trails, and guided 4x4 trails.

A network of 4x4 routes based on the existing track system will be repackaged as trail options for both guided and self-guided experiences and will utilise the various safari camp sites as overnight points. Due to the relatively small size of the MSR permitted tourists can base themselves at any of the sites, or combination of sites, to maximise experiences. This network will enable guests to design the own experience based on their own specific needs and expectations, rather than a designated trail where the experience is externally packaged.

The lodges at Inhaca Island will be based on the management plan for the area, while the Ponta do Ouro-Techobanine cluster development will be guided by the Integrated District Development Plan for the Matatuine District.

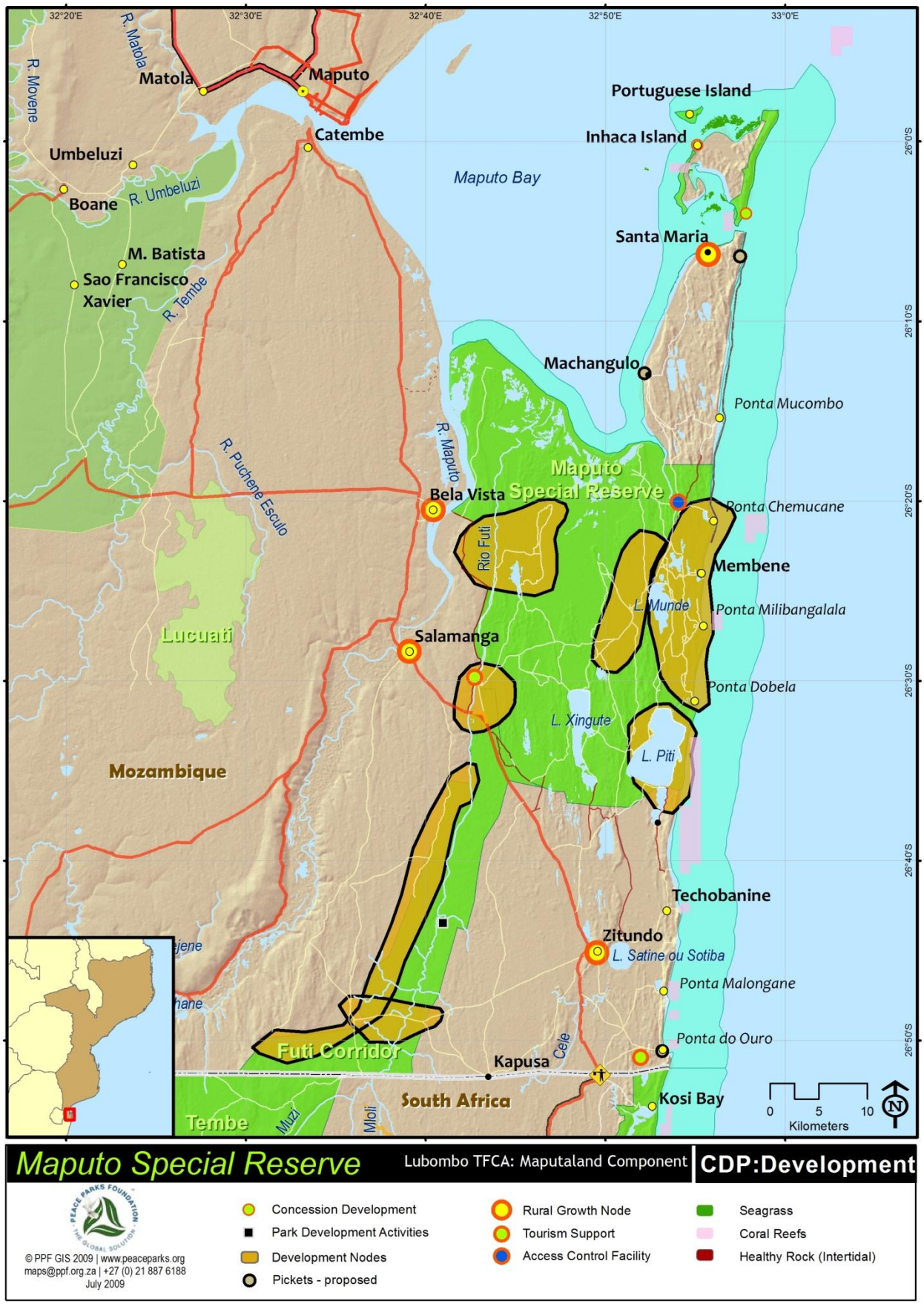
The rural growth nodes at Bela Vista; Salamanga and Zitundo should be used to concentrate development effort rather than diluting the impact through scattered development, while the Ponta do Ouro and the Main Gate areas should be used for tourism support for the developments within the MSR.

Establishing pickets throughout the area will assist the MSR management with the attainment of the objectives of the MSR, and these have been selected based on local knowledge, problem areas and requisite infrastructure.

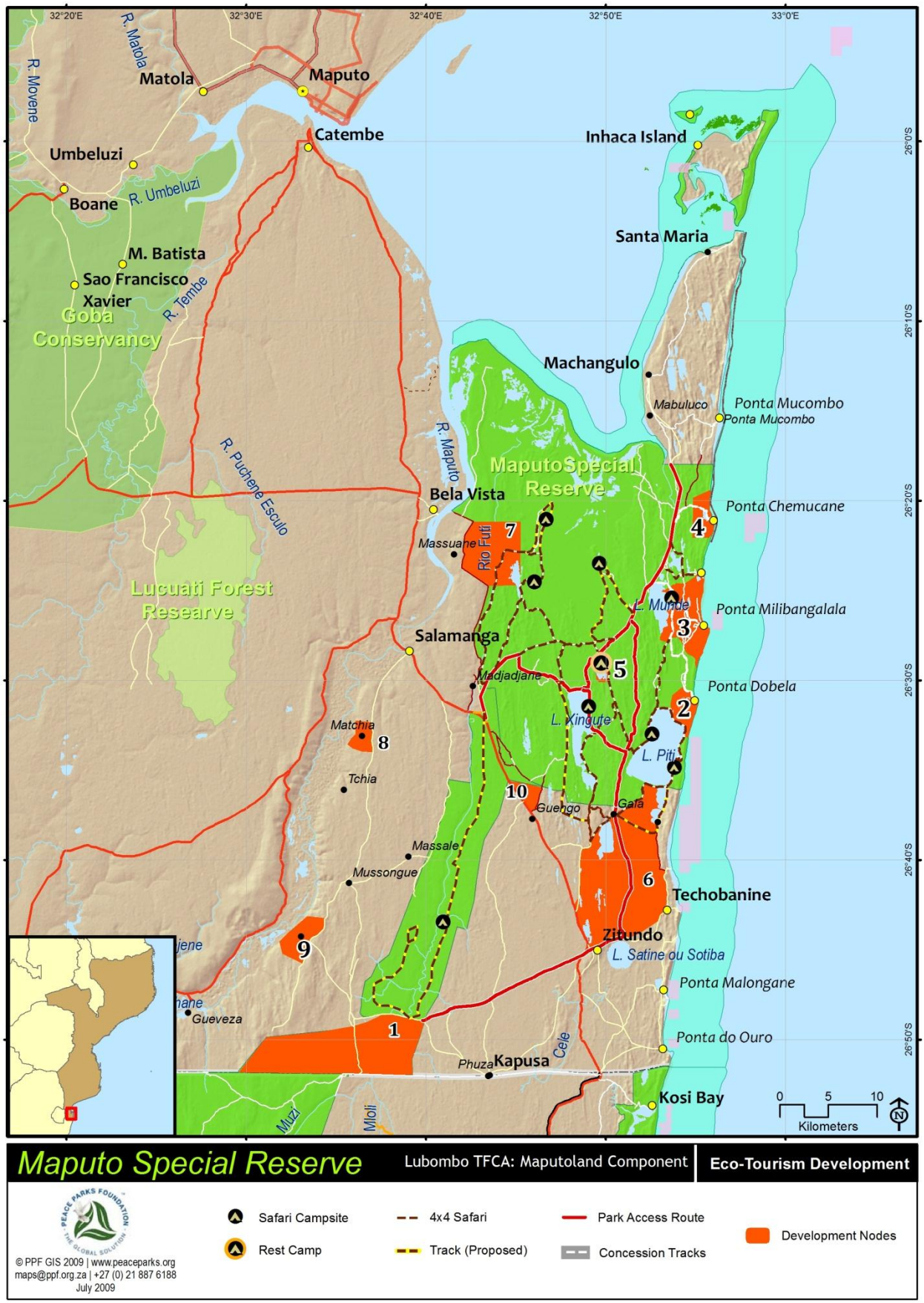
Details regarding potential and priority ecological linkages with community conservation areas which should be supported and encouraged are provided in Map 49, while Map 50 shows the development strategy regarding the wildlife recovery proposed for the MSR.

Refer to Appendix 5 for gross income financial projections and projected occupancy rates pertaining to the various concession and Reserve tourism developments and activities within the MSR (excluding gate fees).

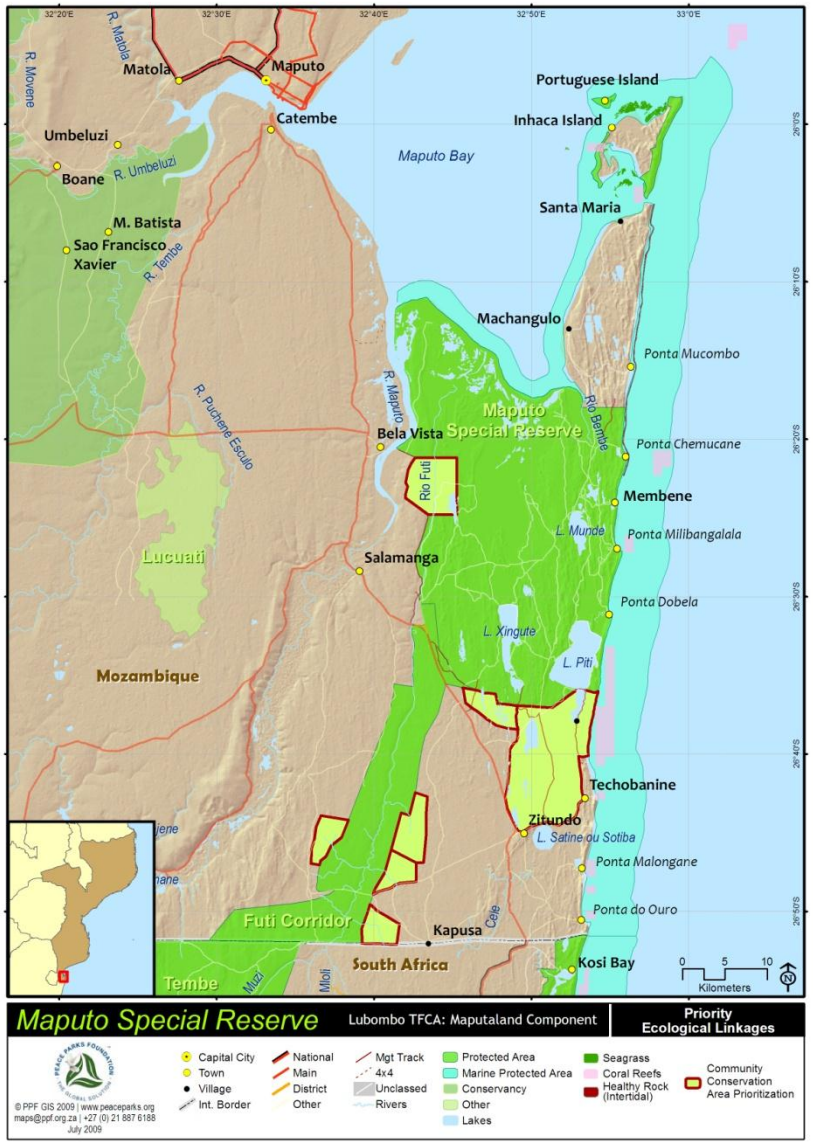
Figure 19: Development Concept



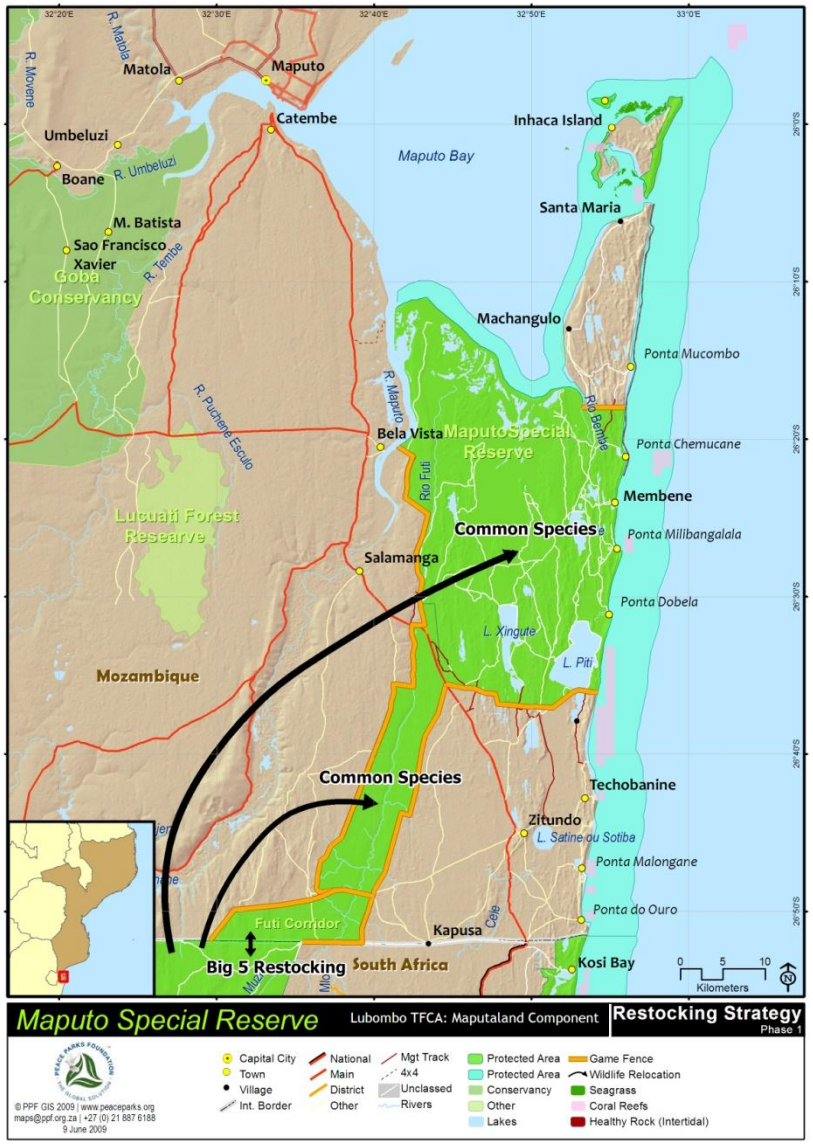
Map 47: CDP - Development



Map 48: CDP Development – Ecotourism Development



Map 49: CDP Development – Ecological Linkages



Map 50: CDP Development – Restocking Strategy

4.6.6.4 Infrastructure

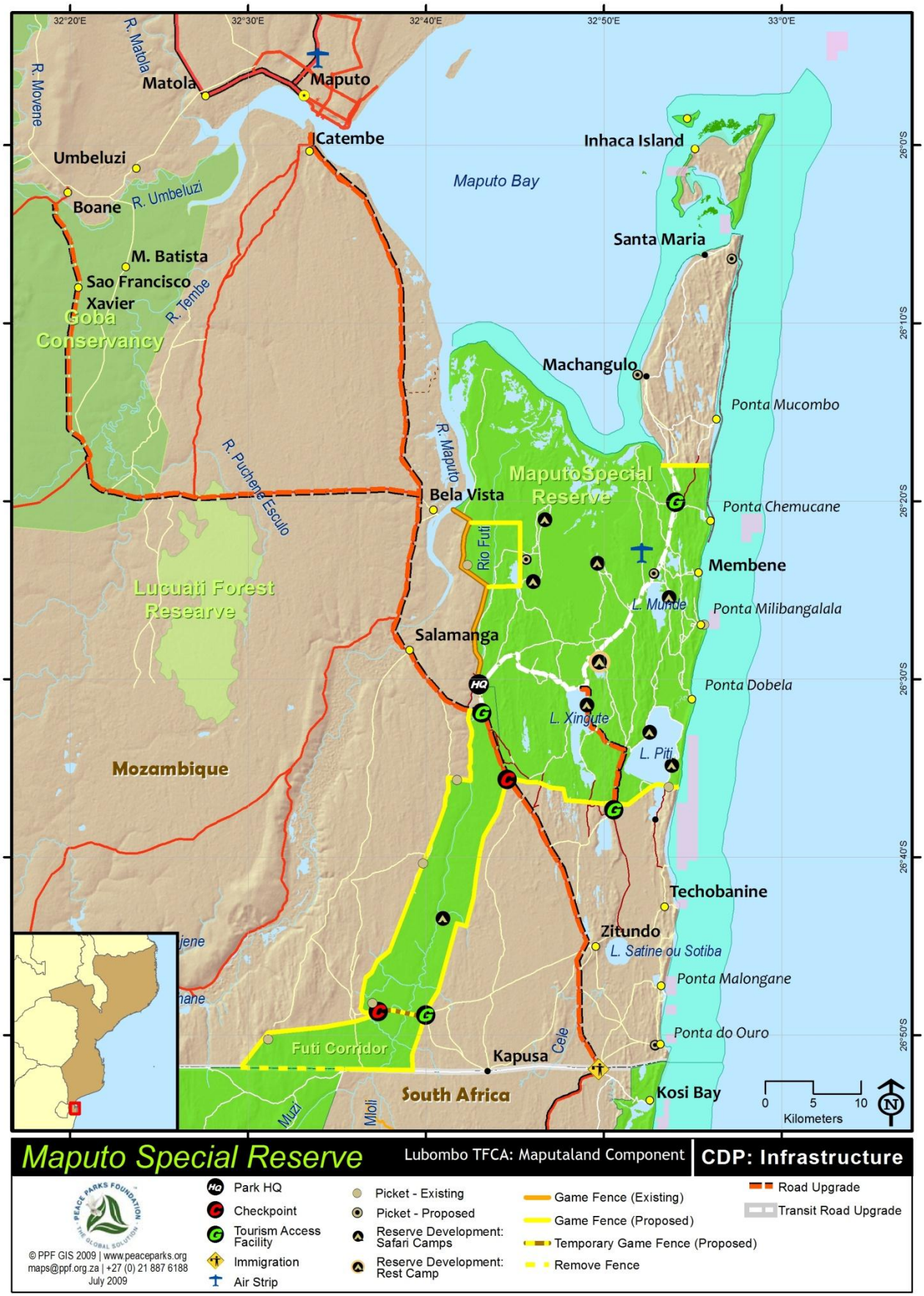
Requisite infrastructure necessary for the effective development of the MSR as a wildlife and ecotourism destination includes (refer Figure 20 and Map 51):

- MSR Administrative Head Quarters – based at Main Camp;
- Tourism Access Facilities – gates at Main Camp; Machungulu; Gala and Futi Corridor, with check points on the Corridor;
- Reserve Development camps;
- The establishment of an airstrip in the north eastern portion of the MSR enabling easy access from the lodges in the region, possibly including facilities to accommodate customs and immigration;
- Road upgrades – mainly the Maputo-Ponta do Ouro Road, as well as the MSR Main Gate-Machungulu transit route;
- Establishment of a game fence around the core area of the MSR as well as a fenced area for game introduction within the core area of the MSR;
- Establishment of a temporary game fence within the Futi Corridor to separate predators from the founder populations of game required to re-establish the wildlife within the core area of the MSR, a fence that will be removed once the founder populations have reached a sustainable level enabling predation; and
- The removal of the fence between the MSR (Futi Corridor) and Tembe Elephant Park enabling wildlife to move freely across the border re-establishing the ecological functioning of the ecosystem along the Futi River. This can only occur once an agreement has been concluded between the GoM with the Tembe Traditional Authority (as the owners of the Park) and Ezemvelo KZN Wildlife(as the manager).

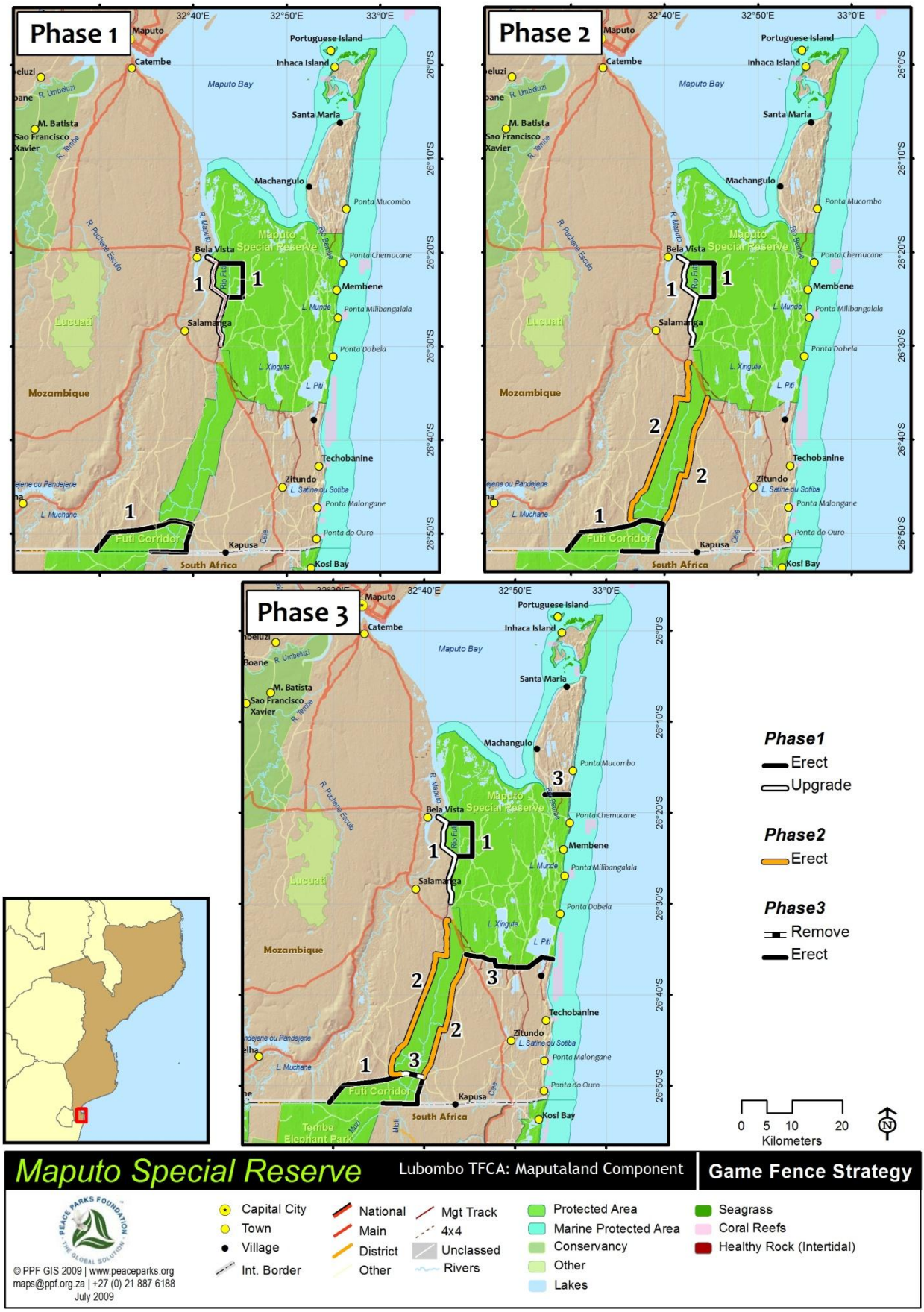
Map 52 shows the phasing recommended for the game fences within the MSR.

Infrastructure associated with the various concession areas will be as set out in the request for proposals and as agreed in the final concession contracts.

Figure 20: Infrastructure Concept



Map 51: CDP Infrastructure



Map 52: CDP Infrastructure – Game Fence Strategy

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SUPPORTING DOCUMENTS

Management Plan and Development Strategy for the Inhaca Archipelago (2010-2014), January 2010

Maputo Special Reserve and Ponta do Ouro Partial Marine Reserve Community Action Plan, May 2010

Maputo Special Reserve and Ponta do Ouro Partial Marine Reserve Management Plans, Consultation and Review Report, May 2010

Mozambique Tourism Anchor Investment Program, Maputo Special Reserve Investment Procurement Documentation including:

- MSR Investment Procurement Strategy
- Request for Proposals for Ponta Milibangalala, Ponta Dobela and Ponta Chemucane
- Partnership Agreements
- Concession Contracts

Ponta do Ouro Partial Marine Reserve Management Plan, May 2010

APPENDICES

APPENDIX 1. LAW ENFORCEMENT STRATEGY NOTES

Recruit young, fit, motivated guards with at least standard seven (7) (new system) to ensure they can write reports (MSR Manager).

Open two new posts: Tsholombane (to control activities in the mangroves, lakes and other northern parts of the MSR) and Matonde (to control vehicles driving along the beach). Membene may also be necessary though it is lower priority (to control entrances from Machangulo, probably only during the turtle season) (MSR Manager).

Capacitate the senior law enforcement/problem animal control officer (MSR Manager).

Provide short in-service training for the guard force as a unit to improve its effectiveness, instilling a sense of teamwork, pride and purpose in the guards (MSR Manager).

Rotate guards between posts and if necessary between protected areas in Mozambique to promote transparency (MSR Manager).

Equip posts adequately and ensure reasonable living and working conditions; this includes firearms, transport and radios (MSR Manager).

Maintain and expand the radio system and communication procedures (MSR Manager).

Review the law enforcement/control system every three months, and streamline if possible (MSR Manager).

Develop a strategy and detailed plans for law enforcement in the Futi Corridor while the fence is being planned and erected (MSR Manager).

Develop a systematic reporting system for law enforcement, and a monitoring system for law enforcement effectiveness (MSR Manager, EKZNW representative).

APPENDIX 2. TOURISM BID PROCESS

Mozambique Government (MITUR) is preparing concessioning process guidelines to be applied within protected areas. Meanwhile the International Finance Corporation of the World Bank Group (IFC) was appointed by MITUR to facilitate the process associated with the Tourism Anchor Projects for MSR at Ponta Milibangalala, Dobela, and Chemucane as set out in the Investment Procurement Strategy.

The broad procurement steps for these tourism concessions include:

- Investigating interest and/or inviting Expression of Interest;
- Preparing a Request for Proposal (RFP);
- Issuing the RFP;
- Receiving and evaluating bids/proposals using an approved/pre-agreed bid evaluation procedure; and
- Selecting the winning proposal and initiating standard procedures governing the awarding of special licences in protected areas.

Tourism developments will be subjected to environmental impact assessments which will follow standardised procedures of MICOA, taking into account architectural guidelines and environmental factors. Developments will be evaluated both individually (i.e. site-specific) and in together (i.e. to assess cumulative effects).

Detailed discussions will be held between developers and Reserve Management on how they will work together. Discussions will also be held with affected and beneficiary communities as to how community participation will be promoted.

Contracts will be drawn up for concessions in which detailed conditions will specify rights of the concessionaires, powers of the Reserve Manager, institutional arrangements, and detailed conditions over aspects such as visitor numbers and activities, development of tourist facilities, waste and sewage disposal, energy sources, use of water sources, forms of access, and involvement and benefits to local communities.

Partnership agreements and concession contracts will be supervised by the Reserve Manager.

APPENDIX 3. PROPOSED MSR REGULATIONS

Regulations pertaining to the MSR will be compiled and will include code of conduct for staff, operators, visitors and local communities. Below are suggestions regarding local rules for visitors:

- No off-road driving;
- No driving on beach;
- No tourist use of roads not open to visitors;
- No driving at night unless authorised;
- No angling outside zones designated for this purpose;
- No collection of plants or animals (including corals, mollusks etc.)unless under licence in areas zoned for this purpose;
- No firearms within the MSR unless for management purposes;
- No disturbance or feeding of wild animals, or damage to plants;
- No unauthorised collection of firewood inside the MSR;
- All rubbish to be removed from the MSR for appropriate disposal elsewhere by both visitors, tourism operators and MSR management;
- No domestic animals allowed into the MSR;
- Fires are only allowed in designated fireplaces; and
- Entrance and exit times for visitors: from 06:00 to 18:00 in summer (September to March) from 07:00 to 17:00 in winter (April to August).

The Maputo Special Reserve is in no way responsible for any loss, damage, injury or loss of life through whatever means to visitors or their property including vehicles.

APPENDIX 4. PROPOSED INSTITUTIONAL STRUCTURE FOR THE MSR AND PPMR

A new Conservation Policy was approved in November 2009. It refers to a national conservation authority which will be responsible for the management of all protected areas in Mozambique. Therefore the final structure and institutional arrangements of the MSR and PPMR will ultimately be harmonised and aligned to the outcomes of the implementation of this Policy and establishment of such an authority.

Management Board

The Board already functions informally with a skeleton membership comprising DNAC and NGOs. The Management Board will comprise:

- Provincial Director of Tourism;
- DNAC representative;
- District Administrator;
- Provincial Director of Fisheries;
- National Maritime Institute (INAMAR);
- Reserve Manager (MSR and PPMR);
- Representatives of the local communities (3 Regional Fora);
- NGOs involved in MSR management or community work in the area of the MSR; and
- Private sector operator(s) with concessions in the MSR or who are otherwise substantially supporting the MSR.

Draft **terms of reference** for the Board are to:

- Supervise and control the management and development of the MSR;
- Commission the updating of the MSR Management Plan, either every five years or on a rolling planning basis, and approve it;
- Approve the annual workplans and budgets prepared by the MSR Administrator;
- Supervise the tendering process for tourism concessions in collaboration with DNAC;
- Collaborate with DNAC in the development of revenue retention mechanisms;
- Supervise the development and running of the financial system; and
- Collaborate with DNAC in the preparation of the new Forest and Wildlife Acts.

The Board will meet a minimum of four times each calendar year, and more often if required.

Reserve Manager and Administration

The MSR and PPMR will have a Reserve Manager and central Administration under which will fall the following sections:

- Administration and Human Resources;
- Conservation Management (including Law Enforcement and Animal Control);
- Development and Maintenance;
- Community Relations;
- Tourism; and
- Research.

Objectives and responsibilities of the Administration are outlined below.

Objective: To plan, coordinate, direct, supervise and monitor MSR and PPMR management to ensure conservation of biodiversity and integration of the local communities in management, and to collaborate in the development and management of the Futi Corridor.

Responsibilities:

- Prepare annual workplans and budgets for approval by the Board, and participate in management plan revision;
- Implement the management plan and annual workplan;
- Control and account for MSR and PPMR budgets to the Board;

- Direct, supervise and coordinate the work of the five administrative sections;
- Supervise the control of vehicles and equipment;
- Collaborate closely with the Regional Coordinator of the TFCA Project and Futi Corridor Coordinator, and support the management of the Futi Corridor;
- Collaborate and foster good working relationships with tourism concessionaires;
- Promote working relations with district and provincial government, political parties, private sector, local communities (through the Communities Section), NGOs and projects operating in the vicinity;
- Assume ultimate responsibility for all legal matters concerning the MSR and PPMR, including prosecutions and boundary alterations; and
- Produce three-monthly reports for the Board summarising development and management achievements including summaries and analysis of section reports; conservation status and trends; progress with community participation and tourism.

Conservation and Maintenance Section

Objective: To provide logistical support to MSR and PPMR management to enable the other sections to function properly, and to undertake routine conservation work

Responsibilities:

- Implement construction and maintenance of buildings and access roads in the MSR and PPMR;
- Undertake routine maintenance of vehicles and other machinery in the MSR and PPMR;
- Assume responsibility for the care and control of equipment in the MSR and PPMR;
- Assume responsibility for care and control of the store;
- Support the controlled burning programme through lighting and attendance at intended fires, and fighting of wild fires which threaten installations or sensitive vegetation types;
- Undertake habitat rehabilitation work as appropriate;
- Provide logistical support to the animal reintroduction programme as appropriate;
- If electric fencing is erected, assume responsibility for its maintenance; and
- Submit monthly reports to the Reserve Administration.

Law Enforcement and Animal Control Section

Objective: To support the conservation of biodiversity by preventing unacceptable and unsustainable use of natural resources and undesirable fires, and protecting people, crops and livestock through control of problem animals

Responsibilities:

- Undertake law enforcement to prevent illegal activities inside and in the vicinity of the MSR and PPMR, including the Futi Corridor;
- Ensure the protection of people, crops and livestock within and in the vicinity of the MSR and PPMR;
- Control fires which are considered undesirable;
- Ensure visitor security (protection against wild animals and people);
- Collect data on animals, vegetation, fires and human activity for management purposes;
- Provide logistical support to the posts and ensure regular supplies to them; and
- Produce monthly reports to the Reserve Administration.

Community Section

Objective: To promote enhanced collaboration between communities and the MSR and PPMR through community participation in management, resolution of conflicts and promotion of sustainable use of resources by communities

Responsibilities:

- Promote dialogue with the communities in and adjacent to the MSR and PPMR;
- Through participatory methods, gain a detailed understanding of the needs, conflicts and pressures facing communities;

- Negotiate co-management agreements with target communities, including community benefits and restrictions on community activities;
- Participate in the application and allocation of Community Development Fund and Special Fund benefits;
- Refine the MSR zoning in collaboration with communities, to accommodate their basic needs and also take in to account conservation aspects;
- Promote community collaboration in management, including resource use and burning programme; and
- Submit monthly reports to the Reserve Manager and Futi Corridor Coordinator.

This section will comprise personnel who will undertake community work in both the Corridor, MSR and PPMR. They will in no way be responsible for any law enforcement, since it is impossible to combine the roles of regulation and facilitation. They should, however, liaise closely with the law enforcement team to ensure compatibility in the messages they are giving to the communities, and their interactions with them. The Community Liaison Officer will head this work.

Tourism Section

Objective: To promote the development and appropriate management of tourism in the MSR and PPMR, in accordance with the tourism objectives

Responsibilities:

- Supervise tourism developments and management in the MSR and PPMR and ensure mitigation of negative impacts;
- Liaise with tourist operators and ensure good collaboration between management and operators;
- Provide interpretation and information for visitors, including recruitment and training of guides;
- Supervise and monitor tourism revenue collection;
- Develop an appropriate system of collecting, analysing and presenting tourism statistics;
- Produce monthly reports to the Reserve Manager on tourist statistics, revenues, developments, problems etc.; and
- Provide inputs to annual workplans and revision of the management plan.

Research Section

Objective: To undertake research, monitoring and evaluation with direct relevance to promoting improved conservation, management and appropriate use of biodiversity, and inclusion of the communities in management programmes

Responsibilities:

- Undertake biodiversity and hydrological inventories;
- Develop a data base for the MSR and PPMR;
- Monitor trends in biodiversity and hydrology;
- Undertake other research as indicated in the management plan;
- Make management recommendations for vegetation, habitat management, animal population management and other aspects as relevant;
- Monitor impacts of communities, tourism and management interventions on the natural systems;
- Provide technical inputs to the annual work plans and the revision of the management plan; and
- Prepare six-monthly reports for submission to the Reserve Manager.

APPENDIX 5. FINANCIAL PROJECTIONS

Table 22: Financial Projects for Income from Tourism Developments and Activities

Products	Units	Pax	Fee	100% Income	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Concessions Developments														
Ponta Chemucane	810ha		1000MTN/ ha	518,400	518,400	518,400	518,400	518,400	518,400	518,400	518,400	518,400	518,400	518,400
Ponta Milibangala	3000ha		1000MTN /ha	1,920,000	1,920,000	1,920,000	1,920,000	1,920,000	1,920,000	1,920,000	1,920,000	1,920,000	1,920,000	1,920,000
Ponta Dobela	1500ha		1000MTN/ ha	960,000	960,000	960,000	960,000	960,000	960,000	960,000	960,000	960,000	960,000	960,000
Sanctuary	9000ha		1000MTN /ha	9,000,000	0	0	9,000,000	9,000,000	9,000,000	9,000,000	9,000,000	9,000,000	9,000,000	9,000,000
Concessions Activities														
Horse Trails	1	8	6710MTN/ p/ night	19,110,080	343,981	573,302	802,623	1,031,944	1,261,265	1,261,265	1,261,265	1,261,265	1,261,265	1,261,265
Wilderness Trails	1	8	6710MTN/ p/ night	19,110,080	343,981	573,302	802,623	1,031,944	1,261,265	1,261,265	1,261,265	1,261,265	1,261,265	1,261,265
			Sub-total (MTN)	***50,618,560***	***4,086,363***	***4,545,005***	***14,003,647***	***14,462,289***	***14,920,931***	***14,920,931***	***14,920,931***	***14,920,931***	***14,920,931***	***14,920,931***
Reserve Developments														
Lago Nela Rest Camp	1	36	3000MTN/ p/ night	39,420,000	0	1,971,000	5,913,000	11,826,000	17,739,000	19,710,000	19,710,000	19,710,000	19,710,000	19,710,000
Campsite 1	1	12	760MTN/p / night	3,328,800	166,440	332,880	499,320	832,200	1,165,080	1,497,960	1,497,960	1,497,960	1,497,960	1,497,960
Campsite 2	1	12	760MTN/p / night	3,328,800	166,440	332,880	499,320	832,200	1,165,080	1,497,960	1,497,960	1,497,960	1,497,960	1,497,960
Campsite 3	1	12	760MTN/p / night	3,328,800	166,440	332,880	499,320	832,200	1,165,080	1,497,960	1,497,960	1,497,960	1,497,960	1,497,960
Campsite 4	1	12	760MTN/p / night	3,328,800	166,440	332,880	499,320	832,200	1,165,080	1,497,960	1,497,960	1,497,960	1,497,960	1,497,960
Campsite 5	1	12	760MTN/p / night	3,328,800	166,440	332,880	499,320	832,200	1,165,080	1,497,960	1,497,960	1,497,960	1,497,960	1,497,960
Campsite 6	1	12	760MTN/p / night	3,328,800	166,440	332,880	499,320	832,200	1,165,080	1,497,960	1,497,960	1,497,960	1,497,960	1,497,960
Campsite 7	1	12	760MTN/p / night	3,328,800	166,440	332,880	499,320	832,200	1,165,080	1,497,960	1,497,960	1,497,960	1,497,960	1,497,960
Campsite 8	1	12	760MTN/p / night	3,328,800	166,440	332,880	499,320	832,200	1,165,080	1,497,960	1,497,960	1,497,960	1,497,960	1,497,960
			Sub-total (MTN)	***66,050,400***	***1,331,520***	***906,182***	***1,301,943***	***1,864,144***	***2,426,345***	***2,759,225***	***2,759,225***	***2,759,225***	***2,759,225***	***2,759,225***
			Yearly Income (MTN)		**5,417,883**	**5,451,187**	**15,305,590**	**16,326,433**	**17,347,276**	**17,680,156**	**17,680,156**	**17,680,156**	**17,680,156**	**17,680,156**
			Rand Value		1,235,277	1,242,871	3,489,675	3,722,427	3,955,179	4,031,076	4,031,076	4,031,076	4,031,076	4,031,076
			USD Value		161,453	162,445	456,107	486,528	516,949	526,869	526,869	526,869	526,869	526,869

Table 23: Projected Occupancy Rates for Income from Concession Activities and Reserve Developments

Description	Units	Pax	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Concession Activities												
Horse Trails	1	8	15%	25%	35%	45%	55%	55%	55%	55%	55%	55%
Wilderness Trails	1	8	15%	25%	35%	45%	55%	55%	55%	55%	55%	55%
Reserve Developments												
Lago Nela Rest Camp	1	36	0%	5%	15%	30%	45%	50%	50%	50%	50%	50%
Campsite 1	1	12	5%	10%	15%	25%	35%	45%	45%	45%	45%	45%
Campsite 2	1	12	5%	10%	15%	25%	35%	45%	45%	45%	45%	45%
Campsite 3	1	12	5%	10%	15%	25%	35%	45%	45%	45%	45%	45%
Campsite 4	1	12	5%	10%	15%	25%	35%	45%	45%	45%	45%	45%
Campsite 5	1	12	5%	10%	15%	25%	35%	45%	45%	45%	45%	45%
Campsite 6	1	12	5%	10%	15%	25%	35%	45%	45%	45%	45%	45%
Campsite 7	1	12	5%	10%	15%	25%	35%	45%	45%	45%	45%	45%
Campsite 8	1	12	5%	10%	15%	25%	35%	45%	45%	45%	45%	45%