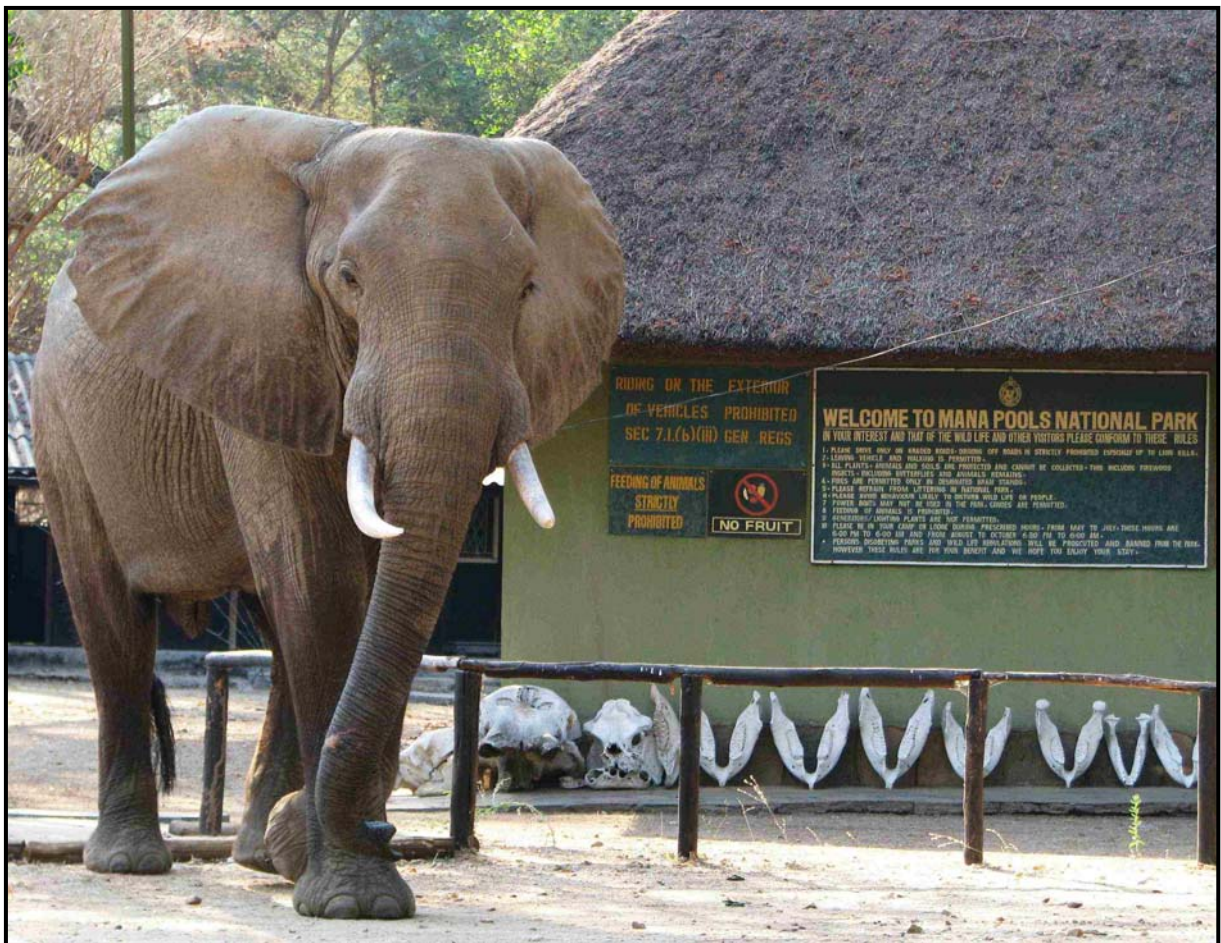




# MANA POOLS NATIONAL PARK GENERAL MANAGEMENT PLAN



## PART 1: THE MANAGEMENT PLAN

**This plan was produced using a participatory approach involving stakeholders. Where possible, ideas and suggestions put forward by stakeholders have been included in the document. It represents the way forward for the park that has agreement from stakeholders.**

**The document should be read in conjunction with Part 2 – Background – as this contain the information on which many of the decisions in the plan are based.**

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**Focussing the planning effort on Mana Pools rather than on the ZPWMA estate in lower Zambezi valley complicated the document. Some issues are obviously cross-cutting and are difficult to address in isolation. A valley-wide planning effort should be considered a priority.**

**Writing a management plan for a protected area in Zimbabwe presented special challenges owing to the economic situation that the country finds itself. On the one hand we are confident that recovery is imminent and that the park and its facilities and management will be restored. However, there is a danger that the document will become a wish list and that implementation will be difficult.**

**In addition, some of the issues facing Mana Pools need to be addressed at a countrywide level by the Authority. Important among these are standardisation of accommodation and leases.**

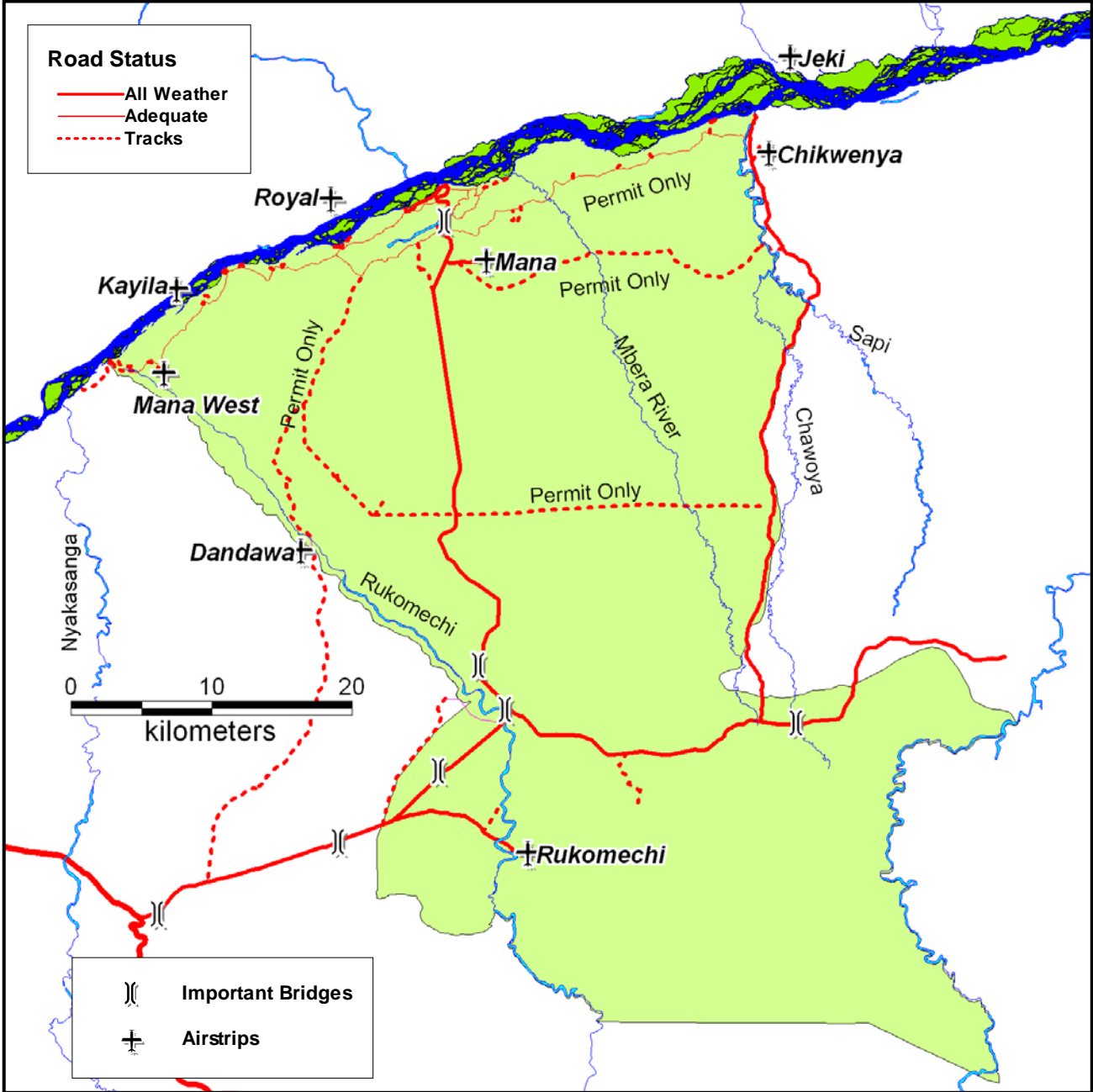
**For this plan to be successful, both the political and financial commitment must be forthcoming from the Government of National Unity and from the Zimbabwe Parks and Wildlife Management Authority. Without this prospects for implementation and efficient management of the park are dismal.**



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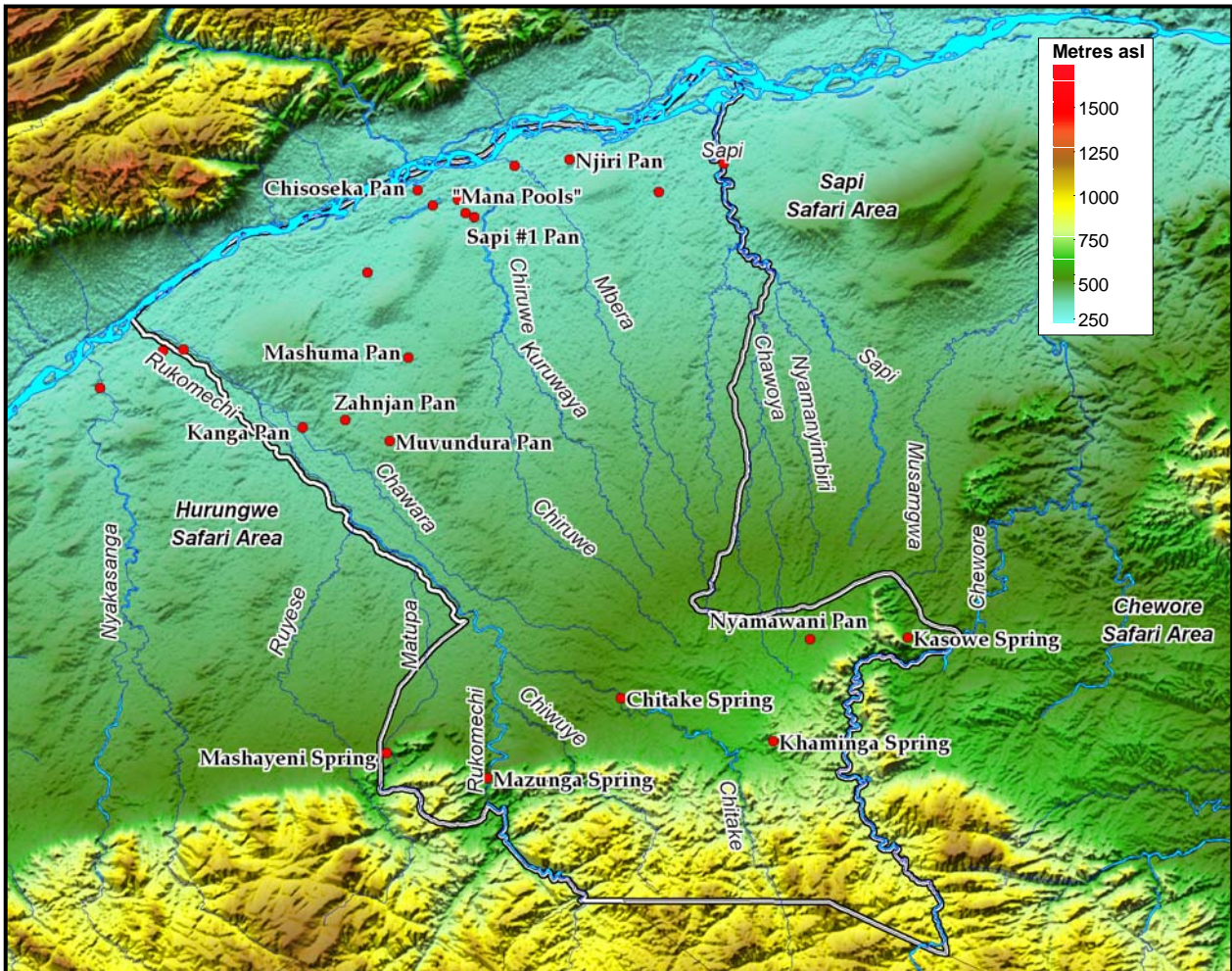
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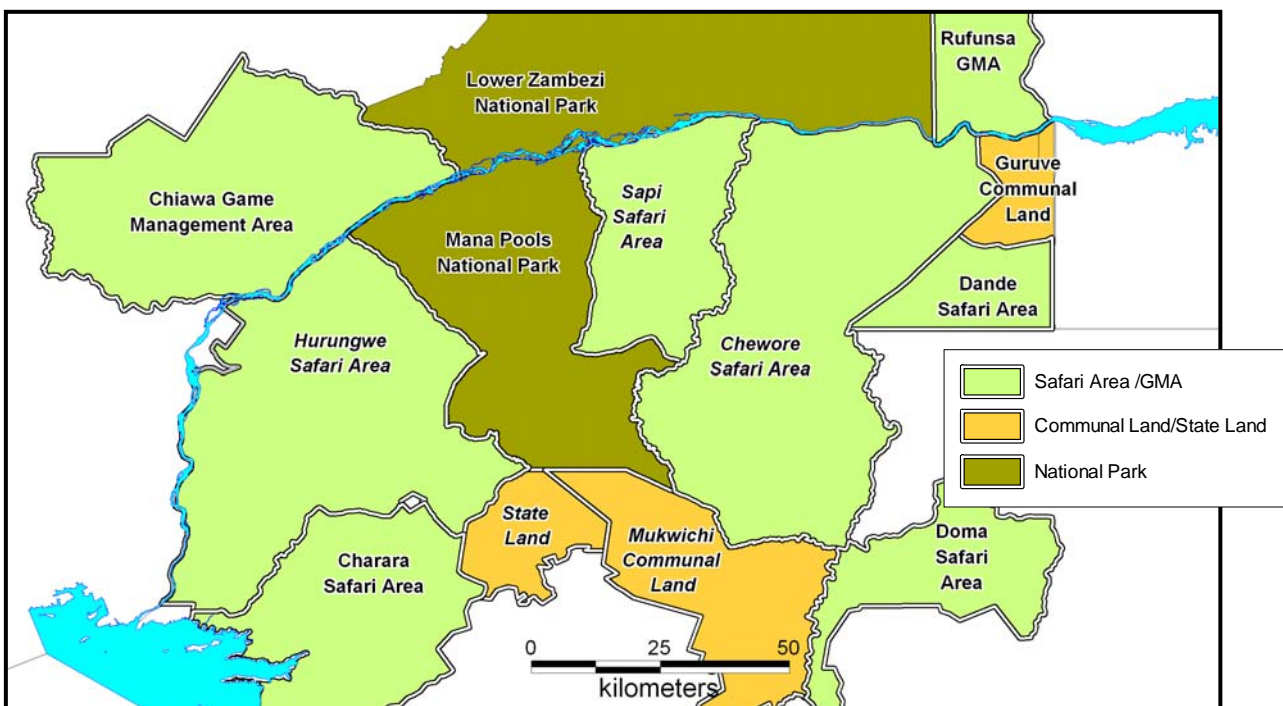




## Relief and Drainage



## Location and Neighbouring Areas



# **FOREWORD**

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## **APPROVAL PAGE**

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# EXECUTIVE SUMMARY

The next few pages provide a brief overview of the key elements of the management plan. It is not designed to be an exhaustive summary. The plan has also been summarised as an A0 sheet for display on station.

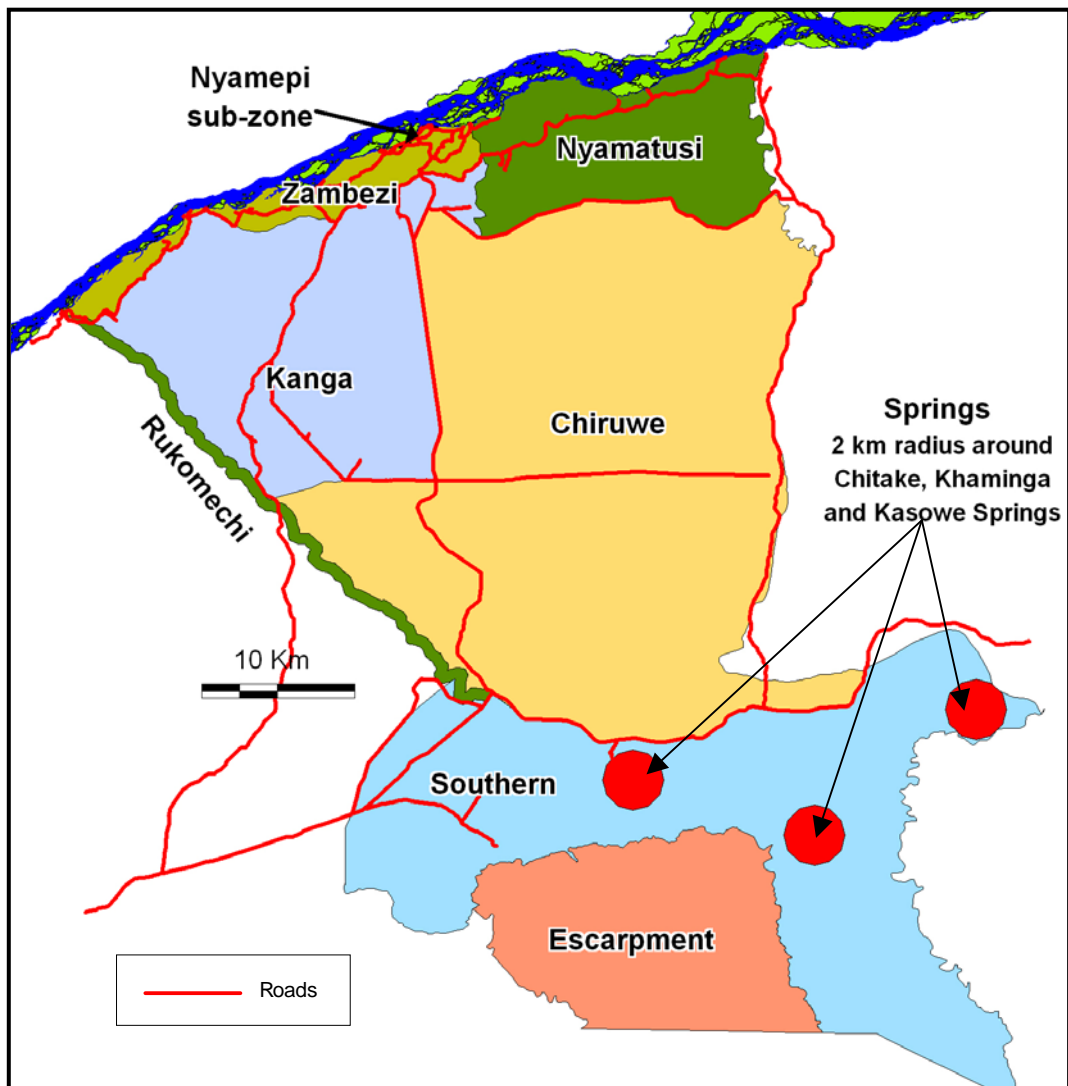
## PARK PURPOSE

*Mana Pools National Park as a World Heritage Site will maintain wilderness values and will protect and conserve the Biological diversity and Ecological processes in and around the park; and in particular the Zambezi River, the flood plain and the “Mana” pools. The park will also play its role in the Mana/Lower Zambezi Transfrontier Conservation Area and will contribute to the socio-economic development of the local communities and the region.*

## ZONES

Mana Pools National Park has been divided into eight zones and one sub zone (Figure 1), The Zambezi river frontage has been subdivided into two zones, one of which Nyamatusi) is designated as a wilderness zone while tourism development is confined to the Zambezi zone.

Figure 1: Zone plan for Mana Pools National Park



## **BIODIVERSITY PROGRAMME**

The Biodiversity Programme acknowledges that the information base for the park needs to be improved and details areas in which urgent management related research is needed. The programme also focuses on management of key habitats such as the Albida woodland and the jesse, mopane and miombo habitats. Supplemented water and fire are two management strategies that could be used to achieve this management but care needs to be taken with both. A strategy for improving anti-poaching efforts is outlined and the possibility for a rhino reintroduction programme initiated. The impact of roads and river crossings on the environment is also dealt with under this programme.

A monitoring programme is outlined based on the selection of a suite of conservation targets.

## **TOURISM PROGRAMME**

The Tourism Programme strives to maintain the wilderness character of the park by advocating low impact camping and semi-permanent camps as the main form of accommodation. It will preserve a stretch of the Zambezi river as wilderness in which no developments will be permitted. Provision has been made to open up new, low impact accommodation facilities away from the river. An inland site will be allocated for a joint-venture community development tourism project. Activities on offer will be diversified and walking will be encouraged. Use of the park for educational trips will be promoted. Wet season motor-boating will be permitted on a trial basis. At least one site will be investigated for a community/public/private partnership but the details of how this type of operation will work still need further investigation.

## **PARK OPERATIONS PROGRAMME**

The main thrust of the Park Operations Programme is to improve infrastructure, access and communications on the one hand, and to increase staff numbers and their morale and efficiency on the other. Significant investment will need to be made into buildings and roads so that the park can be managed effectively. It is vital that staff accommodation issues are resolved through this programme prior to additional staff being posted to Nyamepi. At least two more light trucks will need to be added to the station fleet. In addition, it is necessary for there to be sufficient fuels and other consumables on station.

## **NEIGHBOURS PROGRAMME**

The Neighbours Programme takes into account both immediate neighbours and those in the wider conservation area. The park is largely surrounded by other conservation areas and it is only in the south where communities are found. A key component of the Neighbours Programme will be to ensure that the buffer zone in the Mukwichi Communal Land is re-established and that members of the community can participate in tourism, both inside and outside Mana Pools. Cultural sites inside the park will be documented. Linkages with other stakeholders using the Parks and Wildlife Estate will be improved and Mana Pools management will participate fully in the formation of the proposed Lower Zambezi/Mana Pools Transfrontier Conservation Area.

# 1: PLAN FUNDAMENTALS







# 1: PLAN FUNDAMENTALS

## 1.1: INTRODUCTION

### 1.1.1 The Planning Area

This plan is for the Mana Pools National Park only. Time and funding constraints precluded a mid Zambezi Valley planning process which included the adjacent safari areas. However, where these areas and their use is discussed where they directly affect Mana Pools National Park.

### 1.1.2 Document Structure And Function

The document is split into three parts which are briefly described below. The set of documents is designed to be stored and accessed as a complete package.

Document	Brief Description
<b>The Management Plan</b>	<p>This document contains the management plan narrative and the initial three year action and activity plans for Mana Pools National Park. The plan consists of four programmes, each of which is designed to be “stand-alone”. However, it is recommended that the document is read as a cohesive work.</p> <p>In addition to this document the three year action/activity plan plus some essential other maps and text will be presented on a series of A0 sheets. These should be displayed in the relevant offices to ensure a wide circulation of the plan.</p> <p>The Management Plan document is designed to be as brief as possible to ensure that readers are not put off by the sheer size of the document. However, the supporting documents – the Resource Inventory and its Appendices provide the detail behind the direction and objectives outlined in the Management Plan.</p>
<b>Resource Inventory</b>	<p>The Resource Inventory provides a synthesis of the background information available for the Mana Pools National Park. It contains far more detail on a number of topics than the Management Plan document and is backed up with tables and maps.</p>
<b>Appendices</b>	<p>The Appendices provided detailed backup for the Resource Inventory document. Here one will find species and equipment lists plus other relevant information.</p>

### 1.1.3 Previous Planning Initiatives

A draft plan has been in existence for Mana Pools since the late 1980s. This document appears to have been drafted and then added to over time. The full text of this plan is included as Appendix x.

### 1.1.4 Current Planning Process

This current planning process was initiated in late 2008 as part of a response to the Lower Zambezi Trans Frontier Conservation Area. Prior to an MoU being signed by the Governments of Zambia and Zimbabwe, it was believed that a ratified plan for the Mana Pools would ensure commitment to the process. The management plan for the Lower Zambezi National Park is at an advanced stage and is expected to be ratified soon.

The process used to plan for the Mana Pools National Park is a modification of a consultative method developed in East Africa which is a modified version of the “logical framework approach”. The logical framework approach was initially developed by donor agencies to ensure that project goals, methods and outcomes were clearly defined and measurable. The method essentially defines a logical connection between identified issues and concerns and the activities, which are linked by objectives and targets.

The planning framework is also designed to allow stakeholders an opportunity to be involved in the design of a realistic and appropriate management plan. Stakeholders are encouraged to take ownership of the planning process, and contribute ideas and information to the plan.

Participation in the process is multi-layered, with the objective of providing an opportunity for as many stakeholders as possible to contribute to the planning. There are four principal mechanisms for this (Table 1)

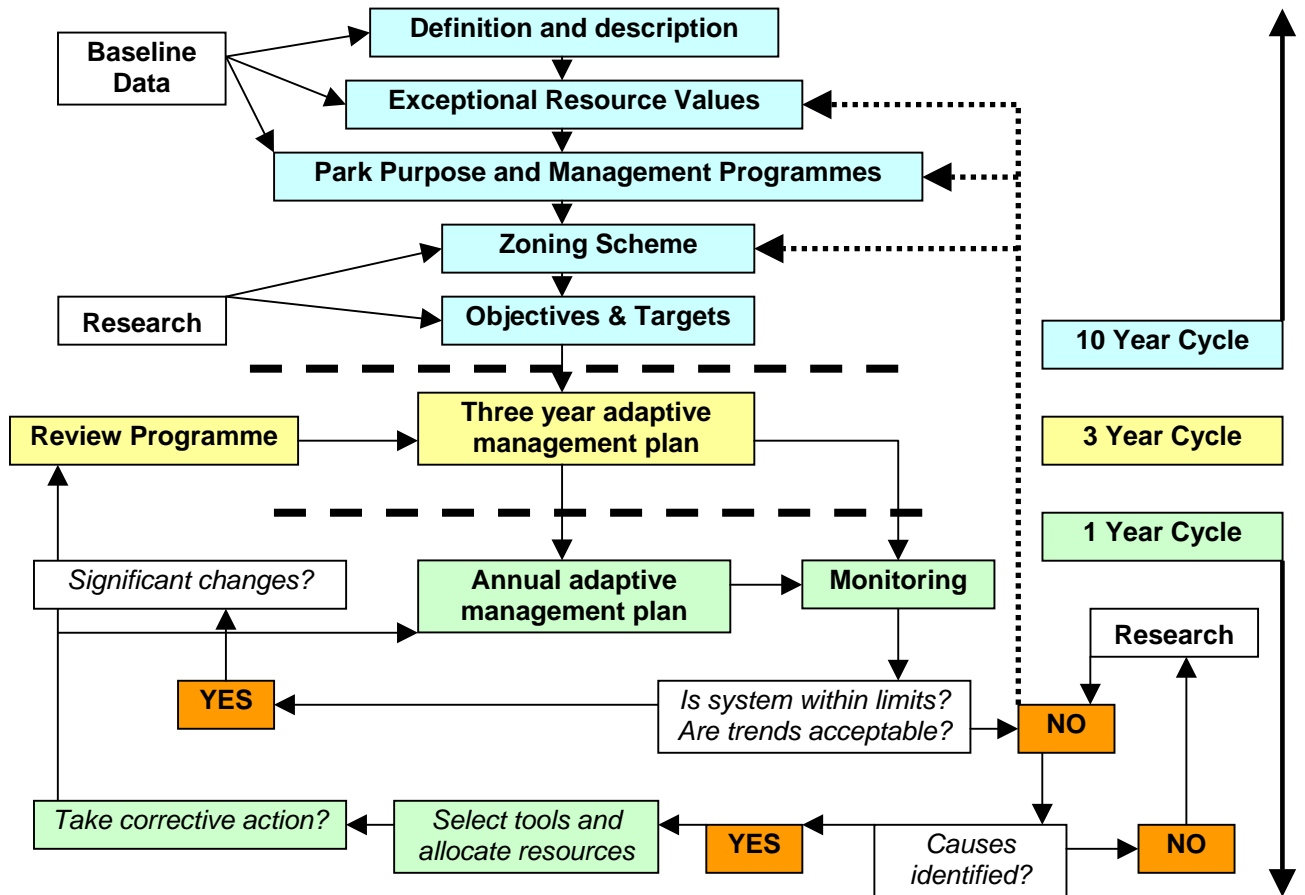
**Table 1: Mechanisms for stakeholder participation in the KWS planning process**

<b>Core Planning Team</b>	The core planning team was defined very early in the process and consisted of seven people, six from the Zimbabwe Parks and Wildlife Management Authority and a facilitator.
<b>Stakeholder Workshops</b>	Stakeholders, including representatives from researchers, conservationists, tourism industry, communities adjacent to the parks, senior ZPWMA staff/ managers, and members of the core planning team, were invited to these. The workshops provided the broad outlines needed for the planning process and allowed a public platform for stakeholders to have an input into the management plan.
<b>Working Groups</b>	Four programmes were identified for the planning process (Biodiversity, Tourism, Park Operations and Neighbours). Working groups provided the detail for the plan in each of the programmes. Input from working group members is also taken on individual or during smaller informal meetings.
<b>Individual Consultation</b>	Individual consultations are held with stakeholders throughout the process, as not all stakeholders can attend the meetings.

The ZPWMA has adopted a three-tiered management plan. At the highest level the plan has a life-span of 10 years. This level defines the exception resources, the management programmes and their purposes, the objectives and the targets for each of these objectives.

In the mid-term the plan adopts a three year cycle and defines an adaptive action and activity plan, usually written as a table which links to the targets and objectives. The management plan stops at this level. However, area managers will be compiling annual works plans and budgets which will be based on the three year planning cycle. Feedback mechanisms will allow changes to be monitored and adaptive changes to the plan made. The planning cycles have some leeway as the three year cycles add up to less than 10 years (Figure 2).

Figure 2: The planning cycle framework for the ZPWMA



## 1.2: BACKGROUND INFORMATION SUMMARY

This section is a summary of the material presented in Part 2 of the Management Plan. In addition supplementary materials will be found in the Appendices (Part 3). However, as much of the material in the background is summarised in each programme, this is more of an overview and contains more detail on those sections which are not specifically summarised in the programmes.

### 1.2.1 Legal And Administrative Framework

Administration and management of Mana Pools National Park is carried out by the Zimbabwe Parks and Wildlife Management Authority, which is a parastatal organisation. The Authority manages the Parks and Wildlife Estate in trust for the citizens of Zimbabwe and has two main divisions – the Conservation Division and the Corporate Division which are administered by a Corporate Centre located in Harare. The mission of the Authority is : *To conserve Zimbabwe's wildlife heritage through effective, efficient and sustainable protection and utilization of natural resources for the benefit of present and future generations and stakeholders.*

The day to day activities of the Authority are controlled and guided by the laws of Zimbabwe and the most important piece of legislation is the Parks and Wildlife Act (1974). This Act, consisting of in 17 sections and ten schedules, was revised and reprinted in 1996. Important subsidiary amendments are contained in Act 19 of 2001 and Act 22 of 2001. The Wildlife Policy of Zimbabwe (1991) also provides guidance for the management of the wildlife estate.

For the management of National Parks, Section 23 describes the powers of the Minister in relation to parks. These powers are quite considerable and management, tourism and other utilisation. The Parks and Wildlife (General) Regulations, 1990 and its amendments are vital pieces of legislation for the effective management of the estate.

Other important controlling Zimbabwean legislation includes the following:

- Wildlife Based Land Reform Policy
- Mines and Minerals Act
- National Museums and Monuments Act
- Environmental Management Act
- Communal Land Act
- Water Act
- Zambezi River Authority Act
- Inland Waters Shipping Act

Zimbabwe is also signatory to a number of international policies and agreements and the more important ones for the management of Mana Pools include:

- Convention on International Trade in Endangered Species of Wild Fauna and Flora
- Convention on Biological Diversity
- The treaty of the Southern African Development Community
- Sustainable Use of Biodiversity

### 1.2.2 Resource Inventory

#### Introduction

Mana Pools is located in Mashonaland West Province in the mid-Zambezi valley and has approximately 60 kilometres of Zambezi river frontage. The park is in the centre of a network of protected areas in Zimbabwe which stretch from Kariba to the Mozambique border. In addition, a significant portion of the Zambian bank has protected status.

The park is located in Mashonaland West Province and falls under the ambit of the Hurungwe Rural District Council for higher level administrative purposes.



Much of the boundary of the national park is marked by rivers or roads and the northern boundary is the international boundary between Zambia and Zimbabwe. However, there are some places where there is doubt about the exact alignment of the park boundary as it follows old road alignments or other unclear features.

### **History**

Prior to 1958, the area was occupied at low density by people living a subsistence lifestyle. In 1958 the area was proclaimed for wildlife and these people were relocated. In 1960 most of the valley floor section of the Park, to the East of the Rukomechi River, was included in the Urungwe Non-Hunting Reserve. In 1963 the Mana Pools Game Reserve was declared and this included the area between the Sapi and Rukomechi rivers stretching inland for approximately 25 kilometres. Several boundary changes were made in the late 1960s and early 1970s until the present day boundary was finalised in 1975. The park, along with the Sapi and Chewore Safari Areas was declared a World Heritage Site in 1983.

Control of the area below Kariba was split between three chiefs with Chief Dandawa and Chief Chundu's people actually living in what is now Mana Pools. Chief Dandawa's people were settled along the Rukomechi while Chief Chundu's people were more on the eastern side and into the Chewore area. There are records of a number of cultural sites in Mana Pools and indications that others have not yet been documented.

### **Physical Features and Drainage**

The Zambezi rift valley is approximately 55 km wide in the Mana Pools Area and most of Mana Pools National Park lies on the valley floor. The Zambezi river falls 12 meters over the 50 km of frontage along the park and there is a gentle rise of approximately 200 meters between the river and the Chitake springs area at the base of the escarpment. The escarpment then rises abruptly from the valley floor to nearly 1 000 m.asl, an increase in elevation of around 300 meters.

The Zambezi River is the major water source for the park and the flow of the river has been regulated since 1952. This has had important ramifications for the river and the alluvial terraces, but the extent of the change is still under debate. Two rivers in the park have their sources in the upland escarpment areas (Rukomechi and Chewore), but all others are seasonal streams starting from the base of the escarpment.

The alluvial floodplain contains the "Mana Pools" and these are likely remnants of former channels. The largest is "Long Pool" and the Chiruwe and Mbera rivers are important feeders for these pools as they only fill from the Zambezi at exceptionally high water. Several of the pools will hold water throughout the year. In addition to the pools, numerous pans are found throughout the park, both in the Mopane and Jesse bush areas. All of these will dry up but are important for wildlife in the early part of the dry season. Several springs are found near the escarpment and these include Chitake, which is a well known tourist area. These springs are perennial water sources and are vital for the ecology of the park.

### **Geology, Soils and Fossil Occurrences**

The oldest rocks in the area are those of the Proterozoic Zambezi Metamorphic Belt forming the Zambezi Escarpment. These rocks are mainly highly metamorphosed and deformed gneisses. The Zambezi Valley is part of the early African Rift Valley system of fault-bounded, sediment-filled grabens of Karoo age. Sediment depth may reach 4000m in the Mana Pools Basin and folding, tilting and faulting may have continued into post-Cretaceous times.

The Zambezi alluvium is locally very variable, consisting of deep, poorly consolidated, stratified deposits. One widely occurring feature is a poorly structured and relatively heavy textured surface which reduces rainfall infiltration causing surface wetness. Away from the Zambezi, the Kalahari-type Jesse Sands exhibit deep, well-drained, poorly consolidated red sandy loams. The most sodic soils, which are also highly saline, occur above the southern edge of the floodplain.

Although the more famous sites for dinosaur remains and footprints are known from the Chewore Safari Area, a significant site was discovered in 1972 in Mana Pools National Park. Remains of two dinosaurs are found there. A small scavenging dinosaur (*Coelophysis/Syntarsus*) from the Triassic/Jurassic boundary and a larger (4m approx) omnivorous (prosauropod) dinosaur (*Massospondylus*) from the Triassic age.

## Climate

Rainfall in the mid-Zambezi valley follows the regional mono-modal pattern with the bulk of the annual average of 706 mm falling between November and March. December and January have an average of 180 mm each and these two months account for almost half of the annual average in a normal year.

However, rainfall between years and between months is highly variable. An analysis of the annual rainfall data for Nyamepi shows a high of over 1 500 mm in 1978 and a low of 200 mm in 1967 (and a little more than 200 mm in 1987). This rainfall variability has a marked effect on the primary productivity of the area and hence the wildlife that it can support. Long-term rainfall data for Kariba indicates a general decrease in rainfall and this will affect the ecology of Mana Pools.

Temperature in the area are high with monthly means approaching 40<sup>0</sup>C prior to the rains. Mean minimum temperatures remain above 10<sup>0</sup>C.

## Vegetation

Four main vegetation units are found in Mana Pools:

1. *Colophospermum mopane* woodland
2. *Faidherbia albida* woodland
3. *Brachystegia - Julbernardia* woodland
4. *Commiphora - Combretum* thicket

The albida woodlands cover about 5% of the park but are very important for wildlife and hence tourism. Concern has been expressed about the regeneration capabilities of this vegetation type and, in the past, significant numbers of browsers were removed in an attempt to address this problem.

Exotic plants are found in the park and the most serious threats come from the aquatic exotics, notably *Eichornia crassipes*.

Mana Pools NP is unusual in that fire has been a rare occurrence on the valley floor since the 1960s. Although records of fires prior to this date do not exist there is some anecdotal evidence that they were more frequent than they are now.

## Wildlife

Obviously the most important invertebrates in the area are the mosquito and the tsetse fly. Both of these insects have played their part in ensuring that the mid-Zambezi valley was lightly settled. Another important, but unquantified, group of invertebrates are the termites (mostly *Macrotermes* sp).

The Zambezi river and its tributaries are host to over 30 species of fish. The most important of these for the sport fishing industry include the Tiger Fish (*Hydrocynus vittatus*) and the breams belonging to the family Cichlidae.

The Nile crocodile is a commercially important species and eggs and adults have been removed from the area since the 1960s. As the Zambezi river is a shared resource exploitation levels differ in Zimbabwe and Zambia, as does the dataset accompanying this exploitation.

Relatively little work has been done on the birds of Mana Pools but more than 400 species of birds have been recorded from the area. It is an important staging post for migratory birds and the mid Zambezi Valley (including Mana Pools) has been listed as an Important Bird Area (IBA). The IBAs are recognised key sites for bird conservation.

A major factor in the ecology of the large mammals of the Mana Pools National Park is the seasonal dry-season concentration of wildlife on the valley floor. This is largely due to water availability but also to the presence of *Faidherbia albida* on the alluvial floodplains which is a major food source for many animals during the dry season. In addition, plant productivity is prolonged on the floodplain and shade is more plentiful. However, as soon as the rains start, most animals move out into the mopane and jesse woodlands. Primary productivity of these woodlands fluctuates with the rainfall and water can remain well into the dry season, especially in the mopane.

In recent years several aerial surveys for large mammals have been carried out in the Mana Pools area. These surveys usually cover the entire valley floor between the Kariba Gorge and Kanyemba and, significantly, some have included wildlife estimates for the escarpment areas as well. Numerically, elephant, buffalo, hippo and impala make up the bulk of the larger herbivores in Mana Pools with the following estimates (from the 2003 aerial survey)

Elephant	Buffalo	Hippo	Impala	Sable	Waterbuck	Kudu	Eland	Zebra
4 285	4 971	2 500	2 492	23	463	168	38	544

Notably absent below the Zambezi escarpment are wildebeest and giraffe. Mana Pools is home to an outlying population of nyala, although these are infrequently seen.

### Adjacent Areas

Mana Pools is the core of an extensive network of protected areas along the floor of the Zambezi Valley, both in Zimbabwe and Zambia. Safari hunting is permitted in the adjacent Zimbabwean protected areas.

The Mukwichi Communal Land is located to the south of the park and is home to Chief Chundu's people who were resettled there in the 1960s. A buffer zone for wildlife was created here but enforcement and protection of this area has been poor in recent years. Poaching and gold panning are threats emanating from the communal land which are impacting on the national park

## 1.2.3 Management And Use

### Access and Communications

Access to Mana Pools is via a national road after which the Authority maintains a feeder link down to the Zambezi river. Internally there are approximately 250 kilometres of road in the park (excluding the main access road) and most of these become impassable during the rains. Many of the roads in the park require permission from Nyamepi before being used by tourists. There are a number of important bridges which, if washed away could cause access problems. These include the Rukomechi, Chavava and Chawoya crossings.

There are three airstrips in the park (Mana, Mana West and Rukomechi) and two on the boundaries (Chikwenya and Dandawa (currently not operational)).

Communications for the park are abysmal at present. The land line ceased to function in 2007. There is limited cell phone contact which is largely dependant on there being electricity at Makuti. Radio communications between Nyamepi and Harare/Chinhoyi are poor and irregular. In addition, the repeater link for hand-held radios which enables patrol staff to communicate with Nyamepi is often out of service.

### Infrastructure and Facilities

Unsatisfactory temporary officer and game scout housing exists at Nyamepi camp, where all past development has occurred without planning. The Nyamepi complex has a number of houses, accommodation blocks, ablutions and a workshop and an office block. Police and ZINWA are also accommodated in the complex.

A gate house and accommodation buildings are located at Nyakasikana gate

At present the Park has one working vehicle - a Land Cruiser pickup, and a serviceable boat with a new 60hp motor. Much of the other equipment is unserviceable and in need of repair and this includes a tipper truck, two land rovers, two tow graders, a water bowser, a tractor, a road rammer, a dam scoop, a grass cutter, two trailers, generators, banana boats and canoes

### **Staffing and Enforcement**

There are approximately 50 staff stationed at Nyamepi. In addition the gate staff at Nyakasikana fall under the Warden at Mana pools.

Enforcement activities consist of regular patrols along the shoreline and into the hinterland. In addition patrol staff respond to reported incidents where possible. Most poaching occurs in the escarpment areas and along the Rukomechi river, especially in the area around Kanga Pan and up to Nyakasikana Gate. Snaring is the main method used by poachers but there are reports of elephant poisoning. Netting for fish occurs in the Zambezi river and is closely linked to legally permitted fishing activities in the Chiawa GMA in Zambia.

Levels of poaching are relatively low at present and around 10 elephant are reported as having been poached annually. However, there are concerns that these low levels may be a result of the low manpower and resource levels and improved patrolling and monitoring may see an apparent increase in poaching levels.

### **Tourism**

This is a brief overview of tourism in Mana Pools. More details are found in the Tourism Programme.

Currently all income generating activities in Mana Pools National Park are based on non-consumptive tourism and accommodation centres around low-impact public and exclusive camping sites. The park famous for its canoeing and walking and it unique in that visitors are permitted to walk unescorted without reference to their "wilderness skills". Game drives are also a popular activity as is fishing. Notably power boats are not permitted and all fishing is done from the banks or from canoes.

Tourism in the Park was closed in the late 1970s because of the Zimbabwean liberation war and was only reopened in 1980 after the cessation of hostilities. No tourism data appears to have survived from before the war. Visitor numbers increased steadily through the 1980s and peaked in the early 1990s with around 12,000 people. It had declined to about half this number ten years later.

Canoeing has been a driving force in the development of tourism in Mana Pools and the demand for campsites and permits was high during the peak tourism experienced in the 1990s. At this time there were probably around 20 operators. Demand for camping sites along the river high and this led to the opening of the Chitake campsites in 1992. Since then there has been an increased demand for Chitake.

Three types of annual operator permits are issued – Canoeing, Game Drives and Walking. Renewal is automatic on payment of fees.

The PWMA sets three types of fee rates; international, regional and citizen/resident fees. These have recently been increased and this may have implications for the profitability of the lodges. Traditionally occupancy of the lodges has been high and they are able to remain open during the rains

### **Other Use**

The Rukomechi Research Station predates the park and is located at the base of the escarpment. The Zimbabwe Republic Police and ZIMWA maintain facilities at Nyamepi. In addition the Ministry of Transport has some facilities at Nyakasikana Gate.

## 1.3: EXCEPTIONAL RESOURCES AND PURPOSE

### 1.3.1 Exceptional Resources

Exceptional resources are the outstanding resource values capture the essence of why the area was created and why it should continue to exist as a protected area. These are the values that must be protected in order to ensure that the National Park fulfils its purpose. Their definition also focuses planners in the formulation of management objectives, resources use, zoning and activity plans.

The identified exceptional resources are listed in Table 2 and briefly described in Tables 3 to 5.

**Table 2: Summary of exceptional resources of the Mana Pools National Park**

Biodiversity	Scenic
<ul style="list-style-type: none"> <li>• Zambezi river</li> <li>• Vegetation Gradient</li> <li>• Riparian woodlands</li> <li>• Wildlife concentrations</li> <li>• Wild dog/cheetah</li> <li>• Pans and springs</li> <li>• Other predators (lion, leopard, hyena)</li> <li>• Dry forests (Jesse)</li> <li>• Extent and quality of mopane woodlands</li> <li>• Wilderness</li> <li>• Aquatic fauna</li> <li>• Core of protected area complex</li> <li>• Nyala</li> </ul>	<ul style="list-style-type: none"> <li>• Zambezi River</li> <li>• Escarpment/rift valley</li> <li>• Marongora escarpment</li> <li>• <i>Faidherbia</i>/alluvial floodplain</li> <li>• Mana pools</li> <li>• Pans/springs/escarpment drainage lines</li> </ul>
	<p><b>Social and Cultural</b></p>
	<ul style="list-style-type: none"> <li>• TFCA</li> <li>• World heritage</li> <li>• Tourism – walks canoeing</li> <li>• Education</li> <li>• Fish reservoir</li> <li>• Wildlife resources</li> <li>• Sacred Sites</li> <li>• Dinosaur remains</li> </ul>

**Table 3: BIODIVERSITY Exceptional Resources**

Exceptional Resource	Brief Description
Zambezi river	The Zambezi river is the 4 <sup>th</sup> longest river in Africa and is a key component of the Mana Pools NP.
Vegetation Gradient	The park exhibits a vegetation gradient from escarpment miombo through Mopane and Jesse to riverine alluvium and aquatic environments.
Riparian woodlands	The riparian woodlands along the Zambezi and its major tributaries are important habitats in the park.
Wildlife concentrations	Spectacular dry season concentrations of wildlife occur on the Zambezi alluvium and floodplains
Wild dog/cheetah	Mana Pools has a significant population of wild dog and also is home to several cheetah.
Other predators	Other larger predators are found in significant numbers in the park and these include lion, leopard and hyena.



**Table 3: BIODIVERSITY Exceptional Resources**

<b>Exceptional Resource</b>	<b>Brief Description</b>
Pans and springs	There are at least three permanent springs in the park, the most famous being Chitake. Numerous pans are found throughout the Mopane and jesse, some of which can hold water well into the dry season.
Dry forests (Jesse)	Jesse – a dry deciduous forest growing on deep unconsolidated stands – is an important habitat type in the park (10% of the park area). These forests are an important seasonal wildlife refuge but also home to a number of smaller species.
Extent and quality of mopane woodlands	Mopane woodlands cover much of the park. This is a common vegetation type in Zimbabwe but the Mana woodlands are notable for their “quality”, with many stands being well developed.
Wilderness	Wilderness is a difficult quality to define but there is no doubt that many parts of the park have it, especially the areas to the south. In addition approximately 50% of the riverine frontage along the Zambezi river is undeveloped.
Aquatic Fauna	The Zambezi river support a rich and diverse aquatic fauna which includes over 30 species of fish. In addition the river is home to a number of bird species, crocodiles and hippopotamus.
Core of protected area complex	Mana Pools is at the core of a protected area complex. Only its southern boundary abuts onto settled land.
Nyala	A sub-population of nyala is found in the Park, Mostly confined to the jesse their status is unknown.

**Table 4: SCENIC Exceptional Resources**

<b>Exceptional Resource</b>	<b>Brief Description</b>
Zambezi River	The Zambezi river is Africa’s 4 <sup>th</sup> longest river and in its middle reaches runs through some prime wildlife habitat, Mana Pools being a part of this.
Escarpment/rift valley	The Zambezi lies within a faulted trough with a marked escarpment at either side. Part of the southern escarpment is within the park while the Zambian escarpment forms a spectacular backdrop to the river.
Marongora escarpment	Part of the southern escarpment is protected within the national park and forms part of the unique vegetation gradient that runs through the park.
<i>Faidherbia</i> alluvial floodplain	The alluvial woodlands adjacent to the Zambezi river are the essence of Mana Pools and this is where most visitors will spend their time.
Mana Pools	The “Mana Pools” are a series of old channels and ox-bow lakes that are separated from the main river. Many of these retain water well into the dry season and some are permanent. They are an important focus for the wildlife in the area.
Pans/springs/escarpment drainage lines	There are a number of important springs in the area, some of which are perennial. In addition, much of the valley floor contains a significant number of pans which hold water into the dry season. Also important are the drainage lines of the tributaries to the Zambezi such as the Rukomechi, Sapi and Chiruwe.

**Table 5: SOCIAL and CULTURAL Exceptional Resources**

Exceptional Resource	Brief Description
TFCA	Mana Pools is effectively at the centre of a transfrontier conservation area which is currently under development. The area includes several national parks, safari and game management areas, as well as community areas with conservation potential.
World Heritage	Mana Pools, along with the Sapi and Chewore Safari Areas, was declared a World Heritage Site in 1983 in recognition of the unique scenic qualities of the area and the fact that it was home to a number of protected species.
Tourism – walks canoeing	Tourism in Mana Pools is focussed on walking and canoeing safaris, in addition to game drives. The Zambezi river offers one of the premier canoeing experiences in Africa while the alluvial woodlands and the Chitake springs area are well known for the quality of the wildlife walking experience. Mana Pools is one of the few parks where visitors are permitted to walk unescorted.
Education	The park holds significant educational possibilities.
Fish Reservoir	The Zambezi river flows through both the Mana Pools NP and the Lower Zambezi NP (Zambia) for approximately 30km. This completely protected section acts a fish breeding reservoir. In addition the rest of the park also provides protection for fish, albeit for only the Zimbabwean side of the river.
Wildlife Resources	The park has significant wildlife resources which include a number of rare and endangered species.
Sacred Sites	There are several sacred sites found within the park. Discussions with villagers indicate that there may be more.
Dinosaur Remains	Remains of two types of dinosaur – a small predator and a larger herbivore – have been found in Mana Pools. There may be other sites in similar geological formations.

### 1.3.2 Mana Pools Purpose

The purpose of a protected area is derived from its exceptional resources and is important because it establishes the framework on which the management plan will be based. It needs to be a short statement which encapsulates the future direction of the management of the park.

The purpose of Mana Pools National Park was defined as being:

#### **MANA POOLS NATIONAL PARK PURPOSE:**

***Mana Pools National Park as a World Heritage Site will maintain wilderness values and will protect and conserve the Biological diversity and Ecological processes in and around the park; and in particular the Zambezi River, the flood plain and the “Mana” pools. The park will also play its role in the Mana/Lower Zambezi Transfrontier Conservation Area and will contribute to the socio-economic development of the local communities and the region.***

In addition some key points from the Wildlife Policy of Zimbabwe are also relevant, specifically the objectives of the Parks and Wildlife Estate. These are reproduced below. More details are found in Part 2 and the Appendices.

- 2.1.1. *Preserve representative examples of Zimbabwe's aquatic terrestrial flora and fauna and their physical environments;*
- 2.1.2. *Protect areas of scenic beauty and special interest;*
- 2.1.3. *Preserve rare, endangered and endemic species;*
- 2.1.4. *Conserve water catchments;*
- 2.1.5. *Provide opportunities for public education and the advancement of scientific knowledge;*  
*and, without prejudice to any of the above*
- 2.1.6 *Encourage public use related to the enjoyment and appreciation of these areas; and*
- 2.1.7. *Generate economic activity within the Estate and surrounding areas to enhance rural development.*

## 1.4: MANAGEMENT ZONING

### 1.4.1 Introduction

A zone plan allows management to pursue its objectives more effectively. A protected area can be zoned for management and/or utilisation purposes and these zones need not be mutually exclusive. However, in the case of Mana Pools these zones are the same. In general zoning an area can help to:

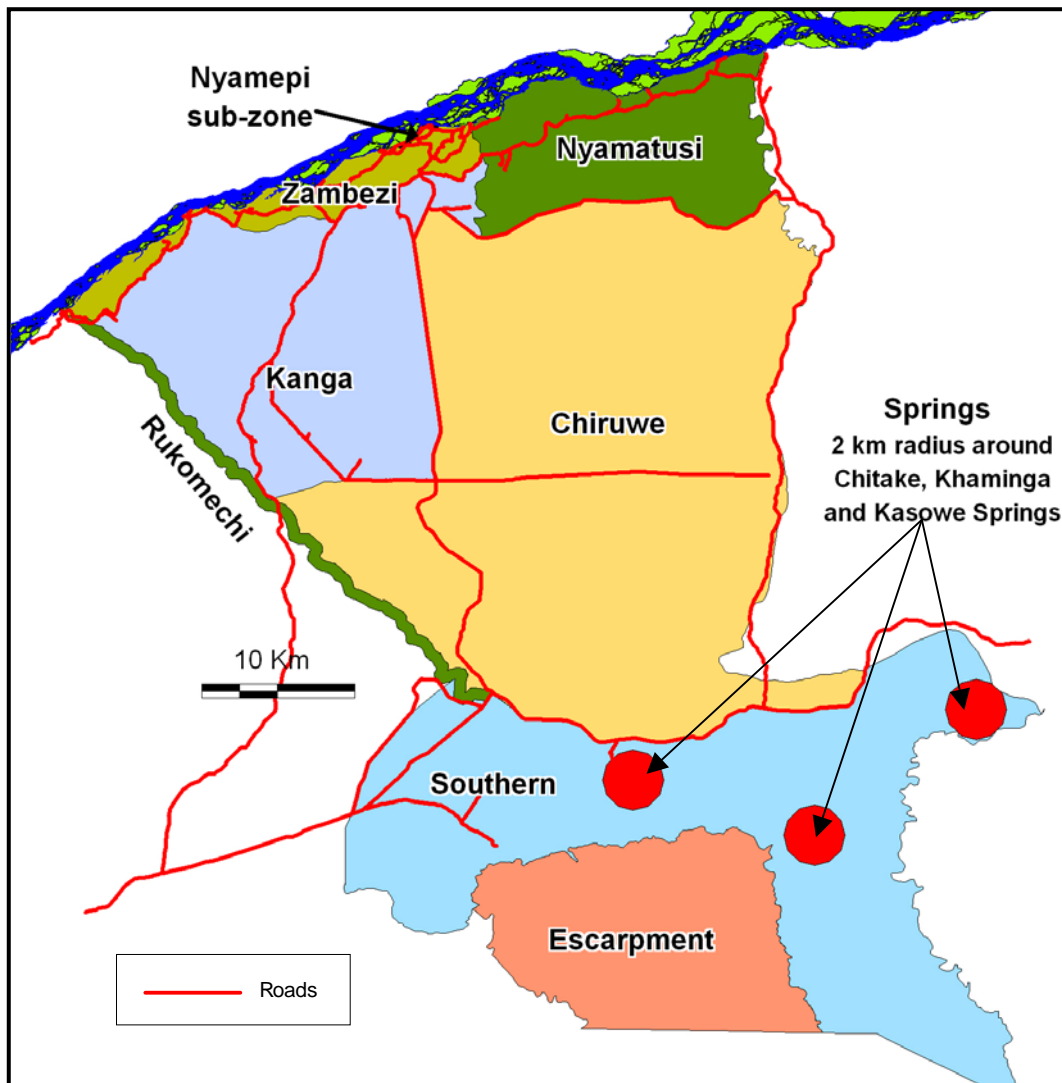
- provide specialised protection for critical or representative habitats, ecosystems and ecological processes,
- Separate conflicting human activities, including levels of tourism
- Protect the natural or cultural qualities
- Enable damaged areas to be set aside to recover or be restored.

In addition to the internal zonation of a park cognisance should be taken of the surrounding areas. Park management can attempt to influence land use practices and development within these zones so that the integrity of the park itself is maintained.

### 1.4.2 Mana Pools National Park Zones

Mana Pools National Park has been divided into eight zones and one sub zone (Figure 3). The zone plan is based on the pre-existing zone plan but has some modifications.

Figure 3: Zone plan for Mana Pools National Park



**Table 6: Zone summary for Mana Pools National Park**

<b>Zone</b>	<b>Main Reason for Establishment</b>	<b>Area km<sup>2</sup></b>
Zambezi	For protection and utilisation of the Alluvium. Contains the "development" sub-zone	82
Nyamatusi	To maintain wilderness values along the river front	189
Kanga	Protection and utilisation of Jesse, mopane and associated pans	310
Rukomechi	Protection of the riverine forest along the Rukomechi river	32
Chiruwe	Protection of jesse, mopane, wilderness	830
Southern	Protection and utilisation of southern park. Possibility of JV with community	500
Escarpment	Protection of the escarpment wilderness and gorges	225
Springs	2km radius around the permanent springs in the south of the park	36

Details pertaining to use and management of the zones is found in the relevant programmes, specifically Tourism.



## 1.5: MANAGEMENT PROGRAMMES

### 1.5.1 Background

Current planning procedure involves the use of a log-frame type of analysis which links problems, objectives, targets and activities more directly. This format ensures that all problems and issues are addressed by the GMP on the one side and that all activities can be costed on the other hand. The text of this section takes this planning procedure into account.

Objectives are a statement of desired future intent, and in this planning exercise, they are for a 10 year period. Targets are the linkage between the objectives and the actions and activities. They provide a more focussed goal for sub-components that when, taken together allow the objective and hence the purpose of the management programme to be achieved.

Using the log-frame approach for management planning the management activities are the final outcomes of the planning process. These are the actual tasks that will be carried out and they are the core focus for field management of the area.

Each of the programmes contains a summary table which shows the objectives, strategies, activities, results (and monitoring and evaluation parameters) and the responsibility for carrying out the activities.

### 1.5.2 Management Programme Definition And Objectives Summary

Four management programmes were defined for the Mana Pools National Park. These, and their key components are listed below (Table 7).

**Table 7: Summary of Management Programmes for Mana Pools National Park**

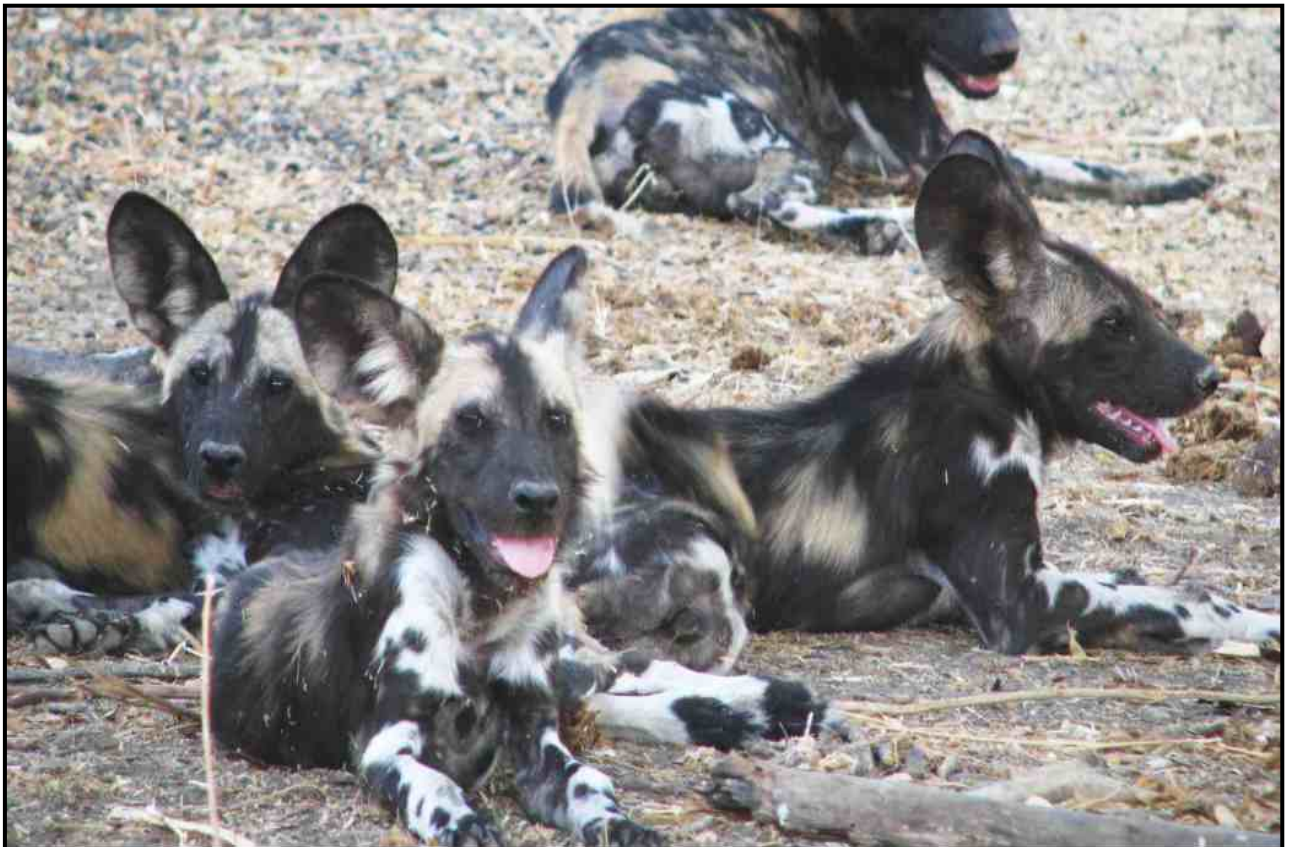
<b>Programme</b>	<b>Key Components</b>
<b>Biodiversity</b>	<ul style="list-style-type: none"> <li>• Monitoring</li> <li>• Research</li> <li>• Resource Management</li> <li>• Wildlife Management</li> <li>• Anti-poaching</li> </ul>
<b>Tourism</b>	<ul style="list-style-type: none"> <li>• Management of existing tourism</li> <li>• Development and diversification of tourism</li> <li>• Marketing</li> <li>• Trans- Frontier Aspects</li> <li>• Education/ Interpretation</li> <li>• ZPWMA Tourism facilities</li> </ul>
<b>Park Management</b>	<ul style="list-style-type: none"> <li>• Access</li> <li>• Buildings</li> <li>• Staffing</li> <li>• Morale</li> <li>• Communications</li> <li>• Finances</li> <li>• Transport</li> </ul>
<b>Neighbours</b>	<ul style="list-style-type: none"> <li>• Communities</li> <li>• Trans-Frontier Issues</li> <li>• External operators/Hunters</li> </ul>

The objectives for each of the management programmes are listed below (Table 8) to provide an overview of the structure and direction of the programmes. The following sections provide the detail for these programmes and are designed to be used as stand alone sections.

**Table 8: Objectives summary**

<b>PROGRAMME</b>	<b>OBJECTIVES</b>
<b>Biodiversity</b>	<ol style="list-style-type: none"> <li>1. Information base improved</li> <li>2. Management of key habitats improved</li> <li>3. Wildlife populations and diversity are maintained or enhanced</li> <li>4. Human impacts on the ecosystem are controlled</li> </ol>
<b>Tourism</b>	<ol style="list-style-type: none"> <li>1. Tourism product is improved, expanded and diversified without degrading the quality of the Mana experience</li> <li>2. Management and administration of tourism improved</li> <li>3. Educational and interpretive facilities, activities and materials developed</li> <li>4. Regional linkages initiated and enhanced</li> <li>5. Marketing of Mana and Lower Zambezi Improved</li> </ol>
<b>Park Management</b>	<ol style="list-style-type: none"> <li>1. Management infrastructure, access and communications improved</li> <li>2. Staff numbers, efficiency and morale optimised</li> <li>3. Equipment and consumables sufficient for park management</li> <li>4. Use of Mana Pools by other Government agencies is formalised</li> <li>5. Funding for Mana Pools improved</li> </ol>
<b>Neighbours</b>	<ol style="list-style-type: none"> <li>1. Mukwichi buffer zone secured and linked to Mana Pools</li> <li>2. Community receiving tangible benefits from Mana Pools NP</li> <li>3. Community awareness of natural resources in Mana Pools raised</li> <li>4. Linkages with external stakeholders improved</li> <li>5. TFCA Formalised and established</li> </ol>

# 2: BIODIVERSITY PROGRAMME





## 2 BIODIVERSITY PROGRAMME

### 2.1 INTRODUCTION, PURPOSE AND KEY COMPONENTS

Mana Pools National Park forms the centrepiece of a network of protected areas along the middle-Zambezi River. On the Zimbabwean side it is flanked by hunting areas which are devoid of settlement while on the Zambian side it abuts onto the Lower Zambezi National Park (LZNP) and the Chiawa Game Management Area, both of which still have significant wildlife populations and wilderness areas. On the Zimbabwean side the Mana Pools NP and the Chewore and Sapi Safari Areas have been accorded World Heritage status and moves are underway to register a similar status for the LZNP in Zambia.

The Zambezi River is a shared waterway and is the heart of the Mana Pools NP and the adjacent protected areas, on both sides of the river. Mana Pools NP is famous for the extent of its alluvial floodplain characterised by the *Faidherbia albida* trees. This floodplain supports a significant proportion of the Parks's wildlife during the dry season. In addition to the floodplains (representing about 10% of the park) there are extensive stands of mopane and jesse dry forests between the Zambezi and the southern wall of its rift valley. Miombo vegetation is found on the higher ground of the escarpment, while the Zambezi River has several aquatic habitats. This variety of habitats provides Mana Pools with a diverse range of flora and fauna.

In ecological and biodiversity terms Mana Pools National Park represents a significantly important part of the middle-Zambezi Valley and its conservation merits special attention.

The alluvial floodplains are characterised by extensive stands of *Faidherbia albida* which is significant in that its main pod production occurs during the dry season. These pods are an important food source for the seasonal concentrations of wildlife on the plains, which are driven here in search of water. There are concerns about the age of these *F. albida* stands and the apparent lack of regeneration.

The dry forest and thicket known locally as jesse bush are a relatively rare habitat type in the region. They are an important wet season refuge for wildlife, as well as harbouring some unusual and possibly endemic species.

Fires were recorded in the early years after the creation of the park but more recently fires are virtually unknown. Records indicate that the area was burnt while people were living here but their removal in the late 1950s and the non-burning policy promoted by the ZPWMA and its predecessors has effectively removed fire from the park. The implications of this are unknown.

Mana Pools NP is host to a wide variety of wildlife, both large and small. In addition, it is also home to a number of rare and endangered species (IUCN classification) and these include the elephant, crocodile, wild dog, lion, cheetah and (until recently) the black rhino. Unfortunately the black rhino became locally extinct in 1992 following a wave of poaching activity in the area.

Most of the park lies on the floor of the Zambezi rift through which the river meanders. The Zambezi River is fed by a number of seasonal rivers that bisect the park and provide important habitats for wildlife. Water away from the river during the dry season is very limited and this causes the spectacular concentrations of wildlife on the alluvial floodplains for three of four months of the year. Three permanent springs are found near the base of the escarpment, the most famous of which is Chitake (which has a ribbon of water associated with it).

Based on data from aerial surveys, there are probably over 4 000 elephant in Mana Pools. Other significant contributors to the biomass are buffalo (around 3 000), impala (2 to 5 000), hippo (2 600) and zebra (500). Other common species include eland, waterbuck, warthog and kudu but numbers of some of these species are notoriously difficult to estimate from aerial surveys.

Major predators in the park include lions, hyenas and leopards. Other important predators include cheetah and several smaller species. Following controversial views about the effect of hyenas on the lion population, a recent study concluded that lion numbers were not unduly low and that the

population compared favourably with those in other protected areas in Africa. The hyena population was found to be in the low to medium category when compared to other areas in Africa.

Although strictly speaking not part of Mana's biodiversity, mention must be made of the fossil site found in the park. Remains of two species of dinosaur have been found in a fossil bed exposed by a flooding river. In addition, there are several known cultural sites associated with Mana Pools. These include graves and legends (e.g. baobab on Chivava river, moving stone at Rukomechi, grave site at Long Pool and Chitake).

Culling and cropping of animals has been taking place in Mana since the late 1960s. To date close to 3 000 elephants, over 1 100 buffalo and nearly 18 000 impala have been removed from the park. The explicit reasons for this were not located during the resource inventory but it is believed that protection of habitat, and especially the alluvial floodplains, would have been the primary reason. A low level offtake continues for training and ration hunting and this is mainly confined to buffalo. Numbers are unknown at this stage.

Mana Pools is surrounded by hunting areas on the Zimbabwean side of the river. The areas adjacent to the Zambezi River on the valley floor are sold as time based bag hunts, usually in 10 or 14 day blocks. The prime species are buffalo, elephant, lion and leopard and the western area (Nyakasanga) has higher quotas than the eastern area (Sapi). Between the two areas there are nearly 100 buffalo, 20 elephant (12 bulls), two lions, 4 leopards and 12 crocodiles. The hunting areas on the escarpment are sold as concessions to a single bidder, usually for a five year period. Chewore South and Makuti directly abut onto Mana Pools and the extent which the Mana populations feed the hunting concessions is unknown. However, a recent research project has shown that male lions frequently move out of the park and into the hunting areas.

Poaching is a perennial threat for protected areas and Mana Pools is no exception. Poaching for trophies is not as common as meat poaching as it once was and the rhinoceros became locally extinct through illegal offtake in the 1980s. Levels of poaching are thought to be relatively low on the valley floor as the park has the advantage of being surrounded by other protected areas. However, the escarpment areas are a cause for concern, especially during the rains when accessibility is difficult. There are recent reports of illegal panning for gold in the Mukwichi Communal Land and concerns that this has already spread into the southern parts of the park. Fishing, which is permitted on the Zambian side of the river in the Game Management Areas, is also a cause for concern as the international boundary is not always respected. In addition, offtakes can be significant and this will impact on the entire river, and not be confined to the Zambian side.

Mana Pools is well known in the tourist industry as being a wilderness area, especially away from the Zambezi River. However, the quality of the wilderness experience has already been significantly eroded along the river by the proliferation of camps and houses along the shoreline of the Chiawa GMA. In addition, the biodiversity linkages between the Zimbabwean and Zambian protected areas need investigation.

The Rukomechi Research Station, once a centre of excellence and the origin of some ground breaking work in tsetse and trypanosomiasis control, has largely become derelict. The Station is a sizeable facility located near the escarpment and has the potential to be resuscitated as a Zambezi Valley Research Station, perhaps by a joint initiative between the ZPWMA and the Ministry of Lands

Tourism activities are concentrated along the Zambezi river, the alluvial floodplains and the Chitake Spring near the escarpment. There is very little use of the rest of the park. High numbers of tourists crowded into small areas can impact negatively on the environment and this needs to be carefully monitored and controlled.

Given the above, and taking into account the exceptional resources and the threats issues and concerns the purpose of the Biodiversity Programme is defined as:

**BIODIVERSITY PROGRAMME PURPOSE:**  
***Enhanced conservation of the natural environment of  
Mana Pools National Park***

The Biodiversity programme is responsible for the following key components in Mana Pools National Park (Table 9).

**Table 9: Key components of the Biodiversity Programme**

Aspect	Brief Description
Monitoring	Monitoring refers to activities designed to give management a long-term insight into parameters that affect the park. This includes climatic data, wildlife estimates, tourism information and other basic information.
Research	There is a fine line between research and monitoring but in this context means a project specifically initiated to answer a management question. Many research projects leave behind a monitoring component.
Resource Management	Resource management refers to water, fire and vegetation management (including exotics)
Wildlife Management	Wildlife management is concerned with problem animals, cropping, culling, removals, introductions and veterinary issues.
Anti-poaching	Policing and anti-poaching is a big part of the management of a protected area. Much of it is the routine patrolling but staff also need to be able to respond to specific incidents.

## 2.2 THREATS, ISSUES AND CONCERNS

Planning is largely about finding solutions to threats and concerns and their identification is an important step in the process. The threats, issues and concerns identified for the Biodiversity Programme were used to help develop the objectives and research and monitoring framework which are detailed later in this chapter. They are summarised in Table 10 and more fully described in Table 11.

**Table 10: Summary of threats issues and concerns**

<ul style="list-style-type: none"> <li>• Changing ecology esp. floodplain, including river flows, floods, <i>albida</i></li> <li>• Insufficient Resource Information</li> <li>• Exotics</li> <li>• Overstocking carrying capacity/uneven wildlife distribution</li> <li>• Poaching</li> <li>• Overuse of biological resources</li> <li>• Dam development threats</li> <li>• Mines (Zambia)</li> <li>• Possible tourist hunting threat</li> <li>• Pollution</li> <li>• Climate variability</li> </ul>	<ul style="list-style-type: none"> <li>• Erosion (river, inland)</li> <li>• Use of croc resource</li> <li>• No rhino</li> <li>• Uneven water distribution</li> <li>• Planning needs to be for entire valley</li> <li>• Elephants and woodlands</li> <li>• Fire</li> <li>• Degraded Mopane woodland</li> <li>• Undue pressure regarding resource management from outside</li> <li>• Siltation of pools</li> <li>• Tourism over development</li> </ul>
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**Table 11 : Biodiversity threats, issues and concerns**  
 (Stars indicate a measure of importance)

Threat Issue/Concern	Description
Changing ecology esp. floodplain, including river flows, floods, <i>albida</i> *****	<p>The middle Zambezi is a dynamic system and change can be expected. Wildlife numbers in the park have increased since the area was proclaimed a national park and this build up has had a detrimental effect on the vegetation in certain areas. In addition, it is likely that fires have decreased partially due to active discouragement by the ZPWMA and partially because the fire load has been removed by the increased numbers of large herbivores.</p> <p>The alluvial floodplain, with its charismatic <i>F. albida</i> trees, has been affected by these changes. Increased herbivory results in suppressed regeneration of the <i>albida</i> trees. In addition, the existing trees come under pressure from elephants and other animals (although there are theories that elephant are the only animals which affect <i>F. albida</i>). It is likely that many trees found in this area are of a similar age and some may be approaching the end of their "life span". The continued existence of the floodplain in its current state is a cause for concern. Encroachment by <i>Croton megalobotys</i> has also been mentioned as a cause for concern in some areas, but this is usually limited to alluvial areas related to tributaries of the Zambezi . In addition, elephants have little impact on <i>Trichelia emetica</i> and this could mean a gradual change in the alluvial woodland from <i>F albida</i> to <i>T. emetica</i> and other unpalatable woody plant dominance.</p> <p>The altered flow patterns of the Zambezi river because of the upstream dams and water management systems is also a cause for concern. There is some disagreement on the regularity of flooding of the alluvial area away from the river at Mana prior to construction of Kariba Dam, but it certainly happened more frequently than it does now. This will have had a marked effect on the ecology of the area.</p>
Insufficient Resource Information ****	<p>Much of the available information for the area is based on research carried out in the 1979s and 1980s. Since that time research has been limited to surveys for large mammals (as part of a wider aerial survey) and hippo and crocodile counts of the Zambezi river. However, a long-term study on lions was initiated in 1996 and has recently been completed. Many major questions regarding the behaviour, numbers and dynamics of important species remain unanswered. There is a body of "grey" literature at Mana Pools but this needs to be analysed.</p> <p>Very little information exists for rare and endangered species found in the valley. This includes wild dog, nyala, crocodile. etc. A leopard survey is expected to be carried out by Zambezi Society in 2009</p>
Exotics ***	<p>A number of exotic species are found in the park. The most visible of these is the water hyacinth. A number of exotic terrestrial weeds are found but exotic trees have nor been recorded. On the aquatic front <i>Tilapia niloticus</i> has found its way into the river and has been quite successful.</p>
Overstocking carrying capacity/uneven wildlife distribution**	<p>A significant percentage of Mana's wildlife ends up on the floodplain and close to the river during the dry season. This concentration of wildlife has a huge effect on the area and represents an overstocking problem for a few months of the year. Mention must also be made of the hippo who also rely on the grazing available on the floodplain throughout the year.</p>



<b>Table 11 : Biodiversity threats, issues and concerns</b> (Stars indicate a measure of importance)	
<b>Threat Issue/Concern</b>	<b>Description</b>
Poaching**	<p>Poaching is a perennial problem in protected areas in Africa. It usually takes two main forms – meat and trophy poaching. The Zambezi Valley suffered heavily from trophy poaching in the 1980s and all rhino were either poached or translocated. The park is fortunate in that it is at the centre of a protected area complex and that poaching has not has a serious impact on the wildlife populations – the black rhino being a notable exception. Currently the only trophy poaching in Mana Pools is for elephant, with both from cross-border and local poachers being involved. Between 10 and 20 animals are killed annually.</p> <p>Meat poaching was formerly called “subsistence” poaching and is probably more of a threat in the long-term as it targets all types of animals. It also has a tendency to move from being carried out for subsistence reasons to a commercial level. The levels of meat poaching in the park are not high at present there is evidence that it increases during the rains when patrol effectiveness is less.</p> <p>Cross-border fish poaching is also a cause for concern. Netting is permitted in the waters adjacent to the Chiawa Game Management Area and fishermen have been known to cross into Zimbabwean waters. In addition, even if they remain on the Zambian side they are depleting a shared resource. As there is a fuel shortage and the boat has been without an engine for some time, therefore control of this form of poaching has not been adequate.</p> <p>In 2008, nine arrests for poaching were made, 10 camps were found and a further six fish poachers were arrested. These low numbers may be a reflection of anti-poaching effort.</p>
Mining and Panning	There are reports that prospecting and extraction permits are being issued for gold and gemstones in the Mukwichi Communal Land. Some of these people are already venturing into the southern part of the park and there are fears that once a “gold rush” starts it could have catastrophic consequences to this remote part of the park.
Mines (Zambia)	Prospecting (which may be followed by mining) is permitted in the Zambian protected areas. There is a strong possibility that an opencast copper mine will be developed in the Chiawa GMA and also gold and copper possibilities in the Lower Zambezi National Park.
Overuse of biological resources	The core area – the alluvial floodplains - of Mana Pools is less than 100km <sup>2</sup> and virtually all tourism activities take place here. The concentration of the activities in this small part of the park can result in the overuse of biological resources. This can be seen as overuse of firewood and degradation of the tourist sites.
Dam development threats	The Mupata Gorge dam has the potential to drown the alluvial floodplains for which the park is famous. Although the dam plans have been shelved for now, development pressures could see its resuscitation.
Possible tourist hunting threat	Zimbabwe legitimised trophy hunting for elephants in its national parks under the umbrella of elephant control. This created an international outcry and it has subsequently been stopped. Although it did not occur in Mana Pools there were indications that it was considered and more recent information suggests that the possibility is again being considered for 2009.
Ration and training hunting	Ration hunting to supplement staff food requirements has been carried out in Zimbabwean Parks for a number of years. In addition, some animals are shot to allow staff to gain experience in the hunting of dangerous game. There are opinions that hunting of any sort should not be permitted in National Parks.

**Table 11 : Biodiversity threats, issues and concerns**  
 (Stars indicate a measure of importance)

Threat Issue/Concern	Description
Pollution	Pollution of the river resulting from poor agricultural practices upstream is a threat. In addition, sewage runoff from towns such as Chirundu, Siavonga and Kariba must also be considered.
Climate variability	The rainfall in the mid Zambezi valley is very variable and this has a huge effect on the primary productivity of the area. Climate change (as opposed to seasonal variations) is also a threat to viability of the area.
Erosion (river, inland)	<p>Erosion is a very real threat to the park. The flow regime of the Zambezi has been changed by the Kariba Dam and by the regulation of the Kafue river. This may mean improved bank stability – until the Kariba floodgates are opened. Erosion of the banks is seen in many places and is currently threatening the old Rukomechi camp and the Nyamepi campsite. Liaison with river management authorities is expected to be a way of discussing possible mitigation of these effects.</p> <p>Erosion from boat wake is thought to be a threat on the Zambian side of the river but this has yet to be quantified</p> <p>Erosion on the inland rivers does occur but this is generally seen to be a natural process and part of a dynamic system. However, erosion resulting from human activities, and especially roads, is a cause for concern. This usually results from poor alignment of the road and inadequate maintenance. The bridge on the Rukomechi at Nyakasikana is a cause for concern as there is the possibility that it could be breached by erosion at its northern end.</p>
Use of croc resource	<p>Permission has recently been granted for collection of crocodile eggs and capture of breeding stock from Mana Pools. The egg collection permit is issued as “research permit” and the results of this collection need to be made available as soon as possible. There is concern as to how long this research will continue and to its actual purpose. However, it is noted that collection of eggs and live animals is permitted on the Zambian side of the river. The effect of this type of utilisation on population dynamics is unknown.</p> <p>In the case of breeding stock collection the ZPWMA authority is finding itself in a compromised position of being the both the regulator and user of the resource.</p>
No rhino	The rhino has been extirpated from the middle Zambezi valley. There are plans for a reintroduction in the Lower Zambezi National Park in Zambia but for this to be successful it needs to be accompanied by improved protection.
Uneven water distribution	In the dry season water is available at the Zambezi river/Mana Pools and at a few springs near the escarpment (Chitake, Kasowe and Khaminga). There is no water available anywhere else in the park. In good years some of the larger pans will hold water until the end of August.
Planning needs to be for entire valley	When dealing with mobile megaherbivores such as the elephant, management needs to take into account the wider area. Plans to manage elephant in only part of its range (e.g. Mana Pools) are a short-term view. The same principle will apply for all aspects of ecological management.

<b>Table 11 : Biodiversity threats, issues and concerns</b> (Stars indicate a measure of importance)	
<b>Threat Issue/Concern</b>	<b>Description</b>
Elephants and woodlands	Elephant numbers have probably increased since the beginning of the century and elephants have extensively modified some vegetation types. The <i>Brachystegia</i> woodlands on the escarpment hills have been most affected, with elephants having pushed over many of the canopy trees and annual hot fires preventing or greatly reducing the growth of small woody plants into the canopy layer. Elephants have also modified patches of <i>Colophospermum mopane</i> woodland on the valley floor, especially on sodic soils adjacent to the Zambezi alluvium. The jesse thickets have also been under heavy pressure from elephants as have the <i>Faidherbia albida</i> woodlands. Some areas of jesse have been severely modified through elephant pressure.
Fire	It is believed that fires were more extensive on the valley floor in the past than they are today. Analysis of satellite data for fires indicates that there are remarkably few fires on the valley floor. What are the implications of this?
Degraded Mopane woodland	In certain areas of the park, usually just off the alluvial areas there are badly degraded areas of mopane woodland. Usually found on sodic soils the causes of this are not fully understood but theories regarding the leaching of minerals to the surface associated with clay areas have been put forward.
Undue pressure regarding resource management from outside	There has been pressure from operators with regard to the active management of resources, especially fire and predators. This pressure led to the ZPWMA authority assigning an ecologist to research the lion population in the 1990s. This study has recently been completed and refutes the claims made by the operators but the pressure still continues.
Siltation of pools	The pools at Mana, including Long Pool are silting up. In addition a number of the larger pans are also silting up. This decreases their ability to hold water into the dry season.
Tourism over development	Excessive and inappropriate development of tourism facilities has the potential to impact on the environment and the wilderness quality of Mana Pools
Gold Panning	There are recent reports that gold panning is being encouraged in the Mukwichi Communal Land. This activity has already spilled over into the park along the Mvurameso River.
Fossil Sites	There is a single known fossil site in the Park. Currently under investigation by the National Museums, the ZPWMA management needs to have some policy or regulations regarding the site.

## 2.3 GUIDING PRINCIPLES

The following guiding principles were elaborated for the Biodiversity Programme. They are listed below before being described in more detail.

1. Information sufficient for management decisions
2. Water availability improved
3. Habitat connectivity will be maintained
4. Rare and endangered species will require special attention
5. Protection of habitats
6. Utilisation of the Park's resources will be non-consumptive

### 1 Information sufficient for management decisions

The information base for the Mana Pools National Park is relatively weak, given that it is one of Zimbabwe's most important national parks, and has been designated as a World Heritage site. Most of the research was carried out in the 1970s and 1980s and monitoring programmes initiated during this period have not been continued. A notable exception is the long-term lion study that has recently been completed. Management decisions need to be taken on adequate data and it is imperative that a meaningful research and monitoring programme be established for Mana Pools National Park and the surrounding area.

### 2 Water availability improved

The distribution of permanent water during the dry season is limited to the Zambezi river with its associated pools and several springs near the southern escarpment. The central park of the park has numerous pans but only a few hold water into the dry season, and all will dry up during the hottest months. This has a significant impact on the distribution of wildlife for three to four months of the year. It creates the high concentrations of wildlife near the Zambezi for which the park is famous. However, these wildlife concentrations are also responsible for the huge grazing and browsing pressure on the alluvial *Faidherbia albida* woodlands. The wildlife also draws the bulk of the tourism load and concentrates it into approximately 10% of the park. This has ramifications for the environment as well as the quality of the tourism experience.

If water was available in the interior for longer periods it could relieve pressure on the floodplains. In addition it could also broaden and diversify the tourist experience. However, manipulation of water supplies in a dry area is not without its problems, as other parks in Zimbabwe have learnt to their cost. Maintaining wildlife concentrations at pans can adversely affect the vegetation and the possible failure of these water supplies after wildlife has become reliant on it can have serious consequences.

It is imperative that any boreholes drilled in Mana become the property of the Authority so that they can legally manipulate the water supply should it be necessary.

### 3 Habitat connectivity to be maintained

Mana Pools National Park is at the centre of a network of protected areas and therefore is pivotal in maintaining connectivity between habitats and wildlife populations in the Zambezi Valley. On the Zimbabwean side the park is surrounded by safari hunting areas on the valley floor. It is a nucleus for important trophy species such as elephant and lion in the adjacent areas. Two of the safari areas (Chewore and Sapi) share the world heritage status with the national park. In Zambia the park abuts onto the Lower Zambezi National Park and the Chiawa Game Management Area. Although the GMA is settled it still contains significant wildlife populations and wilderness areas. Mana Pools, in conjunction with the adjacent protected areas, has the potential to be a significant trans-frontier protected area and it is important that habitat connectivity is maintained.

#### **4 Rare and endangered species require special attention**

The Park is home to a number of rare, endangered and vulnerable species which include the elephant, wild dog, crocodile, lion, cheetah and (until recently) the black rhinoceros. These species were part of the reason that the area was given World Heritage status in 1983. The park holds significant numbers of these species with the elephant population estimated at around 4 000 individuals. Lions and crocodiles are not considered to be endangered within the park and cheetah and wild dog are present, although numbers are not confirmed. However, the rhinoceros became locally extinct in 1992 when the last few remaining individuals were translocated to a safer area. Two of these species (the elephant and crocodile) are considered to be locally overabundant and elephant have been culled in the past to protect the vegetation. Crocodiles have caused the death of two tourists and some control measures have been undertaken, mainly of individual animals. As these are all recognised as globally endangered species their management will require special attention.

#### **5 Protection of habitats**

There are four major habitat types in the Park. These are the alluvial floodplains dominated by *Faidherbia albida*, mopane woodland, jesse bush and the escarpment vegetation. The alluvial woodlands represent the “iconic” vegetation of Mana Pools and there is serious concern about their long-term survival. Most of the trees appear to be of similar age and there is remarkably little regeneration, mainly due to grazing and browsing pressure. There are fears that the woodland may start to die off and will be replaced by grassland.

The jesse bush thickets (deciduous dry forests) represent an unusual habitat type in the region and the sites Mana Pools represent those with the highest level of protection in Zimbabwe. Elephants and fire are the major causes of change within this habitat type but it appears that elephant in Mana are mainly using the thickets with emergents rather than the true dry forest. In addition, there have been significantly few fires in the park since the 1960s and this may be reflected in the structure and composition of the jesse areas.

The mopane habitats in Mana Pools are remarkable as they have had few fires since the 1960s, a situation which is probably unique in areas of unsettled mopane. This has led to the development of large stands of mature trees.

The escarpment vegetation is miombo which exhibits signs of constant burning, partially from annual early burns designed to prevent late season hot fires. However, there are isolated patches of denser vegetation in the main river valleys.

#### **6 Utilisation of the Park’s resources will be non-consumptive**

Consumptive utilisation is generally not permitted in national parks and the removal of wildlife from Mana Pools has been limited to control programmes of large or numerous herbivores (elephant, buffalo and impala). In addition, an unspecified (but low) number of animals are shot for staff rations and training purposes. However, there have been some disturbing developments during the last decade. Collection of crocodile eggs – which was specifically avoided since crocodile farming operations started in the 1960s – was permitted for research purposes in 1990? and again in 2007 and 2008. In addition, hunting of elephants was permitted in some other national parks and it seemed likely that it was to be opened in Mana Pools in 2008. Fortunately, permission for this was not granted in 2008 and but it seems that it will be resuscitated in 2009. These developments represent an erosion of the spirit of national parks.

## **2.4 CONSERVATION TARGETS**

### **2.4.1 Methodology**

Conservation targets are becoming part of accepted planning methodology. They are defined as the ecological systems, communities and species that become the focus for conservation and, when taken together, they should represent the biodiversity found in Mana Pools. It is believed that, if they are representative, focusing efforts on their conservation will benefit all other parts of the ecosystem.

Usually up to eight conservation targets are selected at several scales – Ecosystems, Communities or Habitats and Species. In addition, important subsidiary conservation targets can be defined if they exist. Once the Conservation Targets have been identified then the key ecological attributes are defined, followed by a threat analysis. The conservation targets, their key ecological attributes and threats, issues and concerns form a very good basis to define a monitoring programme for the park.

### **2.4.2 Mana Pools Conservation Targets**

Conservation targets were identified at three levels – systems, communities/habitats and species. The identified exceptional resources were an important factor in determining the conservation targets. For each target the rationale for inclusion is summarised and the important subsidiary targets and their key ecological attributes are listed (Table 12).

Threats to the conservation targets were also identified (Table 13) and these aided the development of the monitoring and research framework.

**Table 12: Conservation Targets and Key Ecological Attributes for Mana Pools NP**

	<b>Cons. Target</b>	<b>Rationale</b>	<b>Important Subsidiary Target</b>	<b>Key Ecological Attributes</b>
<b>Systems</b>	Zambezi River	4 <sup>th</sup> largest river in Africa.	<ul style="list-style-type: none"> <li>• Water birds (Skimmers, Carmine bee-eaters, rock pratincoles)</li> <li>• Crocodiles</li> <li>• Fish (Tiger)</li> <li>• Hippo</li> </ul>	<ul style="list-style-type: none"> <li>• Water quality, turbidity</li> <li>• Islands and sandbanks</li> <li>• Crocodile numbers &amp; pop. struct.</li> <li>• Bird numbers &amp; nesting data</li> <li>• Tiger pop. struct.</li> </ul>
<b>Communities/ Habitats</b>	Alluvial Vegetation	“Iconic” Mana Pools with spectacular dry season wildlife concentrations. Regarded as threatened	<ul style="list-style-type: none"> <li>• <i>Faidherbia</i> woodlands</li> <li>• <i>Vetiveria</i> grasslands</li> <li>• Elephant</li> <li>• Other browsers/grazers</li> </ul>	<ul style="list-style-type: none"> <li>• <i>Faidherbia</i> numbers</li> <li>• <i>Faidherbia</i> age</li> <li>• <i>Faidherbia</i> regeneration</li> <li>• Wildlife numbers</li> <li>• ?</li> </ul>
	Jesse Bush	Unusual vegetation type	<ul style="list-style-type: none"> <li>• Nyala</li> <li>• Elephant</li> <li>• Other browsers</li> </ul>	<ul style="list-style-type: none"> <li>• Species composition</li> <li>• Extent of damage</li> <li>• Nyala population size</li> </ul>
	Mopane Woodland	Extensive mature stands without fire for many years	<ul style="list-style-type: none"> <li>• Elephants</li> <li>• Wet season wildlife</li> </ul>	<ul style="list-style-type: none"> <li>• Population size and structure</li> <li>• Movement patterns</li> <li>• Fires</li> </ul>
	Escarpment	Small part of park but with unusual species and habitats	<ul style="list-style-type: none"> <li>• Sable</li> <li>• Gorge vegetation</li> </ul>	<ul style="list-style-type: none"> <li>• Fires</li> <li>• Sable numbers</li> <li>• Quality of gorge vegetation</li> </ul>
	Pans/Springs	3 main springs near escarpment and numerous pans in mopane which are important determinants of wildlife distribution	<ul style="list-style-type: none"> <li>• Water birds</li> <li>• Wildlife</li> </ul>	<ul style="list-style-type: none"> <li>• Water persistence</li> <li>• Vegetation degradation</li> </ul>
	Predators	Several endangered species. Some are hunted in adjacent areas	<ul style="list-style-type: none"> <li>• Cheetah</li> <li>• Wild Dog</li> <li>• Leopard</li> <li>• Lion</li> <li>• Hyena</li> </ul>	<ul style="list-style-type: none"> <li>• Population size and distribution</li> <li>• Population structure</li> <li>• Population viability</li> </ul>
<b>Species</b>	Elephant	Classified as vulnerable (IUCN).	<ul style="list-style-type: none"> <li>• Vegetation communities</li> </ul>	<ul style="list-style-type: none"> <li>• Integrity of surrounding areas</li> <li>• Population size and structure</li> </ul>

**Table 13: Threat analysis for conservation targets**

	<b>Cons. Target</b>	<b>Threats</b>
<b>Systems</b>	Zambezi River	Altered river flows Exotic species Siltation Erosion Overfishing Erosion of wilderness Dam development Mining Pollution Croc egg collection Climate variability
<b>Communities/ Habitats</b>	Alluvial Vegetation	Over utilisation Over development (tourism) Exotics Poaching Altered flow regime Erosion Browsers and elephants
	Jesse Bush	Elephants Fire
	Mopane Woodland	Fire Elephants
	Escarpment	Fire Poaching Encroachment
	Pans/Springs	Changing water flows Uncontrolled utilisation by tourists Over utilisation by wildlife
	Predators	Hunting Poaching Altered population dynamics
<b>Species</b>	Elephant	Poaching Local overabundance



## 2.5 OBJECTIVES, TARGETS AND ACTIVITIES

Based on the threats, issues and concerns and the guiding principles outlined above the following objectives and targets were formulated for the Biodiversity Programme. They are summarised below before being described in detail. At the end of this section the three year activity plan based on the objectives and targets is presented.

### Objective 1: Information base improved

Targets
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- 1.1. Improved understanding of predator dynamics
- 1.2. Improved understanding of the role of fire
- 1.3. Implications of supplemented water understood
- 1.4. Bare sodic soils investigated
- 1.5. Mana library and laboratory improved
- 1.6. Improved understanding of rare species
- 1.7. Mammal surveys carried out at regular intervals
- 1.8. Understanding of vegetation changes improved

### Objective 2: Management of key habitats improved

Targets
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- 1.1 Dry season availability of water improved
- 1.2 *Albida* woodlands maintained or improved
- 1.3 Burning programme continued
- 1.4 River bank erosion controlled where required

### Objective 3: Wildlife populations and diversity are maintained or enhanced

Targets
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- 3.1 Anti-poaching operations enhanced
- 3.2 Rhino reintroduction investigated
- 3.3 Wildlife diseases monitored and managed

### Objective 4: Human impacts on the ecosystem are controlled

Targets
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- 4.1 Influence into flow control of Zambezi river
- 4.2 Impact of roads managed

## **Objective 1: Information base improved**

Given that Mana Pools is part of a World Heritage site the information base is relatively poor. Most research was carried out in the area in the 1970s and 1980s, a notable exception being the recently completed lion study. Whenever questions were asked during this planning initiative about what course of action should be followed, the answer invariably led back to the fact that there was not enough information to satisfactorily address the question.

Although research and monitoring is not a priority in the current economic climate it is believed that it is important and this plan outlines a basic programme for which funding should be sought. In addition, even if the ZPWMA assigns staff and resources to Mana Pools National Park, it is unlikely that these will be sufficient to answer some of the concerns outlined in this section. It is likely that the Authority may need to find external research organisations to carry out some of the work.

### **Target 1.1: Improved understanding of predator dynamics**

- 1.1.1 A recent study of lion in Mana Pools has indicated that the population is not unusually low for the type of habitat. There has been considerable pressure on management to initiate a hyena reduction programme based on the belief that the ratio of hyenas to lions is unbalanced and the hyenas have increased to levels where they affect the survival of lion cubs. The hyena increase was suggested to have been as a result of increased food through culling (especially of impala) in the 1980s and early 1990s and theft of food from the campsites. This needs further investigation with scientifically based monitoring of the key species. Attention also needs to be paid to reducing the food source available from tourism (see Tourism Programme)
- 1.1.2 The Mana lions are thought to provide a seed population for the adjacent hunting areas but the extent of this is not well understood. The work started needs to be continued and expanded to include the adjacent hunting areas.
- 1.1.3 It is important that there is continued monitoring of the predator populations and their dynamics, and not only of lion and hyena. Leopard, cheetah and other smaller carnivores also need to be monitored. Specific studies into wild dog, leopard and cheetah need to be initiated
- 1.1.4

### **Target 1.2: Improved understanding of the role of fire**

- 1.2.1 There have been remarkably few fires in Mana Pools since the creation of the national park. This is largely as a result of the removal of the main cause of fires from the valley – humans. Satellite records of fires since 2004 show no fires in the valley floor habitats. The implications of this need to be understood. There are concerns that there has been bush encroachment into previously open grassland but there is no empirical evidence to support this. Aerial photographs and satellite imagery may provide part of the answer, if they are used to estimate woody vegetation. Differences in scale would need to be resolved to ensure that the results are valid.
- 1.2.2 The mopane and jesse areas have had few fires since the 1960s and research into the status of these woodlands and thickets needs to be undertaken. In addition, long-term trial burning plots should be established and monitored to allow a fire management strategy to be developed for the area. It is imperative that any burning should be part of a registered research programme with enough funding to continue over several years, rather than an ad hoc programme undertaken by a park manager with an interest.

- 1.2.3 A global programme which records fires from satellite has been established and records are taken twice daily (MODIS). It is relatively easy to access this data and it should be part of regular monitoring for fire in the park. Perhaps this type of data should be collected for the whole country at the Harare HQ and then distributed to the parks. If it is collected at station level then a reliable internet connection would be needed (see also the Park Operations programme about communications).
- 1.2.4 A significant body of work on fire exists and any proposals for a fire management in Mana Pools need to take this into account. A notable area from which information could be obtained is the Kruger National Park in South Africa.

**Target 1.3: Implications of supplemented water understood**

- 1.3.1 Supplemented water programmes are controversial. There is plenty of evidence to suggest that the local concentrations of large herbivores around the new water supply can result in significant vegetation degradation in the vicinity of the pan. Disruptions to movement/migration patterns are less well understood. In addition, the consequences of the failure of the water supply once animals have come to rely on it must also be considered. Also, local populations of wildlife (such as elephant) may respond to more water by increasing. It is imperative that the implications of supplemented water are understood as management actions may need to be undertaken to mitigate against adverse effects once water is put into these pans. Lessons should be learnt from the long-term supplemented water programmes in Hwange and Kruger National Parks. One possibility is the rotational pumping of low volumes of water to selected pans to simulate a spring.
- 1.3.2 As a first step a pan database should be established using geo-referenced photographs. Information about the pans such as persistence into the dry season, state of the surrounding vegetation, use by elephants etc should be included as part of this database.
- 1.3.3 A monitoring programme for all supplemented water points needs to be established.

**Target 1.4: Bare sodic soils investigated**

- 1.4.1 There are extensive open areas with degraded mopane on the interface between the alluvium and the higher ground. Several theories for these have been put forward and some research was initiated in the 1990s. However, the results of this have not been found and its important that this is located and analysed.
- 1.4.2 Research into the causes of this phenomenon needs to be carried out to determine if any interventions are necessary.

**Target 1.5: Mana library and laboratory improved**

- 1.5.1 There are a number of documents and research papers in the Mana offices and laboratory,
- 1.5.2 which includes data from the various culls. These need to be scanned and computerised. In addition, a digital bibliography should be made available. Work on this started during the planning process but it needs to be updated. Printed copies of the main documents should be available on station.
- 1.5.3 A GIS was created for the planning and this should also be made available, both in Mana and at the Harare headquarters.

- 1.5.4 Ideally a GIS “unit” should be established on station. Essentially this means a computer, GIS software and, most importantly, someone to run the system. Probably the most cost-effective solution is to ensure that any ecologist posted to Nyamepi is conversant with GIS systems and management. Another, less than ideal situation, is for the GIS to be updated at intervals by a consultant. But this may be a short-term solution.

**Target 1.6: Improved understanding of rare and key species**

- 1.6.1 There are several species found in the park about which very little is known. These include the nyala and sable. Studies on both of these species should be initiated, or at least reliable population estimates carried out. The movements of kudu and eland during the wet season are also unknown.
- 1.6.2
- 1.6.3 Crocodiles are a locally abundant endangered species. A baseline survey was carried out in 2007 and this should be expanded into a monitoring effort. In addition, the research data available from allowing egg collection in 2008 should be analysed.
- 1.6.4
- 1.6.5 There are several species of birds on the Zambezi that could be used as indicators of aquatic health. These include the skimmers and carmine bee-eaters. Surveys of numbers and nesting sites will be valuable.
- 1.6.6 There is no data on the fish populations, or the effect of angling on these. It is a matter of priority that this is rectified, preferably in conjunction with the Zambian Authorities.

**Target 1.7: Mammal surveys carried out at regular intervals**

- 1.7.1 In recent years aerial surveys have been carried out at intervals, the most recent having been completed in 2003. Other surveys were carried out in 1998, 1999, 2000 and 2001. The 2003 was a coordinated survey over both Zambia and Zimbabwe, whereas most of the others concentrated on the Zimbabwean side. Although the results for some of the species are problematic this type of survey should be carried out at intervals, funds permitting.
- 1.7.2 Road strip counts along the alluvium were carried out in the past and have been written up into a scientific publication. A programme should be designed to continue this work.
- 1.7.3 The Wildlife Society of Zimbabwe organises annual counts at waterholes and along transects on the alluvium, mainly for large mammals. The Authority should have an input into the count design and the data analysis to ascertain if it could become a valuable addition to the body of knowledge about the Mana wildlife populations.

**Target 1.8: Understanding of vegetation changes improved**

- 1.8.1 A substantial amount of work was done on *Faidherbia albida* dynamics in the 1980s (see Dunham references). Fourteen photopanorama points were established on the floodplain in 1961. Some of these were retaken in 1966, 1971, 1978 and 1987. This work should be continued. In addition, more points should be established in the jesse and mopane woodland. This would also help in the understanding of fire (or no fire) in these habitats. There are concerns regarding the spread of *Croton* along the river front and these areas should be identified and photo points established.
- 1.8.2 The exclusion plot at Nyamepi needs to be re-established but, prior to this investigations detailing the result of the failure of the fence and the subsequent use of the area by herbivores needs to be carried out.

## Objective 2: Management of key habitats improved

Knowledge is the key to understanding, but once it has been gained then it needs to be translated into management and intervention activities, if deemed necessary. The primary tools available to wildlife managers include water manipulation, fire, and manipulation of the wildlife numbers either through removal or addition. Given the present state of knowledge of the habitats of Mana Pools the following targets are tentatively suggested.

### Target 2.1: Dry season availability of water improved

There are a number of pans which hold water for several months after the rains stop. Some of these are named (e.g. Mashuma, Zahnjan, Muvundura, Kanga etc) while many are not. Muvundura pan did have a borehole in the past and the pump mounting infrastructure still remains. Information regarding the extent and the quality of the water may exist at Nyamepi and this should be located. There may also be reasons why the pump was removed (environmental, no water, liberation war hostilities) and these could have a bearing on the design of the supplemented water programme. Recently a borehole was drilled at Kanga Pan and a relatively impressive source of good quality water was found. This may have implications for any supplemented water programme.

- 2.1.1 As a first step (once the pan database) has been initiated some pans could be selected for silt removal. Care would need to be taken to ensure that the seal is not breached otherwise this will render the pan useless for water retention.
- 2.1.2 As mentioned under the previous objective, supplementing pans with underground water from boreholes is controversial. Apart from all the potential environmental problems there is the issue of accessing water in the first place. In many areas some idea of the availability of sub-surface water can be gained because other boreholes have been drilled in area for other reasons (schools, development centres etc) but this is not true in the case of Mana Pools. Drilling a borehole in such a remote area will be an expensive undertaking, especially as it will be largely experimental given the lack of knowledge about the aquifer.

### Target 2.2: *Albida* woodlands maintained or improved

- 2.2.1 There is evidence to suggest that elephants are the main browsers of *Faidherbia albida* seedlings. Elephants are also noted to avoid *Trichelia emetica* seedlings. Current knowledge suggests that species such as impala (which were previously culled to stimulate seedling survival) do not utilise the seedlings. A series of "mobile" exclusion plots, specifically targeted at excluding different species (i.e. all species, elephants only, hippo only) should be established, to test the survival of *F. albida* seedlings and root suckers in the absence of elephants. Observations from the original enclosure experiment indicated that *F. albida* grew well from root suckers and this may be a more important method propagation than seeds. The plots should be closely monitored to ensure that insects do not affect their survival, as this is an unknown aspect of *F. albida* ecology.
- 2.2.2 In the past impala were removed from the floodplains as they were believed to be inhibiting *Albida* regeneration by eating seedlings. There are doubts that the removal of 7,000 impala made any difference and that the cull was a misguided response. Another threat is destruction of mature trees by elephant. The situation should be monitored and remedial measure taken if deemed necessary. However, the possibility of elephant control in Mana Pools (for example) should not be taken in isolation from the mid-Zambezi valley population as a whole. Prior to any large scale herbivore removal, research should be very sure that it is an appropriate response.

### **Target 2.3: Burning programme continued**

Fire management is a contentious issue in Mana Pools. There have been no significant fires in the park for many years which makes the park unusual relative to other protected areas in the region. Many would argue that the lack of fire has been detrimental to the ecology of the area and that wildlife numbers and diversity has declined as a result. Others would argue that frequent fires are a human phenomenon and that the situation in Mana is part of a natural cycle. Most people would agree however that fire needs to be a part of the system but what management should be aiming for has not been agreed. The consensus of opinion was that, prior to any large scale use of such a powerful tool, management and research should carefully define their objectives.

- 2.3.1 There is no clearly defined objective for fire management in Mana Pools. Arguments rage about the need for hot burns on the valley floor so as to open up woodland to grassland which is expected to increase both animal numbers and diversity. Other arguments favour non-interference in the system and allow it to evolve “naturally”. It is clear that at some point management of Mana Pools needs to formulate a fire management strategy and this is linked to objective 1.2 where research will provide answers that will allow more informed decisions to be taken.
- 2.3.2 Early burning is an established part of woodland management in the Parks and Wildlife Estate. Mana Pools staff annually carry out early burning in the escarpment, above the 600 metre contour and this should continue.

### **Target 2.4: River bank erosion controlled where required**

- 2.4.1 River bank erosion, which is an ongoing natural process, is a cause for concern when it affects development. Rukomechi camp has moved from its original site, largely because of the erosion of the bank and the Nyamepi public campsite is currently under threat. The services of a Civil Engineer are required to assess the situation and determine if anything could be done about this.

## **Objective 3: Wildlife populations and diversity are maintained or enhanced**

Mana Pools contains notable populations of elephant, buffalo, hippo and crocodile. It also is home to a number of smaller populations of a wide range of species which include sable, kudu, warthog, nyala etc. In addition there are good populations of some of the major predators which include lion, leopard and hyena.

Poaching is a perennial problem within the parks estate and the Zambezi valley was the scene of an poaching onslaught during the 1980s which wiped out the rhino population. Although believed to be contained within acceptable levels at present vigilance is necessary to ensure that the wildlife and its habitats are protected.

As mentioned previously the black rhino population was eradicated during the 1980s. There are a number of successful reintroduction programmes underway in different parts of Africa and there is little reason why it should not also be attempted in the Zambezi Valley, should conditions be favourable.

### **Target 3.1: Anti-poaching operations enhanced**

Anti-poaching and enforcement activities are routinely carried out by parks staff. They also respond to emergencies such as reports of shooting. Their effectiveness is hampered by the current economic crisis which translates into an inadequate transport fleet, little fuel and decreased mobility.

- 3.1.1 For the anti-poaching effort to be successful there needs to be sufficient staff, equipment and fuel. These issues are addressed under the Park Operations Programme
- 3.1.2 Data recording and reporting need to be improved. Ideally the patrol effort could be recorded using GPS and a computer based recording system but, if this is not possible, a paper based system can also be implemented.
- 3.1.3 The improved data recording and reporting system will lead to the implementation of a more focussed and effective patrol effort.
- 3.1.4 Prosecution of offenders caught poaching is always difficult and park managers do not operate in isolation. Linkages with other law enforcement authorities, including local court systems need to be initiated (if necessary) and maintained.
- 3.1.5 The possibility of re-instating “Honorary Wardens” should be investigated but this action is probably better addressed at an Authority wide level rather than at the Mana Pools level.

### **Target 3.2: Black Rhino reintroduction investigated**

- 3.2.1 The rhino became locally extinct in Mana Pools in 1992 when the last known individuals were translocated out of the valley. Many countries have rhino reintroduction programmes and the possibility of these being established in the Mana area should be investigated. There is no doubt about the suitability of the habitat as old reports indicate large numbers throughout the Zambezi valley. A vital prerequisite for this activity will be to ensure that the animals can be protected, otherwise it will be a waste of time and resources. Linkages to private sector initiatives should also be considered.

### **Target 3.3: Wildlife diseases monitored and managed**

- 3.3.1 Disease outbreaks in wildlife populations have the potential to decimate populations if left unchecked. All animal deaths of unknown origin (e.g. other than from poaching) need to be investigated. Recently there have been a number of hippo deaths in Long Pool and it is feared that these could be caused by anthrax. Tissue samples need to be collected, properly stored and then sent to Harare for analysis when possible. If any significant disease outbreaks occur Mana staff should liaise with national and district veterinary authorities to undertake measures to contain the outbreak.



## **Objective 4: Human impacts on the ecosystem are controlled**

Mana Pools is fortunate in that 70% of its boundary is contiguous with other protected areas. This means that it does not suffer from many of the problems that beset other parks. There is little encroachment as the 30% that is adjacent to communal land is protected by being the rugged and broken country of the escarpment.

The main human impacts on Mana Pools are from upstream manipulation of the Zambezi River, tourism and park management and operations itself.

### **Target 4.1: Influence into flow control of Zambezi river**

- 4.1.1 The Zambezi River at Mana Pools is impacted by upstream developments, the most serious of these being the Kariba Dam. In addition, upstream land use practices have the potential to affect the park through siltation, erosion and pollution. It is important for there to be regular communication with the controlling authority for the Kariba Dam – the Zambezi River Authority.
- 4.1.2 To address the longer-term development and water management aspects for the Zambezi Valley, an authority has been created to address these issues and is currently housed in Lusaka. There should be liaison with this authority on issues which have the potential to affect Mana Pools.

### **Target 4.2: Impacts of roads managed**

Other human impacts refer to those brought about by management. The most obvious manifestation of these are damage to soils caused by improperly sited roads and bridges.

- 4.2.1 There are a number of sites in the park where improperly aligned roads have led to erosion. In addition, some tracks cross over black cotton soils and there are only useable in the dry season. The erosion areas need to be identified and repaired. If necessary the roads should be realigned.
- 4.2.2 Many of the river crossings are in a bad state of repair. Most culverts on the roads around the “Mana Pools” have been eroded and are useless. All of these should be replaced by dish drains. The Nyamepi to Sapi road has some badly eroded crossings and advice should be sought from a Civil Engineer if it is possible to do anything about these, remembering that this is a low-use access road rather than a tourism road.



**Table 14: Summary and three year activity plan - BIODIVERSITY PROGRAMME**

<b>OBJECTIVE 1: INFORMATION BASE IMPROVED</b>																	
TARGET	ACTION	ACTIVITY	Responsibility	Priority	Timeline - Quarters												Notes
					2010				2011				2012				
					1	2	3	4	1	2	3	4	1	2	3	4	
<b>1.1: Improved understanding of predator dynamics</b>	1.1.1: Research into predator dynamics	Ongoing population estimates of lions, hyena, wild dog		1													Dependant on ecologist appointment, funding, equipment etc
	1.1.2: Lion research extended into adjacent hunting areas	Research proposal Fund raising	Ecologist	2													
	1.1.3: Specific research into Wild dog population dynamics	Research proposal Fund raising		2													
	1.1.4: Specific leopard and cheetah studies initiated	Research proposals Fund raising		2													
<b>1.2: Improved understanding of the role of fire</b>	1.2.1: Comparison between burnt and non-burnt areas	Access appropriate satellite imagery and aerial photography															Donor funds 2008 image on hand
		Ground surveys															
	1.2.2: Long-term burning trials established	Plot definition															
		Trials underway															
	1.2.3: Fire monitoring	Modis data accessed and analysed															
	1.2.4: Analysis of work in similar areas	Data from other areas in Zimbabwe															
Kruger park data																	
<b>1.3: Implications of supplemented water understood</b>	1.3.1: Historical data analysed	Data from other parks															
	1.3.2: Pan database initiated	Georeferenced photography of pans															
	1.3.3: Monitoring of supplemented pans	Monitoring programme established															

**Table 14: Summary and three year activity plan - BIODIVERSITY PROGRAMME**

<b>OBJECTIVE 1: INFORMATION BASE IMPROVED</b>																	
TARGET	ACTION	ACTIVITY	Responsibility	Priority	Timeline - Quarters												Notes
					2010				2011				2012				
					1	2	3	4	1	2	3	4	1	2	3	4	
<b>1.4: Bare sodic soils investigated</b>	1.4.1: Location of previous research	Search for data															
	1.4.2: Design of new research, if necessary	After finding the above															
<b>1.5: Mana library and laboratory improved</b>	1.5.1 Electronic bibliography updated	Scanning of relevant documents															
	1.5.2: Print copies of relevant documents	Printed and bound copies of documents deposited at Mana															
	1.5.3: Maps and GIS on station and at HQ	Maps printed															
		GIS deposited															
1.5.4: GIS “unit” established	Computer, GIS aware ecologist appointed																
<b>1.6: Improved understanding of key and rare species</b>	1.6.1: Nyala survey	Research proposal															
		Fund raising															
	1.6.2: Sable survey	Research proposal															
		Fund raising															
	1.6.3: Crocodile surveys every three years	Research proposal															
		Fund raising															
	1.6.4: Analysis of the 2008 egg collection data	Data collated and report produced to guide future decisions about resource															
	1.6.5: Aquatic bird surveys	Research proposal															
Fund raising																	
1.6.6: Fish stock assessment	Research proposal																
	Fund raising																

**Table 14: Summary and three year activity plan - BIODIVERSITY PROGRAMME**

<b>OBJECTIVE 1: INFORMATION BASE IMPROVED</b>																	
TARGET	ACTION	ACTIVITY	Responsibility	Priority	Timeline - Quarters												Notes
					2010				2011				2012				
					1	2	3	4	1	2	3	4	1	2	3	4	
<b>1.7: Mammal surveys carried out at regular intervals</b>	1.7.1: Regular aerial surveys	Research proposal															
		Fund raising															
	1.7.2: Road strip count programme initiated	Proposal															
		Vehicle and staff to carry this out															
	1.7.3: Analysis of Wildlife Society ground counts	Analysis of historical data															
		Programme initiated															
<b>1.8: Understanding of vegetation changes improved</b>	1.8.1: Photo Panorama continued and expanded	Scanning of past panoramas															
		Resurvey of panorama points															
		New points chosen and database initiated															
	1.8.1: Nyamepi enclosure plot re-established	Measurement of herbivory after fence failure															
		Fence re-established															

**Table 14: Summary and three year activity plan - BIODIVERSITY PROGRAMME**

**OBJECTIVE 2: MANAGEMENT OF KEY HABITATS IMPROVED**

TARGET	ACTION	ACTIVITY	Responsibility	Priority	Timeline - Quarters												Notes
					2010				2011				2012				
					1	2	3	4	1	2	3	4	1	2	3	4	
<b>2.1: Dry season availability of water is improved</b>	2.1.1: Selected pans de-silted	Pan selection															
		Desilting															
	2.1.2: Supplemented pumping to pans	(in conjunction with Tourism Programme)															
		Monitoring programme established															
<b>2.2: Albida woodlands maintained or improved</b>	1.2.1: Large trial exclusion plots established	Sites identified															
		Materials sourced for exclosures															
		Exclosures established and trials underway															
	1.2.2: Monitoring of threats to trees	Monitoring of elephants and other herbivores															
<b>2.3: Burning programme continued</b>	2.3.2: Fire management objectives considered	Links directly to 1.2															
	2.3.1: Escarpment early burning continued	Fires started															
		Monitoring where possible															
<b>2.4: River bank erosion controlled where required</b>	2.4.1: Appropriate advice sought to assess Nyamepi and other sites	Civil Engineer contracted															
		Follow on from Engineer recommendations															

**Table 14: Summary and three year activity plan - BIODIVERSITY PROGRAMME**

<b>OBJECTIVE 3: WILDLIFE POPULATIONS AND DIVERSITY ARE MAINTAINED OR ENHANCED</b>																	
TARGET	ACTION	ACTIVITY	Responsibility	Priority	Timeline - Quarters												Notes
					2010				2011				2012				
					1	2	3	4	1	2	3	4	1	2	3	4	
<b>3.1: Anti-poaching operations enhanced</b>	3.1.1: Sufficient staff, equipment and fuel	(see Park Operations)															
	3.1.2: Patrol reporting system enhanced	Maps and database entries															
<b>3.2: Rhino reintroduction investigated</b>	3.2.1: Investigation of IPZ possibilities	Chikwenya trial IPZ investigated															
		Other sites considered															
		Liason with Zambian programme															
<b>3.3: Wildlife diseases monitored and managed</b>	3.3.1: Wildlife deaths investigated	Individual deaths investigated															
		Tissue samples collected, stored and analysed with appropriate authorities															

**Table 14: Summary and three year activity plan - BIODIVERSITY PROGRAMME**

**OBJECTIVE 4: HUMAN IMPACTS ON THE ECOSYSTEM ARE CONTROLLED**

TARGET	ACTION	ACTIVITY	Responsibility	Priority	Timeline - Quarters												Notes	
					2010				2011				2012					
					1	2	3	4	1	2	3	4	1	2	3	4		
<b>4.1: Influence into flow control of Zambezi river</b>	4.1.1: Liaison with Zambezi River Authority	Regular contact maintained – at least every six months																
	4.1.2: Liaison with dam management and e-flow entity	Contact initiated																
		Regular contact maintained																
<b>4.2: Impacts of roads managed</b>	4.2.1: Erosion sites related to infrastructure repaired	Sites identified																
		Erosion control carried out																
		Roads realigned if necessary																
	4.2.2: River crossings improved	Replace culverts with dish drains (see also Park Operations; Objective 1)																
		Advice from Civil Engineer regarding major crossings																

## 2.6 MONITORING AND RESEARCH FRAMEWORK

The ecological monitoring and research component is a key element of the Biodiversity Programme. It was developed after an analysis of the conservation targets, their key ecological attributes and the threats and concerns facing the system.

As outlined under Objective 1 there is a great of research that needs to be carried out in Mana Pools and the surrounding areas. It is unlikely that the ZPWMA will be able to fund this research internally or field the personnel from within the Authority. Therefore, collaborative institutions should be actively sought and encouraged to participate or initiate research into these important topics.

However, there need to be some controls on the quality and direction of the research and the following regulations are applicable.

### Research Regulations for Mana Pools National Park

1. Researchers should present their research proposal for discussion by management at Mana Pools. If the project is approved at park level than it should be taken to Harare HQ for official approval.
2. Researchers should report to the Mana Pools Warden's Office upon arrival and present both letters of permission from the relevant authorities and a copy of their research proposal.
3. Researchers may only undertake the work for which they received letters of permission.
4. It is strictly forbidden to collect samples or specimens of any plant or animals without explicit letters of permission from the relevant authorities.
5. Researchers will be assigned a park liaison person with whom they will discuss their work plan and timeline before commencing the work.
6. Researchers should ensure that their park liaison person is kept regularly up-to-date on progress of the project and report any changes in their work plan as necessary.
7. Researchers should also submit written quarterly reports to their park liaison person for review and comment.
8. Researchers should provide the Mana Pools management and the ZPWMA HQ Library with copies of any publications, theses, or other materials produced.
9. Mana Pools staff and other collaborators should be acknowledged in any publications or other materials produced and offered authorship where it is considered appropriate.
10. Researchers must abide by all park regulations
11. Researchers should promote local employment and training wherever possible

In the following tables the monitoring and research topics are laid out in relation to the Conservation Targets. Specific research programmes show up as activities but are linked to the monitoring as well.

## 2.6.1 MANA POOLS ECOLOGICAL MONITORING AND RESEARCH PLAN

Conservation Target: The Zambezi River							
Key Ecological Attribute	Indicator	Measurement Method	Frequency	Source	Responsibility	Current Status	Target Linkage
Water quality	Dissolved chemicals, turbidity, pollutants	Lab analysis of samples	Seasonal		ZPWMA, ZINWA	None available	4.1
Islands and sandbanks	Size and movement	Satellite image	Every 5 years	Landsat		2006 image	4.1
Crocodile population	Numbers and pop. struct.	Aerial/spotlight surveys	Every 3 years	Survey	CFAZ, ZPWMA	2006 survey	1.6
Unusual birds	Pop. size and nesting	Boat surveys	Annually?	Survey	Birdlife, ZPWMA		1.6
Key fish species	Tiger fish pop size and struct	Catch/release surveys	Ongoing	Survey	ZPWMA	None	1.6

Conservation Target: Alluvial Floodplains							
Key Ecological Attribute	Indicator	Measurement Method	Frequency	Source	Responsibility	Current Status	Target Linkage
<i>Faidherbia</i> numbers		Photopanoramas	Every 2 years		ZPWMA		1.8
<i>Faidherbia</i> age							1.8
<i>Faidherbia</i> regeneration	Grazer and browser numbers	Road strip counts	Seasonal	Survey	ZPWMA	Some historical data	1.8
Elephants	Woodland destruction	Photopanoramas					



<b>Conservation Target: Jesse Bush</b>							
<b>Key Ecological Attribute</b>	<b>Indicator</b>	<b>Measurement Method</b>	<b>Frequency</b>	<b>Source</b>	<b>Responsibility</b>	<b>Current Status</b>	<b>Target Linkage</b>
Species composition							1.8
Extent of damage	Damaged trees						1.8
Nyala population size							1.6
Changes		Photopanoramas					1.8

<b>Conservation Target: Mopane Woodland</b>							
<b>Key Ecological Attribute</b>	<b>Indicator</b>	<b>Measurement Method</b>	<b>Frequency</b>	<b>Source</b>	<b>Responsibility</b>	<b>Current Status</b>	<b>Target Linkage</b>
Population size and structure							
Wildlife movement patterns							
Fires		Modis					1.2
Changes		Photopanoramas					1.8

<b>Conservation Target: Escarpment</b>							
<b>Key Ecological Attribute</b>	<b>Indicator</b>	<b>Measurement Method</b>	<b>Frequency</b>	<b>Source</b>	<b>Responsibility</b>	<b>Current Status</b>	<b>Target Linkage</b>
Fires	Numbers and extent	Modis data	Daily	Internet	ZPWMA	Not collected	1.2
Habitat quality	Sable numbers						
	River flows						
Gorge vegetation	Extent and heath						

Conservation Target: Pans & Springs							
Key Ecological Attribute	Indicator	Measurement Method	Frequency	Source	Respons.	Current Status	Target Linkage
Water persistence	Rainfall	Gauges	Daily	Nyamepi	ZPWMA	Ongoing	
	Water presence	Visual inspection	Ongoing		ZPWMA	Few pans known	
Vegetation degradation	Tree damage	Visual inspection. Photopanoramas	Annually		ZPWMA	Not collected	

Conservation Target: Predators							
Key Ecological Attribute	Indicator	Measurement Method	Frequency	Source	Responsibility	Current Status	Target Linkage
Population size and distribution	Numbers	Surveys				Some historical	1.1
Population viability							1.1

Conservation Target: Elephants							
Key Ecological Attribute	Indicator	Measurement Method	Frequency	Source	Responsibility	Current Status	Target Linkage
Integrity of surrounding areas							
Population size and structure	Numbers	Surveys					

## 2.7 ENVIRONMENTAL IMPACTS AND MITIGATION

This section provides a brief summary of the possible environmental effects of some of the activities and developments that will be carried out by this programme. Possible mitigation measures are also suggested.

**Table 15: Mitigation measures for the Biodiversity Programme**

Development/Activity	Potential Impact	Mitigation Measure
Dry season water availability	<ul style="list-style-type: none"> <li>• Altered wildlife movements</li> <li>• Vegetation degradation</li> </ul>	<ul style="list-style-type: none"> <li>• Monitoring</li> <li>• Turn off supply if problem</li> </ul>
Albida regeneration	<ul style="list-style-type: none"> <li>• Unknown negative effects</li> </ul>	<ul style="list-style-type: none"> <li>• Monitoring</li> </ul>
Early burning	<ul style="list-style-type: none"> <li>• Maintenance of <i>miombo</i> in current state</li> </ul>	<ul style="list-style-type: none"> <li>• Ensure early burning takes place</li> </ul>
Burning trials	<ul style="list-style-type: none"> <li>• Fires out of control</li> </ul>	<ul style="list-style-type: none"> <li>• Careful management</li> </ul>
Improved monitoring and research	<ul style="list-style-type: none"> <li>• Informed management decisions</li> </ul>	
Improved anti-poaching	<ul style="list-style-type: none"> <li>• Fewer wildlife deaths</li> <li>• Maintenance of fish stocks</li> </ul>	
Erosion control	<ul style="list-style-type: none"> <li>• Less erosion</li> </ul>	

## 2.8 INDICATIVE BUDGET

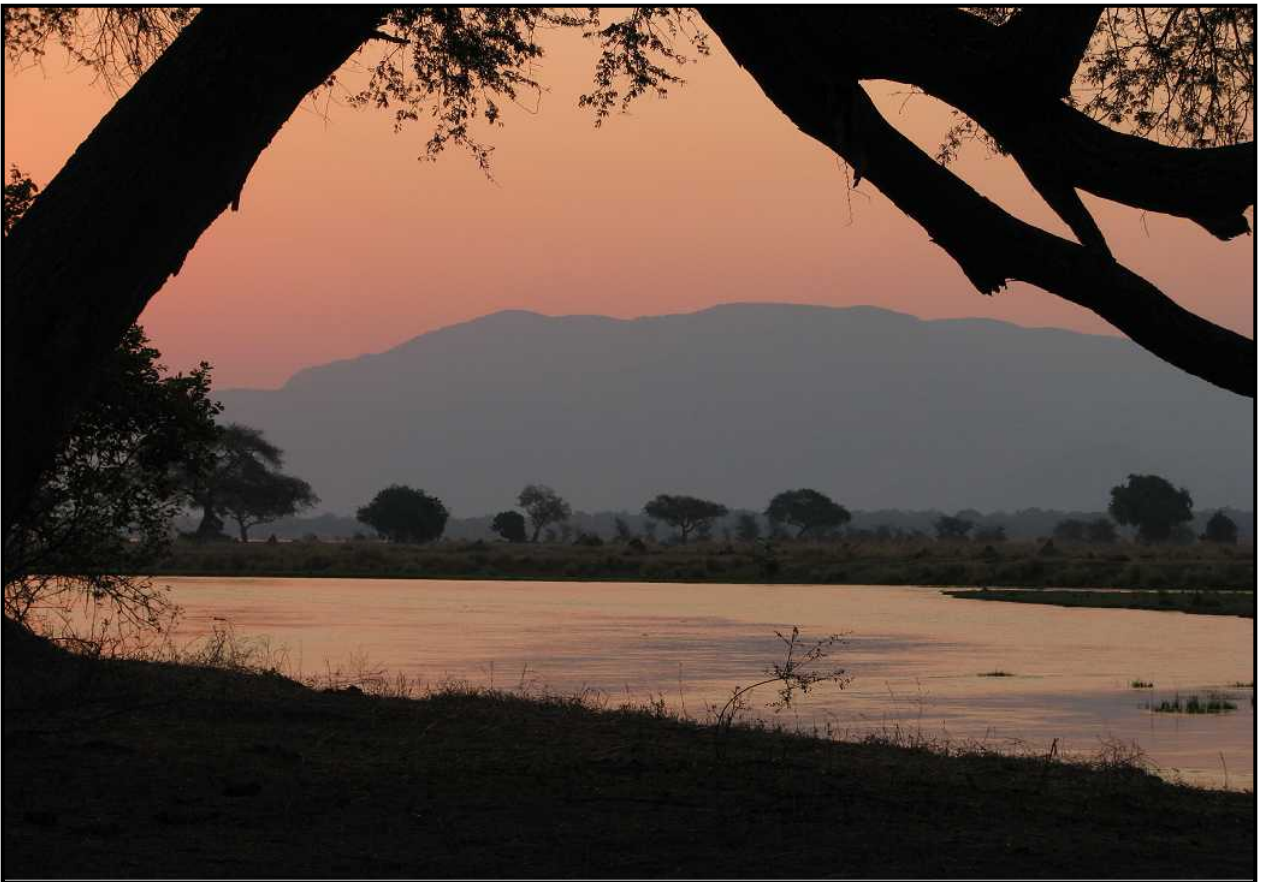
An indicative budget for the Biodiversity Programme proved to be difficult to formulate. A number of the research items mentioned in the text will rely on fund raising and the possibility of external researchers participating. In addition, it will be necessary for a Senior Ecologist as well as other ecologists to be posted to Nyamepi to carry out the research and monitoring required. This is not costed in the indicative budget.

**Table 16: Indicative budget for the Biodiversity Programme in US\$ (by objective)**

Objective	Capital	Recurrent
Information base improved	9,000	2,500
Management of key habitats improved	11,500	2,500
Wildlife populations and diversity are maintained or enhanced	0	0
Human impacts on the ecosystem are controlled	20,500	6,000
<b>Programme Totals</b>	<b>41,000</b>	<b>11,000</b>



# 3: TOURISM PROGRAMME





## 3 TOURISM PROGRAMME

### 3.1 INTRODUCTION, PURPOSE AND KEY COMPONENTS

Mana Pools National Park was re-opened to tourists in 1980, after the cessation of hostilities of the Zimbabwean liberation war. Records of use of the park by tourists prior to its closure in the mid 1970s have not survived and any analysis of tourism has to take this into account. After a slow start in 1980 visitor numbers had quadrupled by 1985 to over 8 000 and a peak was reached in the early 1990s of around 12 000 visitors per year. The current negative image of Zimbabwe as a tourist destination in the marketplace has seen tourist numbers drop considerably, back to around 6 000 per year (and this may be an optimistic estimate). A brief analysis of foreign versus local visitors shows that the local visitor component can be an important buffer against the more fickle international tourism which really becomes a driving force when times are good.

Mana Pools is probably one of the only National Parks in Africa with dangerous big game that permits unescorted walking. Visitors are permitted to walk anywhere in the park, in groups or singly, without reference to their experience or understanding of the environment. While walking they do not need to be escorted by a professional guide or a member of the ZPWMA. This is one of the unique experiences of this park and is listed as an exceptional resource. There have been several fatalities, mainly through elephant and buffalo attacks, but considering the numbers of visitors who take part in this activity, the numbers are remarkably low.

Professionally guided safaris, both by vehicle and on foot, are another key component of the tourism in Mana Pools. The area is famous for its knowledgeable guides who can provide a unique safari experience. Walks are usually only day-walks but some guides undertake more ambitious routes lasting several days through wilderness areas away from the Zambezi, with a recent one carried out between Chikwenya and Rukomechi. In addition, the ZPWMA carries out its own wilderness walks using experienced ranger during the full-moon period. The Authority also is responsible for a specialised safari involving the tracking of lions with radio-collars, which were installed as part of a research programme.

Accommodation in the park is distributed through a range of types with around 400 “beds” on offer with most these along the Zambezi River. The vast majority of “beds” available are in the camping sites with 40% of all “beds” being in the public campsite at Nyamepi. The following table summarises accommodation currently available in the park.

Camping Beds				Non-Camping Beds		
Public Campsite	Operator Exclusive	Public Exclusive	Canoeing	Temp Ext Camp	ZPWMA Lodges	Other Lodges
174 beds	60 beds	108 beds	36 beds	36 beds	28 beds	32 beds
36%	13%	23%	8%	8%	6%	7%
<b>Total = 378</b>				<b>Total = 96</b>		
<b>Total on floodplain = 342</b>				<b>Total on floodplain = 96</b>		

Canoeing Safaris started in the 1980s and soon this had developed into a well established and popular activity on both the Zimbabwean and Zambian banks. The canoeing visitors make up a significant proportion of the tourist load but it is a low profile activity with minimal pressure on the resources. At peak times there can be as many as 70 clients on the water overnighing at four different locations in the park.

The distribution of the resources in Mana Pools has constrained the development of tourism in the park. The major scenic and wildlife attractions are found along the Zambezi river and in the adjacent

alluvial *Faidherbia albida* forests. Pressure for access to the river front has led to a concentration of facilities and campsites along its banks. In addition, the headquarters of the park is based in the alluvial woodland on a prime site at Nyamepi.

When a finite resource is coupled with a business that is perceived to make considerable profits, there can be unreasonable pressure for access. The resultant political and economic pressure to open up areas for development and use can lead to its degradation, both environmentally and in the product that was on sale initially. This has been seen in a number of parks in the region and the most relevant example is found in Zambia across the river from Mana Pools. The scramble for tourism sites in the Zambian portion of the valley has led to an erosion of the wilderness quality and of the resource itself, especially in the Chiawa Game Management Area which directly abuts Mana Pools.

The virtual collapse of the tourist industry in Zimbabwe during the last ten years may be a blessing in disguise for Mana Pools as the pressure for access and sites on the Zimbabwean side has not been as intense as elsewhere. However, recent political developments may see an increase in demand and it is an opportune moment to formulate a plan for the park that can have the opportunity of putting sound environmental principles first.

The Zimbabwe PWMA is unusual in the region (apart from South Africa) in that it runs its own permanent accommodation facilities. Some other agencies will run public and exclusive campsites but few run permanent lodge style accommodation. Currently the ZPWMA lodges account for the bulk of non-camping accommodation available within the park.

Given the above, and taking into account the exceptional resources of the park, the purpose of the Tourism Programme is as follows:

**TOURISM PROGRAMME PURPOSE:**  
***Tourism managed and developed so that economic benefits are balanced with environmental and wilderness***

The Tourism Programme has a number of components and these are described below (Table 17).

**Table 17: Key components of the Tourism Programme**

<b>Aspect</b>	<b>Brief Description</b>
Management of existing tourism	Existing tourism needs to be managed; both the activities and infrastructural developments. Regulations need to be clearly defined and enforced.
Development and diversification of tourism	This programme is also responsible for the development and diversification of tourism within the park. This document sets out some ways in which this can be achieved
Marketing	Marketing of the attractions of the park needs to be improved. The ZPWMA should collaborate with tour operators to ensure that the tourism product is well known and appreciated in the marketplace.
Trans- Frontier Aspects	Mana Pools is the centrepiece of a network of protected areas which extend into Zambia. This programme is responsible for the tourism aspects of this initiative.
Education/ Interpretation	Education of the public about the environment is one of the important functions of the tourism programme. This includes ensuring that school groups and other educational entities are catered for.
ZPWMA Tourism facilities	The ZPWMA runs its own tourism facilities in Mana Pools and is responsible for ensuring that these are successful and help to fund the management of the park.



## 3.2 THREATS, ISSUES AND CONCERNS

The threats, issues and concerns facing the tourism programme were used to help develop the objectives for the programme. These are summarised below (Table 18) and described more fully in Table 19.

**Table 18: Summary of threats, issues and concerns**

<ul style="list-style-type: none"> <li>• Erosion of wilderness values</li> <li>• Habituated wildlife</li> <li>• Pressure for prime sites</li> <li>• Harsh conditions for tourist (interior)</li> <li>• Current low levels of tourism</li> <li>• Inadequate tourism planning</li> <li>• Not enough accommodation</li> <li>• Poor marketing (coordination)</li> <li>• Short tourist season</li> <li>• Unsynchronised tourism activities with Zambia</li> <li>• Possible tourist hunting</li> <li>• Control of tourists</li> <li>• Conflicts ZPWMA /Private operators</li> </ul>	<ul style="list-style-type: none"> <li>• Extended use of Operator Sites</li> <li>• Tourism data not detailed enough</li> <li>• Tourism fuelwood</li> <li>• Campsite Locations</li> <li>• Non Standardised leases</li> <li>• Exclusive zones</li> <li>• Poor communications HQ and Field</li> <li>• Negative perception of Zimbabwe</li> <li>• Bank vs street money rates</li> <li>• Auction Hunts</li> <li>• Poor tourist Information</li> <li>• Uncompetitive pricing</li> <li>• Tourist camp administration</li> </ul>
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**Table 19 : Tourism threats, issues and concerns - Detail**  
(Stars indicate a measure of importance)

Issue/Concern	Description
Erosion of wilderness values**	Wilderness is a difficult quality to define, mainly because it is so subjective. However, it is a quality that is becoming more and more valuable with time and Mana Pools does have it. But it is very easy to erode the quality of the wilderness with inappropriate developments such as roads and tourism facilities, some of which may be beyond the control of the Authority. For example, tourism development on the Zambian side of the river have eroded the quality of the wilderness on the Zimbabwean side.
Habituated wildlife**	In some areas the numbers of tourists mean that wildlife can become very familiar with people. Notable areas where this occurs are the floodplain at Nyamepi and at Chitake springs. Several fatal incidences are on record.  In addition, canoeing safaris are at risk from crocodile and hippo attack and again, at least one fatal incident is on record.
Wildlife pests	Baboons, monkeys and hyenas. All of these animals have become habituated to humans and steal food from visitors and staff or feed on the rubbish pits. Primates are a particular problem in the ZPWMA lodges and they can cause significant damage to the furnishings and fittings. Elephants have also been regarded as a pest in the past and were known for stealing food from cars.
Pressure for prime sites** Commercialisation of tourist threat	There is pressure for tourist sites to be allocated along the Zambezi River. Owing to the current political and economic situation in Zimbabwe this pressure is not as great as it will be once the country's problems have been resolved. Now is a good time to be defining limits of use
Harsh conditions for tourist (interior)**	Away from the river, Mana can be a harsh environment for tourists. The interior has a significant number of tsetse flies, water is non-existent in the dry season, the heat is intense and shade is limited. All of these factors make much of the interior an unappealing place for tourism.

<b>Table 19 : Tourism threats, issues and concerns - Detail</b> (Stars indicate a measure of importance)	
<b>Issue/Concern</b>	<b>Description</b>
Current low levels of tourism	Owing to the current political and economic situation in Zimbabwe there are relatively low levels of tourism in Mana Pools. This affects the income to the Authority and its ability to manage and maintain the park.
Inadequate tourism planning	There has been inadequate planning for tourism in Mana Pools. The park has been operating without a ratified management plan since it was established and tourism develop has often been at the whim of individual wardens.
Not enough accommodation	The demand for accommodation in Mana Pools is significant at certain times of year. The ZPWMA lodges operate at 90% occupancy for most of the year and the operator campsites are often fully booked between July and October. There is a need for more accommodation facilities in the Park.
Poor marketing (coordination)	There is no coordinated marketing approach for Mana Pools and the Zambezi valley as a tourist destination.
Short Tourist Season	The main tourist season is between July and October when at least 80% of visitors come to the park. During the wettest period (effectively five months) the park has virtually no income. This is a serious problem given the ZPWMA remit of being self sustaining in financial terms and each park having to generate its own income. Investigations of methods to extend the season during which people will utilise the park need investigation.
Unsynchronised tourism activities with Zambia	Since 1990 there has been an unregulated proliferation of tourism facilities in the Chiawa Game Management Area in Zambia. Many of these are running generators and the extent of light pollution is significant. In addition, motor boating is permitted on the Zambian side of the river.
Possible tourist hunting	The ZPWMA allowed trophy hunting for elephant in Hwange NP and it was being considered for Mana Pools. Concerns have been expressed about this type of activity in a national park, even though it is expected to occur away from the floodplain and tourist areas.
Control of tourists	Once tourists have entered the park there is little control. There are instances of people camping in undesignated sites, other cases of people entering the park through undesignated roads, hence avoiding paying entry fees etc.
Conflicts ZPWMA /Private operators	There are a number of conflicts between the ZPWMA and private operators but these are addressed at an annual meeting between the Area Manager for Mana Pools and the tour operators.
Extended use of Operator Sites	Currently continuous use of an operator exclusive camping site is limited to three weeks . There are four exclusive sites in the Park and operators move between the sites to run their businesses on an almost continuous basis. It means that staff are also accommodated on site and generators have been seen to be in operation on occasions.
Tourism data not detailed enough	Data on visitors, and vehicles is collected at the Mana office. However, data on lodge and campsite occupancy, canoe visitors would help to build a more complete picture of tourism in the park. In addition, analysis of the tourism figures from different angles (e.g. origin data) reveals inconsistencies in the existing data.
Tourism fuelwood	There is a huge demand for fuelwood by both visitors and staff and, once the political and economic situation improves, this demand is set to grow. Regulations regarding the use of wood need to be made.

<b>Table 19 : Tourism threats, issues and concerns - Detail</b> (Stars indicate a measure of importance)	
<b>Issue/Concern</b>	<b>Description</b>
Campsite Locations	Some riverside campsites are very visible. Perhaps the most visible of these is currently unused (the BBC site) Two campsites are located right on the water at Chitake springs. In addition these sites have no ablution facilities
Non Standardised leases	Leases issued for areas inside the park are not standardised. The length of the lease the areas involved and the conditions differ. Some leases do not specify sizes and other allow activities that are prohibited under the park regulations.
Exclusive zones	There are several leases that allow exclusive use of parts of Mana Pools. Some of these cover already existing camps and park access roads and are clearly not tenable. There has been some “Gentleman’s Agreements” between park management staff and lease holder but these agreements need to be made legally binding.
Temporary Extended Camps	The temporary extended camp is an “evolved” category of accommodation within the parks estate. Essentially it is the same as an Operator Exclusive Site but the incumbent is permitted to remain on site for the duration of the season. Issues regarding allocation, leases and length of tenure may well become problems in the future.
Poor communications HQ and Field	Although essentially a management problem it manifests itself through problems with management of tourism. ZPWMA HQ issues leases without consultation on the ground.
Negative perception of Zimbabwe	Zimbabwe is not high on the list of desirable tourism destinations because of the negative publicity surrounding the country. Tourism has slumped and recently this has been exacerbated by the current global recession.
Bank vs street money rates	Unless a business has been approved by the Reserve Bank all charges for citizens and residents need to be made in Zimbabwe dollars. The huge discrepancy means that some camps are selling US\$ 300 rooms for the equivalent of US\$0.30. It is clearly impossible to run a business at these rates. However, recent events during 2009 where Zimbabwe now operates with US\$, make this issue largely redundant.
Auction Hunts	Auction hunts, sold in 10 or 14 day lots, are the management strategy for the adjoining Sapi and Hurungwe Safari Areas. There are no qualifications required to bid in the process and there is little accountability. However, in recent years it seems that the hunts are block-bought by safari operators and the area run as a hunting concession.
Poor tourist Information	Some information is available for tourists at the Nyamepi HQ courtesy third-parties (e.g. Zambezi Society). There is a need for this to be updated and expanded. In addition, an interpretive centre could help inform and educate visitors about the wonders and dangers of the area.
Uncompetitive pricing	ZPWMA has recently increased its pricing for accommodation in parks to high levels. This also includes pricing for residents and citizens which now puts the parks out of reach of Zimbabweans. Foreign visitors have expressed concern that they do not receive value for money at the current pricing as the lodges often have no gas and the condition is poor.
Tourist Camp Administration	Chikwenya Safari Camps falls under the management of Marongora and not Mana Pools. This causes complications for on the ground field management as the camp uses Mana Pools for some of its activities.

**Table 19 : Tourism threats, issues and concerns - Detail**  
 (Stars indicate a measure of importance)

Issue/Concern	Description
Staff Fees	All staff associated with the Exclusive Use Campsites are required to pay entry and camping fees. Operators fear that with the new fee structure this will adversely affect their business.

### 3.3 GUIDING PRINCIPLES

The following guiding principles were elaborated for the Tourism Programme. They are listed below before being described in more detail.

1. Wilderness qualities will be maintained
2. Tourism away from the river will be encouraged
3. Camping and low impacted tented camps will be promoted
4. Unescorted walking will continue to be permitted
5. Citizen and educational access will be promoted
6. ZPWMA accommodation will be competitive
7. Linkages with appropriate communal areas will be encouraged
8. Exclusive use areas will be discouraged

#### 1 Wilderness qualities will be maintained

Wilderness is listed as one of the Exceptional Resources of Mana Pools. The park is over 2 000 km<sup>2</sup> and the central and southern parts symbolise significant wilderness areas. In addition, the Zambezi river frontage between Nyamepi and the Sapi river has not yet been developed for tourism. This represents a significant part of the middle Zambezi that is wilderness and has national park status. Wilderness is an elusive and subjective quality but there is no doubt that it will increase in value as the world becomes more crowded and developed in the future. Through zoning and limits of use this plan attempts to ensure that Mana Pools will retain its wilderness and wild areas.

#### 2 Tourism away from the river will be encouraged

Apart from the campsites at Chitake Spring all accommodation and camping facilities are concentrated along the Zambezi River. There is an urgent need to spread the tourist load into other parts of the park. The process is already underway and a site has been allocated at Kanga Pan where development has started with the successful drilling of a borehole.

Any operator establishing a camp away from the river will need to have water and although the success of the drilling at Kanga Pan is encouraging, there are no guarantees with respect either to water being found or its quality. At some locations it may be necessary to bring water in from the Zambezi which will constrain the type and size of the camps (which may be a good thing).

A related problem is the year-round availability of water in the pan, should the quest for water be successful. Operators would obviously want to keep water in the pan to ensure that wildlife remains in the vicinity of the camp. However, this could lead to vegetation degradation around the pan as has been seen in Hwange National Park. The Authority will initiate monitoring and controls, if necessary

#### 3 Camping and low impact tented camps will be promoted

The bulk of the tourism product in Mana Pools revolves around low impact camping, canoeing and temporary camps. Permanent accommodation in the park is limited to ZPWMA lodges and the camp under development at the Vundu site. This low impact use of the resource will continue to be promoted to avoid the situation that has developed on the Zambian side, and especially in the Chiawa GMA.

#### **4 Unescorted walking will continue to be permitted**

Mana Pools is unusual in that unescorted walking is permitted. Visitors do not need to show any qualifications or prove any capability before being allowed to walk. In addition, they do not need a ZPWMA scout or professional guide to accompany them which is a requirement in most protected areas in Africa. Although it is believed that this activity originated on the floodplain as visibility is good in the dry season, this type of walking is permitted anywhere in the park. This plan promotes this activity as it is one of the primary features of the tourism experience. However, it should be recognised that problems may emerge with this type of activity once tourism numbers increase and there is a higher proportion on non-Zimbabwean visitors on the floodplain.

#### **4 Citizen and educational access will be promoted**

One of the Policy Objectives for the Parks and Wildlife Estate is to provide opportunities for public education. In addition, the preamble states that “*Government places considerable importance on the primary right of Zimbabweans to have access to recreation in the Estate and will seek an equitable balance between domestic and international tourism*”. This management plan seeks address both of these issues.

#### **5 ZPWMA accommodation will be competitive**

Zimbabwe is unusual in the region in that the Wildlife Authority provides accommodation facilities. In many other countries (South Africa being a notable exception) almost all accommodation is provided by third party operators. In Mana Pools two types of lodges are located along a prime piece of the river. Views are spectacular and the lodges are well designed. However, and mainly due to the current economic situation the ZPWMA finds it difficult to supply and maintain these facilities. Often there is no gas for cooking, cleaning materials are in short supply, fittings and furnishings are aged. To cap it all baboons, monkeys and other wildlife are a perennial problem as they destroy the roofs, create mess on the floors and steal food from visitors. However, pricing of this type of accommodation was always low enough that visitors accepted the situation. Recently the Authority has increased its prices which makes the lodges uncompetitive both in terms of other accommodation available in the park and also regionally. Local tourists, which make up the bulk of the ZPWMA clients should not be sidelined in favour of international clients as, in times when foreign visitor number are low, the local visitors provide a buffer for the facilities.

#### **6 Linkages with appropriate communal areas will be encouraged**

The Wildlife Policy advocates the conservation of wildlife and habitats outside and it also promotes the CAMPFIRE concept as a means for local people to benefit from wildlife. One of the objectives within the policy is to generate economic activity both within the Estate and the surrounding areas to enhance development. Accordingly Mana Pools should seek ways to ensure that local people become part of the tourist industry of the park.

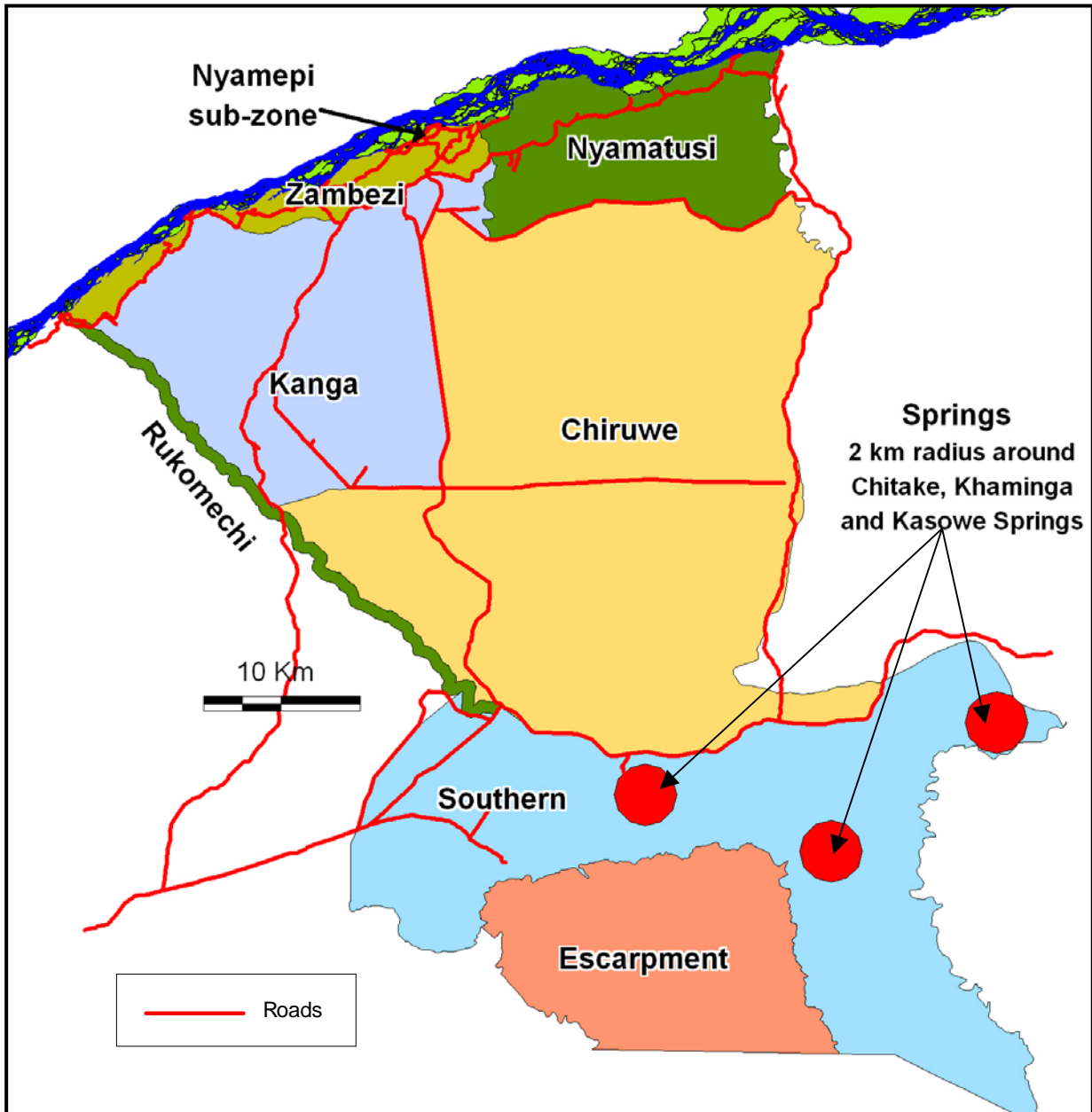
#### **7 Exclusive use areas will be discouraged**

Although the park has two leases that have an element of exclusivity it is believed that allowing exclusive use of a national asset such as a national park is not in keeping with many of the objectives outlined in the Wildlife Policy. Accordingly, this plan discourages exclusive use of large areas of the park.

### 3.4 ZONES AND LIMITS OF ACCEPTABLE USE

Eight zones have been described for the Mana Pools National Park (Figure 4). In addition, one sub-zone is described for the headquarters and main tourist area.

Figure 4: Mana Pools Zones



Tourist carrying capacity, once a favoured term for protected area use, has largely been superseded by limits of acceptable use. Limits of acceptable use allow the management authority to control the numbers of people carrying out a specific activity at a specific time. Where possible thresholds of potential concern can be set which can allow management to take remedial action if problems with overuse become apparent.

The problem with both tourist carrying capacity and limits of acceptable use is how to set them. Defining both is a very subjective task and is often a compromise between economics, aesthetics and practical considerations. In addition, the limits are often bound by existing developments, leases and

agreements. Seldom is tourism use in a protected area defined on ecological grounds, and even if it is, demand for use will usually over-ride these decisions.

During this planning process limits of use were set by the accommodation facilities and not by formally defining a limit (e.g. beds per hectare). Planning was constrained by facilities and agreements already in existence, particularly for the riverine fringe (the Zambezi Zone). It was believed that setting limits for maximum numbers of vehicles (for example) would be difficult to enforce and become complicated once more accommodation facilities open up away from the river. The Zambezi Zone is where overcrowding becomes evident and only during short peak periods. The road passing through Nyakasikana Gate is also a national access road and this would also cause complications.

Similarly the maximum limits of use for canoeing safaris are set by the defined numbers of canoes on each trip plus the numbers of departures.

Mana Pools is unusual in that walking is permitted. Its activities are not limited to the traditional game drives and this goes a long way to spreading the pressure. In addition, escorted walking using professional guides or ZPWMA staff, is permitted. This type of activity can be for a single day or for longer periods with overnight camping. Canoeing is another popular activity which helps to spread the tourist load away from the roads.

Motor boats are currently not permitted and as long as this regulation is enforced it does away with the need to define regulations for this type of activity. However, there is a suggestion of a trial period for wet season motor-boat access and limits of use are set in the objectives.

The Zambezi river, and the alluvial forest around Nyamepi, is the core of Mana Pools and the area under the most pressure from tourism. This plan recognises the need to ensure that the very qualities that make Mana special – wilderness and undisturbed habitat - are protected. Accordingly, the river was divided into two zones, with the tourism development confined to the area that is already the focus for most tourism activities – i.e. the area between Nyamepi and the Rukomechi river. The area between Nyamepi and the Sapi river is left undeveloped and is maintained as a wilderness area.

The plan also recognises the need to utilisation of the vast area away from the Zambezi. Accordingly several sites have been proposed inland for the development of small camps. The exact form that these camps will take may require experimentation to see what will work, especially given the Zimbabwean, and indeed the global economic crises.

In keeping with the Wildlife Policy and need to ensure that Parks provide benefits to the local economy, this plan advocates the establishment of a joint-venture site in the southern part of the park (Nyamawani Pan or the Rukomechi river) which is linked to the adjacent community. The exact details of this arrangement is one of the tasks for the implementation of the plan.

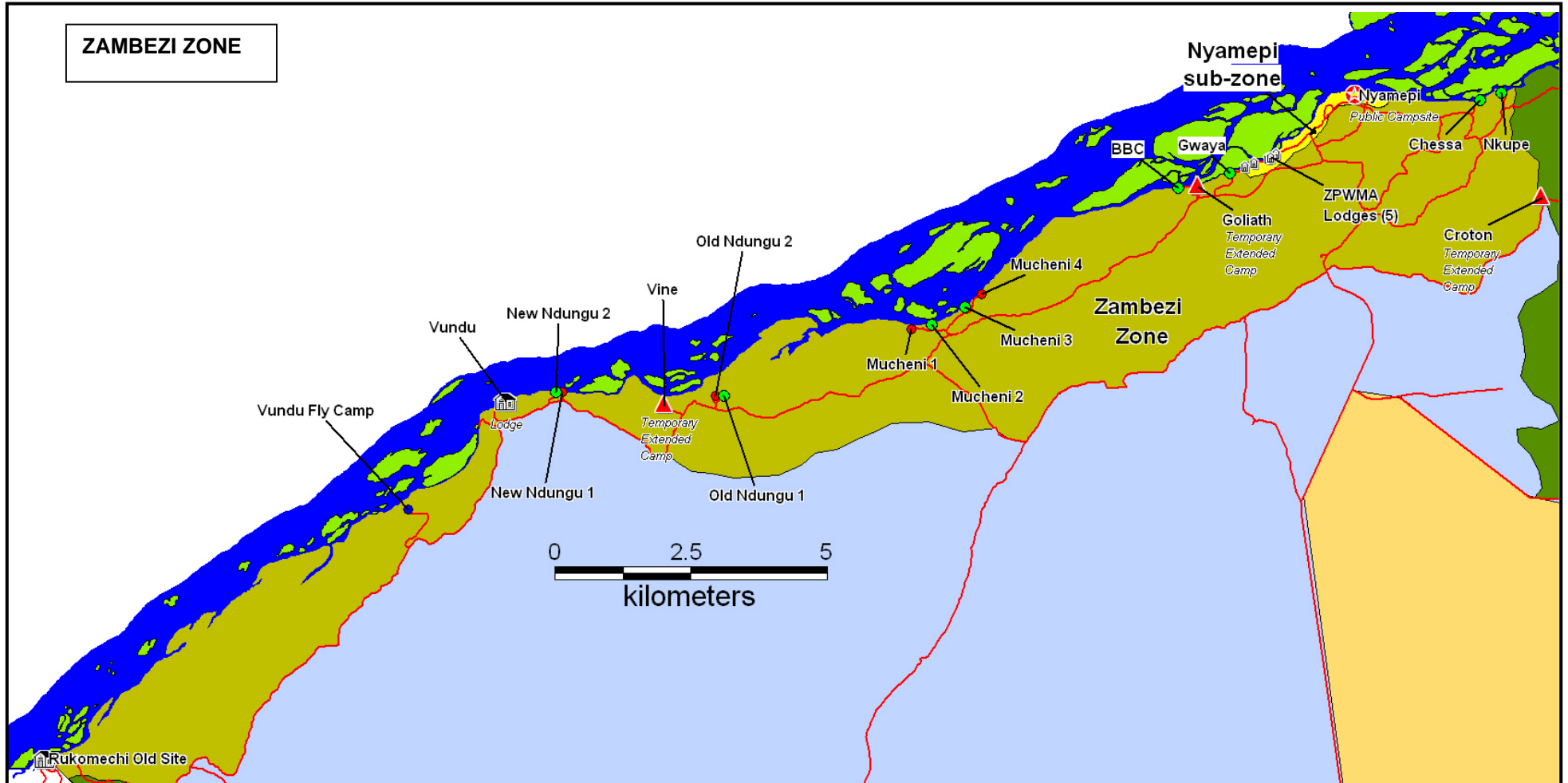
In summary the plan advocates a 11% increase in bed numbers in the park. It is believed that more than this, especially given that most visitors will want to be on the floodplain at some point, would degrade the environment and the tourism experience. At peak times the alluvium is probably already over subscribed.

The following pages summarise information about the zones and provide more detail about their current and proposed utilisation

<b>ZAMBEZI ZONE: 82 km<sup>2</sup></b>							
<b>Rationale</b>	To allow public access to the Zambezi river and alluvial woodlands						
<b>Boundaries</b>	<p>Starting at the Chiruwe river, westwards following the “Middle Jesse Road” to where it meets the contour line between the mopane woodlands and the alluvium at Point 1, then along that contour to where it meets the road at Point 2 (see map), then following the road to the Rukomechi river. Then following the river downstream to the international boundary, then eastwards along the international boundary to the Chiruwe river. Includes the water surface of the Zambezi and the islands.</p> <p>Nyamepi sub-zone defined as a strip 250 metres south of the river between Muchuriri Lodge and the eastern end of the public campsite</p>						
<b>Existing Developments</b>	<p>5 ZPWMA Lodges (28 beds)                      1 Semi Permanent Camp (Vundu - 18 beds)                      2 Semi permanent camps on boundaries (Rukomechi and Chikwenya)                      3 Temporary Extended Special Campsites (36 beds)                      4 Operator Exclusive Campsites (48 beds)                      7 Public Exclusive Campsites (84 beds)                      3 Canoe Camps (36 beds)                      1 Public Campsite (174 beds)                      Total available beds Zambezi Zone and Nyamepi sub-zone = 438</p> <p>43 km “internal roads                      30 km boundary roads</p>						
<b>Proposed New Developments</b>	None						
<b>Permitted Activities</b>	<table border="0"> <tr> <td>Unescorted walking</td> <td>Canoeing</td> </tr> <tr> <td>Escorted walking</td> <td>Camping at designated sites</td> </tr> <tr> <td>Game drives</td> <td>Fishing</td> </tr> </table>	Unescorted walking	Canoeing	Escorted walking	Camping at designated sites	Game drives	Fishing
Unescorted walking	Canoeing						
Escorted walking	Camping at designated sites						
Game drives	Fishing						
<b>Notes</b>	This area includes the <b>Nyamepi Development Zone</b> . However, they are considered to be a single zone for the purposes of tourism development as all tourists using accommodation in the Nyamepi Development Zone (ZPWMA Lodges and the Public Campsite) will spend much of their time in the Zambezi Zone						



Figure 5: Zambezi Zone and Nyamepi Sub-zone



<b>NYAMATUSI ZONE: 189 km<sup>2</sup></b>	
<b>Rationale</b>	To provide a wilderness area with Zambezi river frontage
<b>Boundaries</b>	Starting at the mouth of the Chiruwe river it follows the river up to the “Middle Jesse Road”, then eastwards along that road to the Sapi river, then down the Sapi river to the international boundary, then westwards along the international boundary to the starting point. Includes the water surface of the Zambezi river and the islands (including Chikwenya island).
<b>Existing Developments</b>	No permanent or semi permanent sites Two identified campsites with no facilities (Ilala and on an island for canoeing) 25 km internal roads (mainly Sapi access road) 21 km boundary road
<b>Proposed Developments</b>	None
<b>Permitted Activities</b>	Unescorted walking Escorted walking Canoeing Overnight camping Walking trails Driving (mostly transit) by permit only
<b>Notes</b>	Chikwenya camp on the boundary with access rights

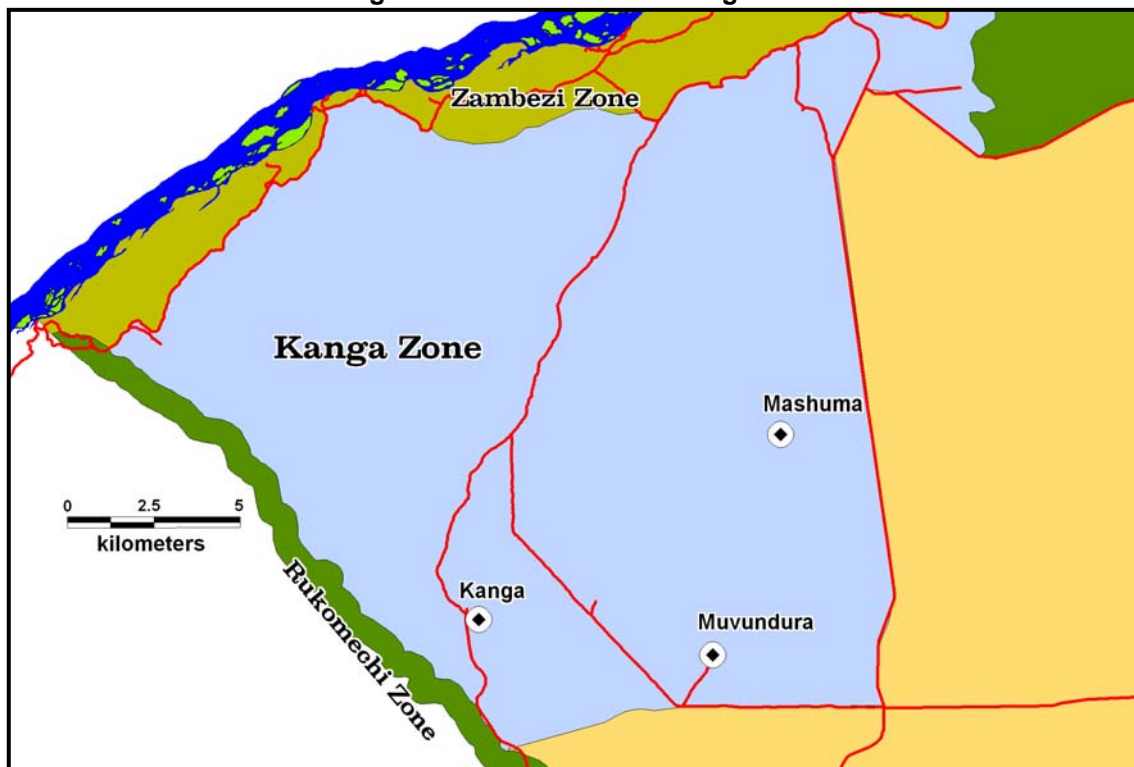
Figure 6: Nyamatusi Zone



<b>RUKOMECHI RIVER ZONE: 32 km<sup>2</sup></b>	
<b>Rationale</b>	Conservation of the Rukomechi riverine which also includes extensive stands of <i>Faidherbia albida</i>
<b>Boundaries</b>	365 metres on either side of the river (to match the Mana Pools boundary which extends 365 metres to the west of the river channel).
<b>Existing Developments</b>	None? Transit track to Dandawa airstrip Depending on where the boundary is the Nyakasikana Camp may be in this zone
<b>Proposed Developments</b>	None
<b>Permitted Activities</b>	Walking trails Overnight camping

<b>KANGA ZONE: 310 km<sup>2</sup></b>	
<b>Rationale</b>	Conservation of Jess and Mopane stands with associated pans
<b>Boundaries</b>	Zambezi zone to the north, Main access road and middle Jesse road to east Dandawa (Fourways) road in south, Rukomechi Zone to west
<b>Existing Developments</b>	Two airstrips (Mana and Mana West) 39 km internal roads; 56 km boundary roads
<b>Proposed Developments</b>	Small (12 bed) semi permanent camps at the following locations Kanga Pan (already allocated), Muvundura Pan and/or Mashuma Pan or seasonal use as an exclusive site?
<b>Permitted Activities</b>	Game Drives Walking Overnight camping
<b>Notes</b>	

Figure 7: Rukomechi and Kanga Zones



<b>CHIRUWE ZONE: 830 km<sup>2</sup></b>	
<b>Rationale</b>	Conservation of Jess and Mopane stands with associated pans. Maintenance of large wilderness area
<b>Boundaries</b>	Northern boundary is Middle Jesse Road Southern is Security Road Western is Access Road, Dandawa (Fourways) Road and Rukomechi Zone Eastern is park boundary
<b>Existing Developments</b>	Nyakasikana Gate Nyakasikana Training Camp 55km internal roads (includes Sapi boundary road) 50 km boundary roads
<b>Proposed Developments</b>	Sites at two areas with pans. Tentative locations shown on map below. Either small 12 bed tented camps or seasonal use as an exclusive site?
<b>Permitted Activities</b>	Walking Overnight Camping Game Drives Tented Camps
<b>Notes</b>	

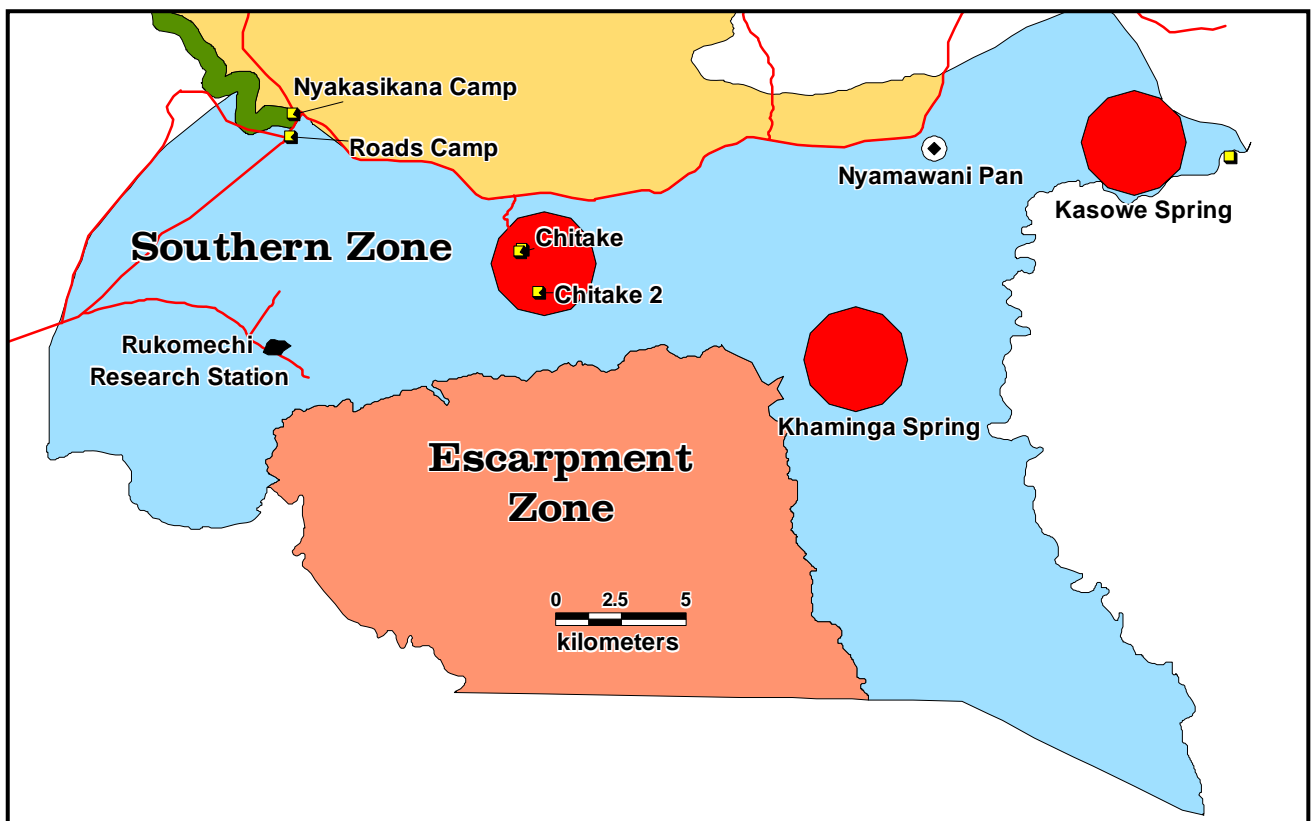
Figure 8: Chiruwe Zone





<b>SOUTHERN ZONE: 500 km<sup>2</sup></b>	
<b>Rationale</b>	Moderate utilisation and protection of varied vegetation types and streams found at escarpment base
<b>Boundaries</b>	Northern boundary is the “Security road” running from Nyakasikana Gate to Guruve The rest follows the boundary of the park south of the road but excludes the Escarpment Zone (the land above 600 m. asl between the Rukomechi and Chitake rivers)
<b>Existing Developments</b>	Rukomechi Research Station Roads Camp 25 km internal road 28km boundary road – the Security road An extensive road network around Rukomechi Research Station which needs to be defined
<b>Proposed Developments</b>	Roads? Possible joint venture with community/developer using Nyamawani pan or a site on the Rukomechi River. This site will NOT have Chitake Spring access
<b>Permitted Activities</b>	Walking and backpacking Game Drives Overnight camping
<b>Notes</b>	The Rukomechi Research Station pre-dates the park extension into this area in 1974. The station itself covers at least 1km <sup>2</sup> and there is a network of roads (some historical) throughout the area.

**Figure 9: Southern, Escarpment and Springs Zones**



<b>SPRINGS ZONE: 36 km<sup>2</sup></b>	
<b>Rationale</b>	To protect the permanent springs found close to the escarpment
<b>Boundaries</b>	2 km radius around the Chitake, Khaminga and Kasowe springs
<b>Existing Developments</b>	None Three identified campsites with no facilities near to Chitake
<b>Proposed Developments</b>	None? (Ablutions??) Relocation of campsites on north bank of river – under discussion
<b>Permitted Activities</b>	Camping at three designated sites (two public, one operator at Chitake only) Walking Game Drives
<b>Notes</b>	Chitake sites should be subject to a detailed on-site investigation Current strategy is not to do any development at Chitake sites Springs Zone is essentially an integral part of the Southern Zone

<b>ESCARPMENT ZONE: 225 km<sup>2</sup></b>	
<b>Rationale</b>	To conserve an representative section of the escarpment wilderness
<b>Boundaries</b>	Northern boundary is the 600 m contour line Western boundary is the Rukomechi River Eastern Boundary is the Chitake River Southern boundary is the Mukwichi boundary
<b>Existing Developments</b>	None Old fenceline along southern boundary??
<b>Proposed Developments</b>	None
<b>Permitted Activities</b>	Walking Overnight camping
<b>Notes</b>	

### 3.5 OBJECTIVES, TARGETS AND ACTIVITIES

Five management objectives have been described for the Tourism Programme. The objectives and their targets (summarised below) were defined after analysis of the threats, issues and concerns and the guiding principles. There is a text description of the components prior to presentation of the first three year action plan. Numbering in the text provides the linkage to the summary table and three year action plan.

**Objective 1: Tourism product is improved, expanded and diversified without degrading the quality of the Mana experience**

- |         |  |
|---------|--|
| Targets | 1.1 ZPWMA Tourist Facilities Improved<br>1.2 Camps established away from Zambezi<br>1.3 Tourist activities are diversified |
|---------|--|

**Objective 2: Management and administration of tourism improved**

- |         |   |
|---------|---|
| Targets | 2.1 Regulations for tourism activities and infrastructure developed and enforced<br>2.2 Tourism statistics collected, analysed accessible at Nyamepi<br>2.3 Citizen access promoted<br>2.4 Booking system improved<br>2.5 Fee issues resolved<br>2.6 Tourist-Wildlife conflicts addressed |
|---------|---|

**Objective 3: Educational and interpretive facilities, activities and materials developed**

- |         |   |
|---------|---|
| Targets | 3.1 Educational trips are a regular occurrence in Mana Pools<br>3.2 Improved information about the Park available |
|---------|---|

**Objective 4: Regional linkages initiated and enhanced**

- |         |   |
|---------|---|
| Targets | 4.1 Linkages with Zambia established<br>4.2 Linkages with other Zimbabwean protected areas consolidated |
|---------|---|

**Objective 5: Marketing of Mana and Lower Zambezi Improved**

- |         |  |
|---------|--|
| Targets | 5.1 Internet marketing improved<br>5.2 Coordinated marketing with private sector |
|---------|--|

**Objective 1: Tourism product is improved, expanded and diversified without degrading the quality of the Mana experience**

Mana Pools is a relatively large park but suffers from a problem common to many parks. The key attractions focus tourists and the demand for tourism facilities into a relatively small part of the area. In the case of Mana Pools this is the riverine area and, more specifically, the alluvial plains with *Faidherbia albida* forests which represents around 5% of the park. Demand is also high for the Chitake Springs site as it provides a unique wildlife experience. High demand and use places pressure on the resources and can also degrade the tourist experience. A key element of this plan will be to limit developments in these tourism focal points and to encourage use of other parts of the park.

New activities will be permitted which will allow Mana to improve its income, especially in the wet season. These include wet season motor boat access and expanded walking opportunities.

**Target 1.1: ZPWMA Tourist Facilities Improved**

- 1.1.1 The ZPWMA maintains five lodges to the west of the Nyamepi headquarters with a capacity of 28 beds. These lodges have been very popular and occupancies have been consistently high, especially as they are accessible during the rainy season. Unfortunately, owing to the current economic situation in Zimbabwe, maintenance has been difficult and the facilities are not in prime condition. In recent years the Authority has not been able to supply gas or firewood for cooking and heating of water. In addition, primates are a continual problem as they destroy the roofs, scatter litter, steal food and mess the furnishings. There is an urgent need for refurbishment and ongoing maintenance of the lodges so that they remain attractive and competitive, as the Authority is in competition with private sector facilities along the river as well.
- 1.1.2 Currently management of the lodges falls directly under senior management – either the Area Manager or the Senior Wildlife Officer. They direct the lodge attendants but responsibility falls to the two senior managers. This situation is unsatisfactory as these key staff often have other, more pressing duties. In the past someone in middle management was entrusted with the responsibility for maintaining the public face of the Authority to tourists and perhaps this system should be reinstated.
- 1.1.3 Waste disposal needs to be improved from the park. Tourists bring in their food to the lodges, exclusive and public campsites and the Authority is expected to deal with the waste resulting from it. There are “animal proof” bins at the Nyamepi campsite but these need to be repaired to ensure that they fulfil their function. In addition, similar bins need to be constructed in the vicinity of the lodges. Currently waste is disposed of in pits which is unsatisfactory. The Nyamepi campsite also has an incinerator but its capacity needs to be expanded. Similarly an incinerator needs to be established in the vicinity of the lodges. As a longer-term solution the park regulations should be amended and visitors should be required to remove their hard waste from the park. Enforcement of this will be difficult but it is believed that many visitors are environmentally aware and would do this if asked. To assist with this simple can crushers should be designed and installed to make the waste package as small as possible. Hyena are notorious for raiding campsites and stricter controls need to be put in place to limit this type of behaviour. Consideration should be given to fining tourists who leave food out.
- 1.1.4 A fuelwood alternative needs to be sourced. Currently the Authority does not have enough diesel to collect wood for tourists, as was done in the past. And should the tourism industry expand, the demand for fuelwood may not be compatible with the environmental concerns facing the park. As with the litter, the public should be made aware of the problem and be requested to bring wood in from outside or to use gas as much as possible. This problem is also related to Objective 1 under the Park Operations Programme.



**Target 1.2: Camps established away from Zambezi**

- 1.2.1 A key concept under the Tourism Programme is to spread the tourist load inland and away from the Zambezi. The process is already underway and the Kanga Pan site has been allocated and a borehole successfully drilled. However, the lease and environmental assessment carried out for this site are unclear and unsatisfactory. The lease (as is common with other ZPWMA leases) refers to a map which is not attached. The text doesn't specify an exclusive zone and a number of other issues in it need to be clarified. In addition, the ownership of the borehole needs to be clarified.
- 1.2.2 This plan advocates the designation of several more sites in the Kanga, Chiruwe and Southern zones to be used as tourist sites by registered operators. The nature of the developments at these sites has not been finalised and a lot depends on the availability of water. In the initial stages perhaps small eight or ten bed camps could be established that bring water in by bowser. Another possibility is that the sites become exclusive campsites and their use is rotated. They could be booked for periods of longer than 21 days? The modalities of the agreements need to be established during the trial period. Access routes into the selected sites would need to be opened after due environmental consideration.
- 1.2.3 A community site will be designated in the Southern Zone. Site possibilities include Nyamawani pan and the Rukomechi River. The lease of the site will be negotiated with the Hurungwe Rural District Council or leaders in the Mukwichi Communal Land. This site should be a joint-venture in which the lease holder will go into a partnership with a reputable operator for the appropriate development of the site. The Nyamawani site is expected to link into walks to and from the Mukwichi Communal Land. Cultural safaris, which include horseback and walking, could be explored in the Mukwichi Communal Land. It should be noted that any site in the Southern Zone would NOT be permitted to use the Chitake Spring as one of its attractions. Game drives and activities would need to be established away from the spring.

As with any of the sites away from the Zambezi river the provision of water for both wildlife and humans would need to be properly established and monitored. This is important in the case of year-round provision of water for wildlife in supplemented pools. All supplemented water points need to have a monitoring programme and the Authority must have the power to stop pumping into these points if deemed necessary. This will be especially important if an operator now starts relying on the wildlife attracted to the supplemented water point.

**Target 1.3: Tourist activities are diversified**

- 1.3.1 Mana Pools offers a unique opportunity to develop both escorted and unescorted walking safaris in wilderness areas and overnight walking safaris will be promoted. There are vast unutilised areas in the park walks which range from alluvial river frontage along the Zambezi to miombo woodland in the escarpment areas. Walks will be permitted in all zones and would be experimental in the initial stages. However, all equipment and food must be carried in and vehicles will not be permitted to supply the camps in any way. Fees for these camps will be charged as if they are exclusive campsites. All trips would need to be undertaken either with ZPWMA staff or with licensed guides, and the Authority currently offers this type of safari during the full-moon periods, both at the base of the scarpment and in the Nyamatusi Zone.
- 1.3.2 Another variant on the walking safaris discussed above are backed-up walking safaris. In this case the safari carries very little equipment and the camp is serviced at night by vehicle. It is very important that camp sites are chosen with care should this type of activity be permitted as vehicles will need to access these sites and the roads may become more permanent than initially expected. A trial of this type of safari was successfully carried out in 2009 and it has the potential to become a more permanent part of the activities on offer.

- 1.3.3 Wet season motor boat access to parts of the Zambezi River in the park will be permitted, initially on a trial basis. Boats will be permitted to launch at Nyamepi between the 1<sup>st</sup> November and the last day of February. Access will be allowed between Nyamepi and the Sapi River. No motor boats will be permitted upstream of the Nyamepi Campsite.
- 1.3.4 It is important that this management plan does not become too prescriptive and start closing the door on new activities. Ideas for activities which do not erode the character of the park, and which can be monitored and controlled should be considered on their individual merits and carried out first on a trial basis. If successful then consideration should be given to allow them to become part of the mainstream activities which can then be properly costed and charged for.

## **Objective 2: Management and administration of tourism improved**

Tourism is the engine for the economic survival of the park, given the authorities mandate to become financially self sufficient. Management and administration of tourism needs to be efficient and fair to ensure that the environment is conducive towards ensuring that the tourist businesses survive. But it also needs to ensure that sufficient revenues are collected to be able to run the park effectively.

### **Target 2.1: Regulations for tourism activities and infrastructure developed and enforced**

- 2.1.1 The Temporary Extended Tented Camp is a category of accommodation that has evolved in Mana Pools and currently only one operator has made a success of this. The sites are issued on an annual basis and all trace of the camp must be removed by November each year. The procedure for allocation, tenure and detailed lease conditions need to be defined by the Authority. A longer period of allocation will allow more investment although the camps must still be removed annually to ensure that they do not develop into permanent sites. Also, at present, the ZPWMA makes its money on these camps on tourist throughput rather than from lease fees so it may be advisable to set minimum occupancy rates to stop a site being taken and then being non-operational. It may also be advisable to set minimum standards for these operations.
- 2.1.2 The original Vundu camp lease specifies an exclusive zone of 5km around the camp. However this is in conflict with existing structures and access routes. The current operator recognises this and is not claiming the exclusive zone defined in the lease. However, the lease could be sold and the situation then change. It is important that this issue is resolved legally.
- 2.1.3 The newly issued lease for Kanga Pan is unclear on several aspects. This will make it difficult for park management to ensure that the operator abides by the lease. These issues should be resolved as a matter of priority.
- 2.1.4 Mana Pools has a set of standing regulations made in respect of Section 41 of the Parks and Wildlife (General) Regulations which permits the Authority to make regulations that are park specific. In the case of Mana Pools important ones include no generators, no powerboats and the permission to walk. These need to be revised to include the removal of hard waste from the park and the proper disposal of paper and plastics in the incinerator.

In addition, a suite of regulations aimed at ensuring protection of the resource and the smooth running of tourism also need to be defined, circulated and enforced. These include regulations for extended temporary camps, exclusive camps (and specifically Chitake), overnight walking and canoeing. An overall set of guidelines for wise use of the environment has been developed by the Zambezi Society and this should be adopted and distributed to tourists and operators.

The standing regulations and other activity and accommodation specific regulations and codes mentioned above are shown below.

### **Mana Pools Standing Regulations (Revised)**

- Please drive only on graded roads. Driving off roads is strictly prohibited, especially up to lion kills
- Leaving vehicle and walking is permitted where safe
- All plants, animals and soils are protected and cannot be collected. This includes firewood, insects, including butterflies and animal remains
- Fires are permitted only in designated braai stands
- Please refrain from littering in the National Park. Incinerators are located at the Nyamepi Campsite
- All non-biodegradable rubbish is to be removed from the park. Can crushing sites are available at the Nyamepi Campsite
- Please avoid behaviour likely to disturb wildlife or people
- Powerboats may not be used in the park. Canoes are permitted
- Feeding of animals is prohibited
- Generators/Lighting plants are not permitted
- No radios, tape players etc should be used
- Please be in your camp or lodge during prescribed hours. From May to July these hours are 6:00 pm to 6:00 am and from August to October 6:30 pm to 6:00 am
- Persons disobeying Parks and Wildlife Regulations will be prosecuted and banned from the Park

### **Regulations for Temporary Extended Camps**

- Camps can only be erected after the 1<sup>st</sup> April
- All traces of the camps must be removed by the second week of November each year
- No generators
- Flush toilets and soakaways permitted
- Layout of the camp to be discussed on station with Park Management prior to establishment
- Silent solar powered pumps can be used to pump water to tanks

### **Chitake Code**

- No driving in river bed or off road. Ideally vehicles should only be used for entry and exit to the sites
- No camping except at designated sites
- No bathing/washing in spring water
- Wildlife to given right of passage (and to drink)
- No music or other unnatural noise
- All litter to be removed. Nothing must be buried
- Chemical toilets to be used if possible
- No feeding of wildlife
- Spotlight use for emergencies only. No direct beams into animal's eyes.
- No day visits permitted. Access only for those who have camping reservations

### **Regulations for Exclusive Camps Used by Tour Operators on Zambezi River**

- No camp to be up for over 7 days
- Maximum of two vehicles per camp
- No generators
- Chemical toilets to be used, if possible
- Camp layout must be centered around existing braai areas (Mess area, kitchen, campfire) and care must be taken to ensure that the footprint is kept small

### **Regulations for Canoe Safaris**

- No-one to walk unescorted more than 100 metres from the campsite
- All litter to be removed
- All toilet paper to be burnt
- Site only be occupied for one night

### **Regulations for mobile “backed-up” overnight camps**

- All trips need to be cleared at Nyamepi
- Only previously agreed sites with agreed access routes may be used
- All sites to completely cleared of all habitation traces after the safari
- On completion of trip a written report will be given to the office at Nyamepi

### **Regulations for unescorted walking**

- Walking only in floodplain area defined on map at office. Permits for other areas may be considered by the Park office.
- Only within 2km of Chitake spring
- Only during 6:00 am and 6:00 pm (May-July) and 6:00 and 6:30 pm (Aug-April). It should be noted that these hours do not conform to sunrise and sunset and perhaps this should be used instead?

### **Regulations for wet season boating**

- Boats can only be launched at Nyamepi
- 60 hp maximum
- 4 rods maximum
- Only between Nyamepi and Sapi river mouth
- Only between 6am and 6pm
- Only between 1<sup>st</sup> November and last day in February

### **Main Components of the Respect the Wild Code**

1. Plan ahead
2. Minimise tracks
3. Choose campsites carefully (in Mana sites will be defined by ZPWMA)
4. Remove all litter and food
5. Manage waste properly
6. Be careful with fires
7. Leave nature natural
8. Give way to wildlife
9. Enjoy peace and solitude

- 2.1.5 Guidelines for the construction of semi-permanent camps and the conduct of environmental assessments on these developments should be created. This could be done for all structures in the Parks and Wildlife Estate, rather than for Mana Pools alone.
- 2.1.6 Promotion of catch-and-release fishing as carried out on the Zambian side in the Lower Zambezi National Park. At first this will be on a request basis but it may be necessary to make it a standing regulation that can be enforced in the future. Draft regulations are shown in the Appendices.
- 2.1.7 Concerned members of the public should be encouraged to report other park users breaking the regulations and engaging in inappropriate behaviour, given the limited staff presence on the ground at present. This includes off-road driving, harassment of wildlife, littering, noise (including generators) etc.

### **Target 2.2: Tourism statistics collected, analysed accessible at Nyamepi**

- 2.2.1 The collection and analysis of tourism statistics needs to be improved. This will allow more informed decisions to be taken regarding the state of tourism within the park. At present tourists can book almost anywhere to come to Mana Pools. They can book and pay at Marongora, Victoria Falls, Kariba, Harare etc and this data does not feed back into the Mana databases. It makes analysis of the statistics difficult.

Current analysis of lodge occupancies is based on beds rather than lodges. As the lodges are sold as a unit any analysis of the success of the accommodations should be based on sales of lodges rather than beds.

- 2.2.2 In addition, data on canoeing and vehicle use, especially during peak season should be collected and analysed.

### **Target 2.3: Citizen access promoted**

- 2.3.1 Citizen access to the park will be promoted through keeping entry and camping fees low. The current economic situation and the necessity for the ZPWMA to be financially self-sufficient makes it difficult for the Authority to subsidise lodge style accommodation within the park. Currently the Authority is adjusting its fees both upwards and downwards and it is expected that a level will be reached that will both encourage tourists and ensure a fair return to the Authority.

### **Target 2.4: Booking system improved**

2.4.1 Current booking protocols for Tour Operators using Mana Pools are as follows and these should be enforced.

- Five packs minimum to be paid on each booking to stop speculation on dates
- Maximum of six nights per site on the Zambezi River
- Maximum of three nights per site at Chitake Spring
- All sites to be booked at HQ in Harare to stop confusion and double bookings

In addition, it has been suggested that there should be a minimum fee for the exclusive campsites. At present if a single person uses an exclusive campsite it earns \$8 whereas it has the potential to earn close to \$100 for the same night.

2.4.2 The booking system needs to be improved. Part of the problem is the poor communication system between the Harare HQ and Nyamepi. Improved communications falls under the Park Operations programme and this, if implemented, should help the booking system.

2.4.3 Booking office staff should undertake trips to the park and the sites to ensure that they are fully conversant with the products that they are selling.

2.4.4 Currently there are numerous complaints about the lodges from tourists. Most of these centre around the poor information available. Visitors are not told that there is no gas and about the state of some of the lodges (for example). Until the situation is resolved information sheets should be given to visitors at the Harare booking office so that they can plan accordingly (by bringing their own gas or firewood, for example)

### **Target 2.5: Fee issues resolved**

2.5.1 Canoeists do not pay camping fees for sleeping on the islands in the Zambezi and Nyamatusi zones. The fees for camping are included in the launch fee, mainly for administrative and fee collection reasons. However, the launch fee needs to reflect the true value for the use of the park. In addition, no income accrues to Mana Pools National Park from long-haul canoe safaris, although the fees are collected at Marongora and reflect for the Safari Area income.

### **Target 2.6: Tourist-wildlife conflicts addressed**

2.6.1 Given that Mana Pools is a wilderness area and home to a large number of potentially dangerous animals there is bound to be "conflict" between tourists and wildlife. In its most benign form this is seen as primates stealing food but a number of deaths from elephants, crocodiles and buffalo are on record. As canoe safaris become more popular aquatic wildlife such as crocodiles and hippos become more familiar and the potential for dangerous or fatal incidents increases. Currently a "scare tactic" for crocodiles is undertaken at the beginning of each season and this seems to be working. Other animals such as hyena, lion and elephants become familiar and steps need to be taken to discourage them.

2.6.2 Education of the "walking public" will go a long way to reducing the number of incidents and visitors should be informed.

2.6.3 However, it is likely that there will be fatalities and management needs to develop an appropriate response to these, which may include taking the decision to remove animals.

### **Objective 3: Educational and interpretive facilities and activities developed**

In keeping with the objectives for the Parks and Wildlife Estate, as outlined in the Wildlife Policy, education and interpretation are important functions for protected areas.

#### **Target 3.1: Educational trips are a regular occurrence in Mana Pools**

3.1.1 Although some schools undertake visits to Mana Pools it is not a suitable destination for day trips, given its remoteness from population centres. On occasions the school children have had to sleep at Nyamepi without proper bedding and shelter and food was also a problem. School visits should be promoted but they need to be properly catered for. One option is to negotiate with the Veterinary Department for use of the Facilities at the Rukomechi Research Station. The Station is about two hours from the floodplain which would allow school visitors to explore the alluvium and still have shelter for the night. An educational programme aimed at schools in the area needs to be undertaken to ensure that the trips are properly equipped with bedding and food. Guidelines should be drawn up and issued to all schools who wish to visit Mana Pools.

An issue associated with school visits is the restriction on vehicles over 3 tonnes entering National Parks and this needs to be addressed, even if it is just the facilitation of permits for unusual entry of these vehicles.

3.1.2 Links with environmental organisations with an educational component should be established. An obvious one is the Wildlife Society of Zimbabwe but others should also be identified.

3.1.6 Other educational activities that should be encouraged are those promoting team-building and leadership skills. These include groups such as Outward Bound and the Mindfulness Foundation of Zimbabwe. These organisations should be encouraged to make use of the less congested zones such as Nyamatusi, Kanga and Chiruwe.

3.1.7 Senior school trips that undertake small research projects should also be encouraged, as was done in the 1970s and 1980s. The establishment of an information centre close to the Nyamepi HQ may provide an opportunity for a merging of purpose and the site could provide this accommodation for this type of user (see Target 3.2).

3.1.8 Research trips from Zimbabwean universities should also be encouraged and links established with organisations such as the Tropical Research Ecology Programme which is housed in the Department of Biological Sciences at the University of Zimbabwe.

#### **Target 3.2: Improved information about the Park available**

3.2.1 Interpretation of the Mana ecosystem is an important component to enhance visitor appreciation for the area. Currently there are few materials available for the visitor, the notable exception being the leaflet produced by the Zambezi Society. The most recent reprint of this document is on sale at the office in Nyamepi and was funded by Wilderness Camps of Zimbabwe. This initiative should be updated and funds sought for future reprints.

A sheet with information specifically regarding the dangers of walking in an area such as Mana Pools needs to be produced and given to all visitors. In the short-term the problems associated with printing of such sheets may be circumvented by clearly displaying this information in both the visitor centre and tourist office. Unescorted walking has the potential to develop into a management problem when visitor numbers improve.



- 3.2.2 A separate brochure should be compiled for Chitake and be sold to tourists at the Nyakasikana Gate
- 3.2.3 The Surveyor General sells a map of the park based on satellite imagery. This map is an important resource for visitors and copies should be on sale in Mana. Negotiations with the Surveyor General should be initiated to ensure that the data on the map is correct and that it will incorporate information about the management plan.
- 3.2.4 Nyamepi should have an interpretation centre with informative displays and information. Information about the dangers of walking should be prominently displayed. All visitors should be encouraged to make a trip to the centre before they start out on unescorted walks. The centre should also contain information about the fossil site in the park (which does not disclose the location). Maps of the park should be produced and displayed in the Nyamepi offices, the interpretive centre and at Nyakasikana Gate.

#### **Objective 4: Regional linkages initiated and enhanced**

Mana Pools is at the centre of a network of protected areas and a key component of this plan will be to initiate and enhance linkages with the adjacent protected areas, both within Zimbabwe and regionally.

##### **Target 4.1: Linkages with Zambia established**

- 4.1.1 Zambia and Zimbabwe are on the verge of signing a Memorandum of Understanding for a middle Zambezi trans-frontier protected area. Once this has been done it will give formal approval for increased collaboration between the Zambian Wildlife Authority (ZAWA) and the Zimbabwean PWMA.
- 4.1.2 There are a number of issues directly dealing the management of Mana Pools that need to be discussed. Some of these reflect the different style of management and control on both sides of the border. For example, fishing with nets is permitted in the Chiawa GMA which shares the river with Mana Pools National Park. Tourism development and the use of motor boats is uncontrolled in the Chiawa GMA and controlled use is permitted in the Lower Zambezi National Park. From the Zambian perspective hunting is permitted in land abutting onto the Lower Zambezi National Park. Communications already exist between ZPWMA and ZAWA management staff and these need to be pursued, perhaps more formally. In addition links with Zambian tour operators and the NGO, Conservation Lower Zambezi.
- 4.1.3 Apart from the more formal channels of communication between the two governments there should be mechanisms to allow cooperation between the management staff of the two national parks and also between other areas. For example the fish netting issue could be raised with Chieftainess Chiawa, who is the authority for the Chiawa GMA..
- 4.1.4 Informal communications have recently been established between tour operators on both sides of the river. The possibility of true transborder tourism could be the outcome – where Zambian operators can access Mana Pools through an established Zimbabwean tour operator. The modalities of this would need to be established with regard to customs and immigration. Another pitfall would be that Zambian operators become established as Zimbabwean tour operators and hence the arrangement does not benefit the local operators. All of these issues would need to be formalised before such a venture becomes a reality.



**Target 4.2: Linkages with other Zimbabwean protected areas consolidated**

Mana Pools is bordered by hunting areas in Zimbabwe. The Sapi and Nyakasanga areas are sold as time based hunts to the general public, usually in 10 and 14 day blocks. There are reports that many of the hunts are bought by commercial hunting companies and then run as part of their normal hunting operations. In the escarpment areas the hunting blocks (Chewore South and Makuti) are auctioned to safari companies, usually for a five year period. An arrangement between the Hurungwe RDC and the ZPWMA allows part of Chewore South to be sold as part of a CAMPFIRE block for Mukwichi.

There is little information on the importance of Mana Pools as a reservoir to support hunting in its adjacent areas, but it is believed that this does happen, especially with lion, buffalo and elephant. There have been records of hunters coming into the park and claiming poor knowledge of the boundaries if caught.

A photographic camp has been established in the Sapi Safari Area, right on the Mana boundary.

- 4.2.1 There is a potential for use of the safari areas by photographic tourists. The Authority has established fishing camps on the river in the Chewore Safari Area and these are used by fishermen out of the hunting season. It may be possible to allow use of the riverine by photographic tourists and this possibility should be investigated.
- 4.2.2 In the longer term, perhaps the ZPWMA should consider the expansion of Mana Pools National Park. However, this would depend on their being a substantial recovery in the tourism industry. The environmental cost of bag hunts needs to be investigated. Quota and utilisation data needs to be analysed objectively. In addition, the economics of the bag hunting system needs to be compared with photographic tourism. Finally, the possibility of a wider planning process that takes into account all of the Zambezi valley protected areas needs to be initiated.

**Objective 5: Marketing of Mana Pools and Lower Zambezi improved**

Mana Pools National Park is well known by operators throughout the region but until recently there was no co-ordinated marketing approach. Marketing of the park and the lower Zambezi valley a whole needs improvement.

**Target 5.1: Internet marketing improved**

- 5.1.1 The ZPWMA maintains a website (<http://www.zimparks.com>) which contains information about all parks in Zimbabwe. The fees are also posted on this site at intervals. Overall the site material is good, although some is outdated.

**Target 5.2: Coordinated marketing with private sector**

- 5.2.1 A recently established website <http://www.wildzambezi.com> is described as being “an independent, non-profit association which promotes travel opportunities to the wild areas of the Zambezi River and Lake Kariba, including the Matusadona National Park and Mana Pools World Heritage Site. Its partners are travel companies offering a variety of activities, accommodation, tours or services in this magnificent and safe destination. Wild Zambezi provides web-based, up-to-date information and a reliable, independent travel advisory service”. The information on the site is only for the Zimbabwean side and moves should be made, through the spirit of the Transfrontier Conservation Agreement to include marketing of the whole area. Park management should cooperate with these private sector initiatives

In addition, it may be worthwhile to investigate the possibilities of a similar website that focuses specifically on the Zambezi Valley below Kariba.

**Table 20: Summary and Three Year Activity Plan - TOURISM PROGRAMME**

**OBJECTIVE 1: TOURISM PRODUCT IS IMPROVED, EXPANDED AND DIVERSIFIED WITHOUT DEGRADING THE QUALITY OF THE MANA EXPERIENCE**

Targets	ACTION	Activities	Responsibility	Priority	Timeline - Quarters												Notes		
					2010				2011				2012						
					1	2	3	4	1	2	3	4	1	2	3	4			
<b>1.1:ZPWMA Tourist Facilities Improved</b>	1.1.1: Ongoing refurbishment and maintenance of lodges	Painting schedule formulated and carried out																	
		Furnishings upgrade																	
		Primate proofing programme																	
		Fuel/Gas supplies assured																	
	1.1.2: Management person for lodges	Post created																	
		Person appointed																	
	1.1.3 :Waste disposal improved	Repair of Nyamepi animal proof bins																	
		Construction of animal proof bins at lodges																	
		Expansion of Nyamepi incinerator																	
		Construction of lodge area incinerator																	
		Visitors requested to remove hard-waste from park																	
	1.1.4: Wood fuel alternative sourced	Can crushers installed																	
		Leaflets explaining problems of using wood																	
	<b>1.2: Camps established away from Zambezi</b>	1.2.1: Kanga Pan established	Gas and firewood to be brought in?																
Site established by leaseholder (see also 2.1)																			
1.2.2: Other Kanga and Chiruwe sites established on a trial basis		Investigations of sites																	
		Definition of what camps will be (water etc)																	
	Access routes established																		
	Public tender process if tented camps proposed																		

**Table 20: Summary and Three Year Activity Plan - TOURISM PROGRAMME**

**OBJECTIVE 1: TOURISM PRODUCT IS IMPROVED, EXPANDED AND DIVERSIFIED WITHOUT DEGRADING THE QUALITY OF THE MANA EXPERIENCE**

Targets	ACTION	Activities	Responsibility	Priority	Timeline - Quarters												Notes	
					2010				2011				2012					
					1	2	3	4	1	2	3	4	1	2	3	4		
	1.2.3: Community site established in Southern Zone	Site investigation with relevant community representatives																
		Modalities of type of community involvement resolved																
		Drafting of lease conditions etc																
<b>1.3: Tourist activities diversified</b>	1.3.1: Wilderness walking safaris facilitated	Areas and routes for this activity defined																
		Regulations finalised and circulated																
	1.3.2: "Backed-up" walking safaris facilitated	Camp sites and access routes to be finalised																
		Monitoring of sites																
	1.3.3: Wet season motor boat access permitted	Trial motor boat access permitted between Nov and Feb. Only between Nyamepi and Sapi river																
	1.3.4: Consideration of trials for new types of tourist activity	Active consideration of proposals which are put to the Mana Pools office.																

**Table 20: Summary and Three Year Activity Plan - TOURISM PROGRAMME**

**OBJECTIVE 2: MANAGEMENT AND ADMINISTRATION OF TOURISM IMPROVED**

Targets	ACTION	Activities	Responsibility	Priority	Timeline - Quarters												Notes		
					2010				2011				2012						
					1	2	3	4	1	2	3	4	1	2	3	4			
<b>2.1: Regulations for tourism activities and infrastructure developed and enforced</b>	2.1.1: Temporary Extended Campsites formalised	Lease, allocation, tenure and standards problems resolved																	
	2.1.2: Vundu Lease issues resolved	Negotiations with lease holder over exclusive area																	
	2.1.3: Kanga Pan Lease issues resolved	Negotiations with lease holder regarding several aspects of this lease																	
	2.1.4: Tourist activity codes and regulations finalised and disseminated	Respect the Wild Code updated and adopted																	
		Other codes finalised and distributed																	
	2.1.5: Building guidelines and EIA Standards compiled	Liaison with planning effort for other parks to develop ZPWMA standards																	
	2.1.6: Promotion of a "catch-and-release" Policy for fishing	Regulations defined and fishing public made aware																	
2.17: Encouragement of visitors to report regulation contraventions	Action taken on reports received																		
<b>2.2: Tourism statistics collected, analysed accessible at Nyamepi</b>	2.2.1: Improved collection and analysis of existing statistics	Regular collection of relevant Marongora data to include canoeing statistics																	
		Regular collection of relevant Head Office data																	
		Revise analysis to reflect lodge occupancy rather than bed occupancy																	

**Table 20: Summary and Three Year Activity Plan - TOURISM PROGRAMME**

<b>OBJECTIVE 2: MANAGEMENT AND ADMINISTRATION OF TOURISM IMPROVED</b>																	
Targets	ACTION	Activities	Responsibility	Priority	Timeline - Quarters												Notes
					2010				2011				2012				
					1	2	3	4	1	2	3	4	1	2	3	4	
	2.2.2: Collection and analysis of new statistics	Vehicle use on main roads in especially during peak periods															
<b>2.3: Citizen access promoted</b>	2.3.1: Fees periodically revised	Analysis of market forces															
<b>2.4: Booking system improved</b>	2.4.1: Booking protocols enforced and revised if necessary	Check on site use and permits															
	2.4.2: Improved communications HQ- Nyamepi	Related directly to Park Operations															
	2.4.3: HQ booking office staff to visit Mana	Annual visits? To ensure staff know what they are selling															
	2.4.4: Information sheets for visitors	Sheets reflecting lodge/campsite situation & regulations issued at HQ															
<b>2.5: Fee issues resolved</b>	2.5.1: Canoeing fees revised																
<b>2.6: Tourist-wildlife conflicts addressed</b>	2.6.1: Familiar wildlife discouraged	Croc scare exercise, other methods															
	2.6.2: Education of public of dangers	Fact sheets for walkers, interpretive centre															
	2.6.3: Appropriate reaction to fatal incidents	Protocols developed for different species – e.g. crocs, elephants, lions															

**Table 20: Summary and Three Year Activity Plan - TOURISM PROGRAMME**

**OBJECTIVE 3: EDUCATIONAL AND INTERPRETIVE FACILITIES AND ACTIVITIES DEVELOPED**

Targets	ACTION	Activities	Responsibility	Priority	Timeline - Quarters												Notes		
					2010				2011				2012						
					1	2	3	4	1	2	3	4	1	2	3	4			
<b>3.1: Educational trips are a regular occurrence in Mana Pools</b>	3.1.1: School trips promoted	Accommodation for school groups at Rukomechi agreed with Min. Agriculture																	
		Active dissemination of information to local schools through printed material and visits																	
		Issues regarding entry of school buses resolved																	
	3.1.2: Links with educational programmes established	Links with Wildlife Society of Zimbabwe																	
		Other possibilities explored																	
	3.1.3: Outward Bound style groups promoted	Legal aspects investigated																	
		Identification of areas that could be used for this type of activity																	
	3.1.4: School research trips encouraged	Liaison with interested schools																	
		Research ideas and protocols discussed																	
	3.1.5: Tertiary educational research trips encouraged	Links with appropriate institutions																	
<b>3.2: Improved information about the Park available</b>	3.2.1: Information leaflets available	Upgrade and reprinting of Zambezi Society information																	
		Leaflets available at Nyamepi and Nyakasikana																	
		Information about unescorted walking available																	

Table 20: Summary and Three Year Activity Plan - TOURISM PROGRAMME																	
OBJECTIVE 3: EDUCATIONAL AND INTERPRETIVE FACILITIES AND ACTIVITIES DEVELOPED																	
Targets	ACTION	Activities	Responsibility	Priority	Timeline - Quarters												Notes
					2010				2011				2012				
					1	2	3	4	1	2	3	4	1	2	3	4	
	3.2.2: Park maps available	Correction and reprinting of Surveyor General Mana Map															
		Maps available for sale at Nyamepi and Nyakasikana															
	3.2.3: Interpretive centre established at Nyamepi	Design, funding and building of centre. See also possibility of joining with tourist office (Park Operations Programme; Obj. 1)															
		Interpretive displays housed in facility															



**Table 20: Summary and Three Year Activity Plan - TOURISM PROGRAMME**

**OBJECTIVE 4: REGIONAL LINKAGES INITIATED AND ENHANCED**

Targets	ACTION	Activities	Responsibility	Priority	Timeline - Quarters												Notes	
					2010				2011				2012					
					1	2	3	4	1	2	3	4	1	2	3	4		
<b>4.1: Linkages with Zambia established</b>	4.1.1: MoU collaboration	Definition of Transborder area																
	4.1.2: Links to Zambian field management improved	Regular cross-border meetings																
	4.1.3: Links to other Zambia authorities established	Links with Chieftainess Chiawa																
		Links with Kafue Council																
	4.1.4: Links to other Zambian stakeholders	Discussions with Zambian tour operators on issues of mutual concern																
		Contact with the NGO Conservation Lower Zambezi																
<b>4.2: Linkages with other Zimbabwean protected areas consolidated</b>	4.2.1: Investigation of possible use of parts of Safari Areas for photographic activities	Study of possible separation of hunting and photographic activities in safari areas																
	4.2.2: Possibility of Mana Pools extension investigated? Buffer areas?	Environmental costs of hunting																
		Economics of hunting versus photographic																
		Wider planning process which includes Safari Areas initiated																

**Table 20: Summary and Three Year Activity Plan - TOURISM PROGRAMME**

**OBJECTIVE 5: MARKETING OF MANA AND LOWER ZAMBEZI IMPROVED**

Targets	ACTION	Activities	Responsibility	Priority	Timeline - Quarters												Notes
					2010				2011				2012				
					1	2	3	4	1	2	3	4	1	2	3	4	
<b>5.1: Internet marketing improved</b>	4.2.1: ZPWMA site updated	Regular input into information available on the site															
<b>5.2: Coordinated marketing with private sector</b>	4.2.2: Cooperation with private sector initiatives	Meetings with website designers and promoters															

## 3.6 ENVIRONMENTAL IMPACTS AND MITIGATION

This section provides a brief summary of the possible environmental effects of some of the activities and developments that will be carried out by this programme. Possible mitigation measures are also outlined. All major developments such as roads and camps must have an environmental assessment.

**Table 21: Mitigation measures for the Tourism Programme**

Development/Activity	Potential Impact	Mitigation Measure
Improved waste disposal	<ul style="list-style-type: none"> <li>• Fewer problem animals</li> <li>• Improved aesthetics</li> </ul>	<ul style="list-style-type: none"> <li>• Maintenance of facilities</li> </ul>
Inland camps established	<ul style="list-style-type: none"> <li>• Reduction of pressure on Zambezi river</li> <li>• New access routes</li> <li>• Water provision issues</li> <li>• Control issues</li> </ul>	<ul style="list-style-type: none"> <li>• Careful siting of access routes with an EIA</li> <li>• Monitoring of all supplemented water points</li> <li>• Regular visits and monitoring of inland camps</li> </ul>
River wilderness maintained	<ul style="list-style-type: none"> <li>• Compression of tourism into Zambezi Zone with reduced enjoyment</li> </ul>	<ul style="list-style-type: none"> <li>• No more facilities to be established</li> </ul>
Wet season boating	<ul style="list-style-type: none"> <li>• Erosion of wilderness value of Nyamatusi zone</li> <li>• Fishing impacts</li> </ul>	<ul style="list-style-type: none"> <li>• Catch-and-release policy</li> <li>• Numbers limited if necessary</li> </ul>
Educational facilities established	<ul style="list-style-type: none"> <li>• Improved public understanding</li> </ul>	<ul style="list-style-type: none"> <li>•</li> </ul>
Unescorted walking	<ul style="list-style-type: none"> <li>• Increase of serious/fatal incidents</li> </ul>	<ul style="list-style-type: none"> <li>• More education</li> <li>• Restrictions, if deemed necessary</li> </ul>
Promotion of low impact camps and camping	<ul style="list-style-type: none"> <li>• Localised degradation</li> <li>• Financial returns per tourist are lower</li> </ul>	<ul style="list-style-type: none"> <li>•</li> </ul>

## 3.7 INDICATIVE BUDGET

The following table is an indicative budget for the tourism programme summarised by objective. It must be noted that this is only a rough first pass at a budget and it will be refined during the annual planning cycles. It does not include provision for staff recruitment and salaries.

**Table 22: Indicative budget for the Tourism Programme in US\$ (by objective)**

Objective	Capital	Recurrent
Tourism Product Is Improved, Expanded And Diversified	25,200	5,600
Management And Administration Of Tourism Improved	1,000	4,500
Educational And Interpretive Facilities And Activities Developed	34,000	2,500
Regional Linkages Initiated And Enhanced	0	0
Marketing Of Mana And Lower Zambezi Improved	0	0
<b>Programme Totals</b>	<b>60,200</b>	<b>12,600</b>



# 4: PARK OPERATIONS PROGRAMME





## 4 PARK OPERATIONS PROGRAMME

### 4.1 INTRODUCTION, PURPOSE AND KEY COMPONENTS

The Park Operations Programme is the core programme for the management of Mana Pools. This is the foundation on which effective protection of the environment and utilisation of its resources through tourism depends. If the Park Operations Programme is not effective then it is likely that the park will fail to achieve its objectives outlined in the Biodiversity, Tourism and Neighbours Programmes.

Mana Pools functions under extremely difficult conditions, many of which are due to the ailing Zimbabwean economy. The park is short of equipment, vehicles, fuel and staff. Housing conditions are often sub-standard and salaries and this does not help to keep staff motivated – that staff still go on patrol and manage the systems at Nyamepi station is a tribute to their commitment.

An organisation is only as good as its staff and a strongly motivated team mean that the chances of plan implementation are greatly increased. A key component of the Park Operations Programme is the improvement of morale on the field stations.

A perennial problem for many management authorities is insufficient staff and Mana Pools is no exception. However, increasing staff numbers without a corresponding increase in the housing, equipment and other resources to enable them to carry out their duties effectively, would be counterproductive. At worst it could strain the existing facilities and equipment without improving the management effectiveness of the station.

There is all-weather access to the Nyamepi Headquarters on the Zambezi River and the “Security Road” in the south of the park provides all-weather linkages between the main Lusaka-Harare road and the rest of the Zambezi Valley to the east of the park. However, many of the internal roads are rough tracks and become impassable during the rains.

A recurring theme during the preparation of this management plan was the poor communications between the field and headquarters staff. This was due both to the poor state of the physical means of communication (radios, telephones *etc*) and inadequate consultation between HQ and the field on important issues. Another, related communications issue, is that decisions are taken at head office without reference to management staff in the field.

Given the above the purpose of the Park Operations Programme is

**PARK OPERATIONS PROGRAMME PURPOSE:**  
***Effective management of Mana Pools is achieved through improved operational, financial and administrative systems***

There are several key components to the Park Operations Programme and these are briefly described below (Table 23).

**Table 23: Key components of the Park Operations Programme**

Aspect	Brief Description
Access	Roads, tracks, bridges, jetties and airstrips. Currently the “Security Road” in the south is the responsibility of the Ministry of Roads
Buildings	Construction and maintenance of offices, staff housing, laboratory, gates and outposts. This component does not include the tourism infrastructure (lodges, campsites etc) which fall under the Tourism Programme
Staffing	Pertains to staff compliment, leave, training etc
Morale	Staff morale is a very important part of park management and these issues need to be addressed effectively to ensure that the park is properly secured
Communications	Telephone, radio and other communication means between Nyamepi and the outside world. Also refers to internal park communications, usually by radio.
Finances	Correct management of finances, especially as each park is striving to financially self-sufficient, is an important component of the Park Operations Programme.
Transport	Reliable transport is vital for effective management of a park. Equipment needs to be properly cared for and maintained.

## 4.2 THREATS, ISSUES AND CONCERNS

Several of the management issues and concerns described below are a direct result of the current economic and political situation in Zimbabwe. We all believe that this will be a temporary situation and that there will be a return to normality at some point in the future.

In the context of management planning this has some implications. Some management activities may be devised to address the current situation but these may be short-term solutions and their long-term application may not be in the Park’s best interests. For example, fishing and ration hunting may allow the staff to survive a very dire situation but, if uncontrolled, they have the potential to develop into something that will bring a new set of problems.

**Table 24: Summary of threats, issues and concerns**

<ul style="list-style-type: none"> <li>• Poor infrastructure</li> <li>• Insufficient resources</li> <li>• Poor communications</li> <li>• Roads</li> <li>• Insufficient staff</li> <li>• Low morale</li> <li>• Firewood</li> <li>• Power</li> <li>• Staff fishing</li> <li>• Excessive development</li> </ul>	<ul style="list-style-type: none"> <li>• Political manoeuvring</li> <li>• Loss of expertise</li> <li>• Boundary demarcation</li> <li>• Wounded animals</li> <li>• Use of the park by other Government Agencies</li> <li>• Rukomechi Research Station</li> <li>• Training &amp; Ration Hunting</li> <li>• Inadequate consultation between HQ and field</li> <li>• Hunting Ethics</li> </ul>
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<b>Table 25: Park Management Issues and Concerns</b> (Stars indicate a measure of importance)	
<b>Issue/Concern</b>	<b>Description</b>
<p>Poor infrastructure *****</p>	<p>Road access to the park is reasonable but the surface of the main access road can be degraded. Currently the section to the Nyakasikana Gate is in bad condition. However, most other roads in the park become unusable in the rains.</p> <p>The staff housing at Nyamepi is in variable condition but it is probably fair to say that many of the structures need to be upgraded or repaired. In addition, if staff numbers are increased there will be insufficient accommodation units at Nyamepi. Workshops, offices, the laboratory and other ancillary buildings are also in need of repair and upgrade.</p> <p>The condition of the tourist accommodation is also poor but this problem is addressed under the tourism programme.</p>
<p>Insufficient resources *****</p>	<p>Most businesses in Zimbabwe are struggling under the current economic situation and the ZPWMA is no exception. This has a direct bearing on the resources available to run and maintain the park. Fuel delivered to the station is very limited, vehicles are few and equipment has fallen into a state of disrepair.</p> <p>Related to the problem of insufficient resources is the problem of ensuring that the earnings of the park are correctly credited. Some of the Mana income is reflected in the income of Victoria Falls while other income reflects in the income accruing to the Marongora station. It was difficult to determine the true income of Mana Pools and this has ramifications, especially as the ZPWMA requires that individual parks strive for financial self-sustainability.</p> <p>In addition, there is mis-allocation of resources. Approximately 60 to 70% of the ZPWMA expenditure is believed to be on non conservation related activities. This is an authority-wide problem rather than just being specific to Mana Pools.</p>
<p>Poor communications ***</p>	<p>Communication routes between the Mana Pools HQ and the outside world are poor. The land-line ceased operation at least a year ago and there is only sporadic cell phone communication. The radio link to ZPWMA HQ in Harare and other offices (e.g. Chinhoyi and Marongora) is unreliable and is operational for around 85% of the time. Some of the problems are caused by unreliable power at Makuti.</p> <p>Poor physical communications between the HQ, the Regional Office and the Field Stations results in a number of other problems, some of which are discussed below.</p> <p>At the local level there is no communication on the hand-set radios once patrol staff are in the field. There are indications that this is a relatively easy problem to resolve but it has resulted in the very unsatisfactory situation where, once field staff are on patrol, they are unable to communicate with Nyamepi in case of emergencies.</p>
<p>Inadequate consultation between HQ and field</p>	<p>In many wildlife agencies there is often poor communication between the headquarters and the field management staff and the ZPWMA authority is no exception. Field staff feel that they are not sufficiently consulted before decisions are taken at HQ especially with regard to tourism. Leases are issued with inappropriate clauses which make field management of the situation difficult.</p>

**Table 25: Park Management Issues and Concerns**

(Stars indicate a measure of importance)

Roads	<p>Much of the present road network was put in place in response to the demands of tourism and are some have poor alignment or are on inappropriate soils. Some of the management access roads exhibit bad erosion often cause by poor alignments. Some of the river crossings are erosion hazards.</p> <p>The Ministry of Roads assumes responsibility for the road between the main tar road to Zambia and Kanyemba. Inside Mana Pools part of this road is known as the “Security Road”. All maintenance should be carried out by the Ministry and there are cases on record of them refusing ZPWMA to carry out repairs or maintenance on this road. The condition of this road is usually poor.</p>
Insufficient staff	<p>Staff numbers are currently around 50 people. Ideally the station should have between 60 and 70 staff to function effectively. Accommodation, equipment and resources for extra staff will be an issue as well. The current water and sewage systems at Nyamepi may need to be upgraded.</p>
Low morale	<p>Staff morale is low and much of this can be attributed to the current economic situations. Salaries cannot keep up with inflation, money is not accessible, food is in short supply. Staff currently spend a significant part of each month queuing to collect their wages. Since this was initially written staff income has dropped to such a level that they could be considered to be working without pay. Subsistence allowances, paid for patrolling, are often not collected as they are valueless.</p>
Firewood	<p>Most of the cooking and heating of water for staff is done using firewood. This is a year round demand. In addition, firewood is in demand by tourists for cooking and heating water – which is largely a seasonal demand. This wood is collected from the ground in the mopane woodlands. No new trees are cut. However, it represents a significant amount of nutrient removal from the woodlands and there suggestions that extensive firewood collection has contributed to the degraded mopane woodlands found in the vicinity of Nyamepi.</p>
Power	<p>Electricity for the station is currently supplied by generator. Present circumstances mean that there is seldom enough fuel to run it to provide power. In addition generators are not permitted in the park for the general public. A related problem for a station without power is to charge batteries for radios, GPS, computers etc and this is currently done with solar panels. Electrification of Mana through the rural electrification programme is a possibility but this has been put on indefinite hold due to the current economic circumstances.</p>
Staff Fishing	<p>Bag limits for fishing are set at 6 fish per day and the method of capture is restricted to rod and line fishing. This limit and the restrictions are also extended to staff and members of their families. In the current economic circumstances fishing is a survival strategy practiced by the staff and it means that fishing pressure in the vicinity of Nyamepi may be considerable. Some idea of numbers and species being removed could help to clarify the situation. There also complaints by tourist about staff fishing in front of accommodation units.</p>
Excessive development	<p>There are considerable developments at Nyamepi. The area includes much of the tourist accommodation, the offices, staff housing, water infrastructure, workshops etc. The area is located on a prime part of the alluvial floodplain.</p>
Political manoeuvring	<p>There are reports of political manoeuvring with regard to allocation of tourist sites, leases, hunting concessions (in the adjacent safari areas) etc. Although these type of reports are difficult to verify it is likely that it does occur.</p>

<b>Table 25: Park Management Issues and Concerns</b> (Stars indicate a measure of importance)	
Loss of expertise	The current salary structure and the value of the Zimbabwe dollar has meant that there is a continual drain of experienced staff who move onto other jobs where prospects may be better. Many of these staff are field staff who take their detailed knowledge of ground conditions with them. However, it must be stated the ZPWMA is one of the better-paying parastatals.
Wounded animals	There have been instances where wounded animals have entered the national park from the safari areas. However, in all cases, the hunters are required to report the incident so that follow-up operations can take place.
Use of the park by other Government Agencies	At least three government departments (Tsetse, Police and Roads) have bases inside the National Park, but operate outside the control of the ZPWMA. The roads camp at Nyakasikana is presently abandoned. The Zimbabwe National Water Authority (ZINWA) operates the water supply system at Nyamepi and has staff on the station. A police post is located at Nyamepi as well.
Rukomechi Research Station	The Veterinary Department has established an extensive development at the base of the escarpment on the Rukomechi river. There does not appear to be any lease for site as it was in existence prior to the extension of the boundary of the park in 1974. Records indicate that it was used extensively for research in the 1980s and 1990s but currently appears to be disused. A skeleton staff of 14 people remains. Cattle are also kept here for use with tsetse fly density assessments. There is also an extensive network of tracks in the area and an airstrip.
Training & Ration Hunting	This is a long standing policy in the ZPWMA and its predecessors. Essentially quotas are approved at Ministerial level for training and ration hunting for many stations in the Parks Estate. The specific use of this quota is at the discretion of the area manager or warden. In addition, decisions about areas in which animals are hunted is also at local management level. In the present circumstances meat from this hunting is a very important supplement for staff nutrition. It is believed that ration supply helps to stop poaching by the staff themselves, given the current economic circumstances in Zimbabwe.
Hunting Ethics	Most of the hunting in the adjacent areas is through the “bag hunt” system. Hunters buy a bag of animals and the hunt is for a specified time period. This means that there is always a new hunter in the area, making control more difficult. Some hunters do shoot animals on the boundary, others bait for cats right on the Mana boundary and others have been known to actually poach in the park. Perhaps a buffer zone could help to alleviate some of these problems.

## **4.3 GUIDING PRINCIPLES**

The following guiding principles were elaborated for the Park Operations Programme. They are listed below before being described in more detail

1. Trained and motivated staff are the most important asset for management
2. Park infrastructure and activities will be designed to cause minimal environmental impact
3. Good access is vital for effective management
4. Efficient communications are necessary to ensure successful management
5. Financial and political commitment will be forthcoming

### **1 Trained and motivated staff are the most important asset for management**

Staff are more likely to operate efficiently if their needs and concerns are attended to. This includes proper salaries which are paid promptly and decent living and working conditions. In addition, training is an important component for staff morale as it improves their effectiveness and value to the Authority, as well as to themselves.

### **2 Park infrastructure and activities will be designed to cause minimal environmental impact**

Park infrastructure, which includes roads, airstrips, headquarters communications equipment, staff quarters etc, can have an adverse effect on the environment if not properly designed and located. In Mana Pools NP the main HQ is located in the alluvial forest and there are several roads and river crossings that have been badly eroded.

### **3 Good access is vital for effective management**

One of the primary factors which will improve the effective management of protected areas is a good communications infrastructure. Roads and bridges need to be up to certain standard to ensure that staff are able to respond to security situations and that resupply is feasible. Investment in upgrading and maintaining these links is of paramount importance.

### **4 Efficient communications are necessary to ensure successful management**

This is true both for communications between the field and the Authority headquarters in Harare, and for communications between the field headquarters at Nyamepi and the outstations and staff out on patrol. Currently communications are inadequate, especially between the Harare HQ and Nyamepi.

### **5 Financial and political commitment will be forthcoming**

Implementation of the management plan will require both financial and political commitment and the park cannot be viewed in isolation from the operations of the ZPWMA as a whole. Financial support for some parts of the plan may be possible through donors, NGOs or well wishers but for sustainable implementation, most of this will need to come from the Authority itself.

## 4.4 OBJECTIVES, TARGETS AND ACTIVITIES

Four management objectives have been elaborated for the Park Operations Programme. The objectives and their targets (summarised below) were defined after an analysis of the threats, issues, concerns and guiding principles. There is a text description of the objectives and targets prior to presentation of the first three action and activity plan. Numbering in the text provides the linkage to the summary table and the three year action plan.

### **Objective 1: Management infrastructure, access and communications improved**

Targets	1.1 Nyamepi HQ improved 1.2 Field stations upgraded 1.3 Improved access to Park 1.4 Improved access inside Park 1.5 Communications inside the park and to regional and national HQ improved
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### **Objective 2: Staff numbers, efficiency and morale optimised**

Targets	2.1 Staff numbers optimised 2.2 Improved performance from staff 2.3 Housing improved and expanded at Nyamepi
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### **Objective 3: Equipment and consumables sufficient for park management**

Targets	3.1 Vehicle and boat fleet upgraded and maintained 3.2 Sufficient patrol equipment available 3.3 Adequate fuels, oils and other consumables on station
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### **Objective 4: Use of Mana Pools by other Government agencies is formalised**

Targets	4.1 Formalised agreements with Government support agencies 4.2 Rukomechi Research Station effectively utilised
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### **Objective 5: Funding for Mana Pools improved**

Targets	5.1 Money generated by Mana returns to station 5.2 External funding sought
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## **Objective 1: Management infrastructure, access and communications for Mana Pools improved**

Good infrastructure, access and communications are central to a protected area's ability to function effectively and fulfil its mandate. Mana Pools is fortunate in that it is accessible throughout the year, although access to much of the park becomes very restricted once the rains begin. Management of the park is carried out from the headquarters at Nyamepi with a sub-station located at the entrance gate at Nyakasikana.

### **Target 1.1: Nyamepi HQ improved**

1.1.1 There is a need for repair and upgrade of some of the buildings at Nyamepi. This includes the office, workshop and storage areas. Staff accommodation is covered under Objective 2. Details of this are

- The operations room needs to be constructed from brick and made more secure
- The tourist office needs to be enlarged, improved and possibly relocated (Discussions centred around the possibility of moving the tourist office to the bridge where the road to the public campsite branches off. If so, it could be combined with the visitor centre)
- More offices are needed (and this could be resolved by the relocation/reconstruction of the tourist office)
- A guest house near the Nyamepi offices is needed to accommodate visiting ZPWMA staff and other official visitors
- The workshop needs to be renovated. The roof needs to be replaced and internal divisions improved for security. The workshop also needs to be properly equipped with a welder, drill and other tools – but this has to happen in conjunction with the appointment of a properly trained mechanic (see Objective 2).
- The floodplain is host to dangerous animals and the staff living area was fenced in the past. This fence (and ditch) should be revived to ensure the safety of the staff and their children and it should also be electrified to deter elephants.

1.1.2 Currently power for the station is provided by an old diesel 15 kva generator but this does not run often because of fuel shortages and the poor state of the equipment. Nyamepi does have a new (yet unused) generator capable of supplying power to the entire station but it has not been connected yet because of the cost of installation and the fuel running costs.

There have been investigations into supplying power to the station from the national grid but this idea appears to have been shelved owing to the current economic situation prevailing in Zimbabwe. Should it be resuscitated an environmental assessment of the proposed alignment would need to be undertaken – either from Makuti or Chirundu.

1.1.3 Water is currently supplied through the Zimbabwe National Water Authority (ZINWA) who took over this function from the ZPWMA. The situation is unsatisfactory as ZINWA places demands on the facilities at Nyamepi and the Authority supplies fuel from its station allocation to run the pumps.

### **Target 1.2: Field stations upgraded**

- 1.2.1 Nyakasikana Gate is currently staffed by a single person. The gate will be upgraded to support two people full-time. In addition, accommodation will be constructed for temporary use by scouts who can use it as a base for rest and resupply between patrols.

A borehole exists at the gate but currently is not functioning and water is brought in by bowser from Nyamepi. The pump on the borehole needs to be replaced and this should be considered a priority.

- 1.2.2 An outpost will be established near Mazinga spring which is close to the base of the escarpment on the Rukomechi river. This will be a temporary base (lockable tin hut) for use by patrols in the southern part of the park. Water would be trucked in.

### **Target 1.3: Improved access to Park**

- 1.3.1 Although access to the park is possible throughout the year some parts of the road are often in poor condition. The national road between the main Lusaka-Harare highway and Nyakasikana gate is maintained by the Department of Roads under the Ministry of Transport and Communications and can become very corrugated during the dry season. It may be possible for a joint effort between the ZPWMA and the Ministry of Transport to ensure that this road is maintained and upgraded. In early 2009 the bridge over the Runyese river (outside the park) was washed away and was only repaired after the rains.

- 1.3.2 The main Access Road between Nyakasikana Gate and Nyamepi runs through the jesse and is usually passable throughout the year. This section of the road is maintained by Nyamepi using a tow grader. The extent of road maintenance is largely dependant on the physical state of the tractor and the availability of fuel. Both of these issues need to be addressed and the tractor is due for a major overhaul.

### **Target 1.4: Improved access inside Park**

- 1.4.1 Many of the roads inside the park are closed to tourists once it rains. This is for the safety of the tourists and to protect the roads from being churned up when wet. Every year they need to be reopened using a drag or a grader. Many of the stream and river crossings on the roads leading parallel to the Zambezi river are washed away and can be problematic once the rains start.

Most of the river crossings on the main tourist loops around the Mana Pools have been washed away. The old culverts and masonry should be removed and replaced with dish drains where possible. The river road between Nyamepi and the Sapi river has some deeply eroded crossings and a civil engineer should be contracted to advise on the possibilities of upgrading these crossings and stopping erosion. There are also several other crossings (including those to Chitake) that would benefit from professional advice (and supervision, if necessary).

- 1.4.2 The only new roads that should be established are access routes to the proposed tourism facilities. However, if a camp is established in the southern zone a plan for a tourism road network in this area needs to be established.

- 1.4.3 Annual maintenance of the tourist roads is essential and is carried out after the rains. There are three airstrips inside the park (Nyamepi, Mana West and Rukomechi) and these should be maintained. Responsibilities for this maintenance must be clarified and the legal status of Mana West needs to be resolved. With the expansion of the tourist facilities there may be pressure to open new strips inside the park and these should be resisted. Operators should work with the existing network of airstrips.

**Target 1.5: Communications inside the park and to Regional and National HQ improved**

- 1.5.1 There has been a problem with the repeater link for hand-held radios at Makuti and currently staff go on extended bush patrols without communications. The problem appears to be relatively easy to fix and this should be considered a priority. In fact recent information suggests that this has been done but the problem could resurface in the future and a strategy for dealing with this type of failure needs to be established.
- 1.5.2 Communications between Nyamepi and both the Regional Office in Chinhoyi and the ZPWMA headquarters in Harare are far from satisfactory. Currently it is limited to radio traffic with sporadic cell phone contact on the 011 network. The radio link telephone ceased working last year. Some of these problems are related to intermittent power supply to Makuti from the national grid. The poor communications system often results in miscommunications, error in instructions and conflicting bookings.

Various options are available to improve the situation. The old telephone network worked satisfactorily until recently and possibility of resuscitating this should be investigated. A Vsat system has been installed at other ZPWMA stations and could be an option for Nyamepi. Power supplies to any of these systems would need investigation, should the generator problems not be resolved in the short-term.



**Objective 2: Staff numbers, efficiency and morale optimised to improve park management**

Effective management of a protected area requires sufficient and committed staff with high morale. Given that the staff are very poorly paid (an often not at all) one could argue that this commitment is already evident. However, and although this has been stated elsewhere in this document, it is important enough to reiterate here – increasing staff numbers without ensuring that they have adequate accommodation on station, or without ensuring that there are sufficient vehicles and other resources to support them in their duties, can be counter productive and cause more problems than solutions.

**Target 2.1: Staff numbers optimised**

2.1.1 Mana Pools currently has 48 permanent staff but it is recommended that the staff compliment be increased (Table 26). Currently the park has no ecologist and this post needs to be filled as a matter of urgency.

**Table 26: Staff establishment for Mana Pools**

<b>Grade</b>	<b>Current</b>	<b>Required</b>
Area Manager	1	0
Senior Wildlife Officer	1	0
Senior Ecologist	0	1
Ecologist/Tecnician	0	1
Senior Rangers	2	1
Rangers	35	48
General Hands	2	5
Handymen	1	1
Accounts	1	1
Lodge Attendants	3	2
Mechanics	0	1
<b>Totals</b>	<b>48</b>	<b>61</b>

As stated elsewhere in this document increasing staff numbers without ensuring that they are properly accommodated and that there are sufficient resources for them to carry out their tasks (transport, fuel etc) will be counter-productive and impact negatively on park management.

**Target 2.2: Improved performance from staff**

Staff morale needs to be improved which will help to ensure that there is improved performance from staff. Morale can be improved by improving the living conditions, pay scales, providing social amenities and boosting people's pride in their jobs.

2.2.1 Training is an important aspect and courses (both on and off station need to be identified) and the "quality" of the existing staff raised through training. The following is a list of training types that may be appropriate for the station

- First aid
- Map and GPS training
- Basic mechanics
- Radio procedure
- Monitoring techniques
- Guiding and communication skills
- Customer care and basic hotel skills
- Weapons training and shooting skills

In addition, the Station is issued a training and ration hunting quota which is for 18 animals in 2009. This includes 5 elephant and 5 buffalo. This practical experience is also considered to be invaluable experience for field staff.

2.2.2 Where staff have taken the initiative and wish to pursue further studies outside the Authority's own training programme they should be encouraged. This could take the form of financial or other assistance such as leave or transport.

2.2.3 The current economic climate in Zimbabwe has meant that pay scales have not been sufficient. There have been some positive moves with regard to payment since the Zimbabwe dollar was abandoned earlier this year. The Authority should endeavour to pay staff on time.

2.2.4 It is important that staff have proper uniforms and equipment to enable them to carry out their duties. The supply of a full uniform helps to build morale and a sense of pride an belonging to a respected service.

2.2.5 The junior staff quarters were fenced previously but it appears that this fence was breached by elephant and long since disappeared. As staff have small children the area should be re-fenced and an electrification component to deter elephant included in the design.

2.2.6 Other programmes to improve the quality of life on station include the possibility of a small pre-school and a clinic for basic health care. This should only be staffed to a health assistant level as any staff considered to be seriously sick must be taken out of the park to proper facilities in Kariba or Karoi or even further afield. Awareness campaigns for diseases such as malaria and HIV should be conducted from this facility.

Other projects and activities could include a recreational area with a kiosk and the possibility of transport for a sports team to play other teams away from the station. Ideally, should the generator be installed, electrification of the station will be a great improvement of the quality of life at Mana Pools.

2.2.7 Staff at Mana Pools are usually far from their homes and, if possible, the Authority should consider mechanisms to assist people with housing in their home towns.

?? Class of worker to be general hands. Not good for ranger to have to do very menial tasks

**Target 2.3: Housing improved and expanded at Nyamepi**

- 2.3.1 Much of the housing at Nyamepi is in a poor state of repair. All of the senior staff houses are considered to be sub-standard and many have been added to by staff to make them more habitable. Junior staff are accommodated in an assortment of brick houses and tin huts. Some of these have attached ablutions and kitchen areas while others do not. Separate ablutions are provided for those houses without, but these need to be repaired and upgraded. Some staff are accommodated in an old storeroom. The Police and ZIMWA staff put extra pressure on the housing at the station as well.

Type	Description
Officer Accommodation	Upgrade of five sub-standard houses at Nyamepi.
Junior Staff quarters	13 detached brick houses need extensive repairs/upgrade 5 detached brick houses need extensive repairs and ablutions added Bachelor block to be modifies 17 Tin Huts to be replaces as uninhabitable during summer 2 Communal ablution blocks need extensive reapirs

- 2.3.2 There is obviously an urgent need to upgrade the existing accommodation at Nyamepi. It is also imperative that more housing must be built prior to appointing more staff to the station. Housing designs that are appropriate for the climate at Mana Pools need to be considered in detail prior to any construction. The layout of the station, and the potential environmental effects of upgrade and expansion, need to be considered prior to any works being undertaken.
- 2.3.3 Once the housing has been upgraded and built it is imperative that it is maintained. A handyman needs to be employed on station and he must be provided with tools and consumable to ensure that the structure are maintained properly

### Objective 3: Equipment and consumables sufficient for park management

After staffing issues, access to proper equipment and consumables for running a park, are the most important component for implementation of the park plan.

#### Target 3.1: Vehicle and boat fleet upgraded and maintained

3.1.1 Mana Pools has one working Land Cruiser pickup and a working tipper truck. Several other non-serviceable vehicles are on station. There is an urgent need to have at least one other serviceable vehicle available to the park. The required repairs and listing of additional equipment needed are shown below.

Requirement	Current Status	Possibilities
Light Trucks – 3	1 working	Service working car, Provide tyres and spares, Acquire two other vehicles
Tipper Truck	At Marongora – Not working	Provide spares and repair
Tow graders	2 not working at Mana	Tyres and spares needed
Boat	Working	Fuel and maintenance schedule needed
Water Bowser	Not working	Spares and tyres needed
Road Rammer	Not working	
Dam Scoop	Not working	Tyres and tubes needed
Grass Cutter	Not working	
Trailers	2 not working	One needs substantial repairs
Tractor	Serviceable	Needs major overhaul
Generator	1 Old; 1 new	New one needs to be installed. Fuel needed to run it
Banana Boats	2 working; 3 not working	Boats need to be repaired. Suitable engines (15hp)
Canoes	5 not working	Needed for tourism

3.1.2 On-site maintenance of the vehicles at a remote station such as Nyamepi is also vital and the workshop needs to be upgraded and a full-time mechanic added to the staff compliment. The following list shows what is needed as a minimum to effectively manage the park.

#### Target 3.2: Sufficient patrol equipment available

3.2.1 Patrols are carried out throughout the year and most staff members will spend at least 14 days of every month out in the field. There is a need to ensure that these patrols are properly supplied with respect to basic equipment. This includes tents, sleeping bags, backpacks, water bottles and cooking items.

3.2.2 Ideally all patrols should be equipped with radios and GPS equipment for safety and patrol effort recording.

**Target 3.3: Adequate fuels, oils and other consumables on station**

- 3.3.1 One of the main problems facing the management of the park in recent years has been the availability of fuel. On some occasions management activities have not been carried out because there was not sufficient fuel to run the vehicle. At present Nyamepi receives an allocation of 400 litres diesel per month. Approximately 120 litres of this are given to ZINWA to supply water to the station. At times the allocation is not on station and therefore cannot be used. Fuel also has to be used to collect the allocation. Tyres and tubes are another problem for the vehicles. It may seem like a small thing to repair but without funding for these items the equipment will sit idle.
- 3.3.2 Tyres, tubes and other relatively minor consumable items are not on station and these can ground equipment which could otherwise be working. This situation needs to be resolved.

**Objective 4: Use of Mana Pools by other Government agencies is formalised**

There are a number of Government Agencies with a presence in Mana Pools. The Zimbabwe Republic Police and the Zimbabwe National Water Authority have staff permanently based at Nyamepi. The Department of Roads is responsible for the maintenance of the national road between Kanyemba and the Lusaka highway and this road (known as the security road) runs through the southern part of the park. A roads camp is established near the Nyakasikana Gate but appears to be occupied only sporadically. In addition, the Ministry of Agriculture's Veterinary Department maintains a research station at the base of the escarpment within Mana Pools NP. There appear to be no formal agreements and conditions for these agencies.

**Target 4.1: Formalised agreements with Government support agencies**

- 4.1.1 The Zimbabwe Republic Police, ZIMWA and the Ministry of Roads need to be approached to  
4.1.2 formalise the agreements. These should also contain regulations for conduct of staff in a  
4.1.3 National Park

**Target 4.2: Rukomechi Research Station effectively utilised**

The Rukomechi Research Station is a well known research institute and some ground-breaking work was undertaken at the station. Unfortunately, funding for this research has been withdrawn, and the station is currently in caretaker mode. There is no recorded agreement between the ZPWMA and the Ministry of Agriculture for the station as it predates the gazettement of the park. Staff and researchers at the station do not even have to inform park management of their activities.

- 4.2.1 There is an urgent need to determine the future of the Rukomechi Research Station with the Ministry of Agriculture (Tsetse and Trypanosomiasis Branch). Meetings between the Ministry and the ZPWMA (both field and HQ staff) need to be carried out and the long-term future of the station determined. A possibility would be to expand the research focus of the station to include other aspects of the Zambezi Valley. Meetings with the University and other research institutions may help to formulate the possible revitalisation of the station.
- 4.2.2 If a common understanding on the possible future of the station is reached research and funding proposals need to be developed.

- 4.2.3 Whatever the future is, there needs to be some formal agreement between the Ministry and the ZPWMA about the use of the land within a national park.

### **Objective 5: Funding for Mana Pools improved**

Zimbabwe is entering its 10<sup>th</sup> year of a prolonged recession but there may be indications that the situation might change. Expected with this positive change is increased inflows of money, some of which may find their way to the natural resource sector and ultimately to Mana Pools. But this may also not happen. Whatever the future holds for Zimbabwe this management plan for Mana will require funding to ensure that it is implemented.

#### **Target 5.1: Money generated by Mana Pools returns to station**

- 5.1.1 In the first instance money generated by the use of the Mana Pools National Park should return to the station for its management. Funds generated by Mana are being incorrectly assigned to Marongora (in the case of canoe safaris) and to Victoria Falls (in the case of fees from Rukomechi Camp). In the past it was very difficult to estimate what Mana Pools was actually earning because of the skewed statistics associated with an inflation rate in the millions for the Zimbabwe dollar. Mana management should generate an income scenario using updated statistics.
- 5.1.2 The station should liaise directly with Marongora and Victoria Falls to ensure that Mana pools is correctly credited with funds due.
- 5.1.3 Harare HQ should be lobbied to ensure that sufficient funds are returned to station to allow effective management

#### **Target 5.2: NGO funding sought**

- 5.2.1 The management plan document can become an important fund raising tool. Proposals for funding can be generated from the management plan documents
- 5.2.2 NGOs and donor agencies should be approached to fund parts of the plan.

**Table 27: Summary and three year activity plan – PARK OPERATIONS PROGRAMME**

<b>OBJECTIVE 1: MANAGEMENT INFRASTRUCTURE, ACCESS AND COMMUNICATIONS FOR MANA POOLS IMPROVED</b>																	
TARGET	ACTION	ACTIVITY	Responsibility	Priority	Timeline - Quarters												Notes
					2010				2011				2012				
					1	2	3	4	1	2	3	4	1	2	3	4	
<b>1.1: Nyamepi HQ improved</b>	1.1.1: Office and associated structures improved	Operations room upgraded															
		Tourist office enlarged (see also Tourism Programme Obj. 3)															
		At least 2 more offices															
		Guest house															
		Workshop upgraded															
		Fencing of staff quarters															
	1.1.2: Power system improved	Options for installing new generator investigated															
		Connection to national grid pursued															
	1.1.3: Water supply improved	ZINWA/ZPWMA relationship reviewed if possible															
<b>1.2: Field stations upgraded</b>	1.2.1: Nyakasikana Gate upgraded	Permanent accommodation upgraded to support two people															
		Borehole repaired and functioning															
		Accommodation constructed for temporary rotational use by rangers on patrol															
	1.2.2: Mazinga Spring outpost established	Accommodation established															
<b>1.3: Improved access to Park</b>	1.2.1: National road improved	Links with Roads Dept and Operators to ensure annual grading	Area Mgr., Roads Dept														
	1.2.2: Mana access road	Annual maintenance – see also Objective 3															

**Table 27: Summary and three year activity plan – PARK OPERATIONS PROGRAMME**

<b>OBJECTIVE 1: MANAGEMENT INFRASTRUCTURE, ACCESS AND COMMUNICATIONS FOR MANA POOLS IMPROVED</b>																	
TARGET	ACTION	ACTIVITY	Responsibility	Priority	Timeline - Quarters												Notes
					2010				2011				2012				
					1	2	3	4	1	2	3	4	1	2	3	4	
<b>1.4: Improved access inside Park</b>	1.4.1: River crossings repaired or improved	Dish drains on all smaller crossings															
		Remnants of culverts removed															
		Civil Engineer sought for advice about deeper crossings															
	1.4.2: New tourist roads established where necessary	Environmental assessment of alignment prior to opening															
	1.4.3: Roads and Airstrips maintained	Annual maintenance of tourist roads															
Annual maintenance of existing airstrips (no new strips to be permitted)																	
<b>1.4: Communications inside the park and to regional and national HQ improved</b>	1.4.1: Repeater at Makuti for hand-held repaired	Problem identified															
		Repair carried out															
	1.4.2: Reestablishment of phone link	Discussions with TelOne															
	1.4.2: Internet options investigated	Vsat options investigated. Legal situation and funding resolved															



**Table 27: Summary and three year activity plan – PARK OPERATIONS PROGRAMME**

<b>OBJECTIVE 2: STAFF NUMBERS, EFFICIENCY AND MORALE OPTIMISED TO IMPROVE PARK MANAGEMENT</b>																	
TARGET	ACTION	ACTIVITY	Responsibility	Priority	Timeline - Quarters												Notes
					2010				2011				2012				
					1	2	3	4	1	2	3	4	1	2	3	4	
<b>2.1: Staff numbers optimised</b>	2.1.1 New staff employed	Liaison with Harare															
		Upgrade of accommodation FIRST															
		Mukwichi residents employed if possible (see Neighbours Programme)															
<b>2.2: Improved performance from staff</b>	2.2.1 Training of existing staff carried out	Needs assessment															
		Courses or instructors identified															
		Staff sent on courses															
		Training hunting															
		Assistance for further studies															
	2.2.2 Uniforms upgraded	All staff members to have complete uniform															
	2.2.3 Pay scales improved	In liaison with HQ															
	2.2.4 Uniforms upgraded	All staff with complete uniform															
	2.2.5 Staff quarters fenced	Quote and erection															
	2.2.6 Staff facilities upgraded and xx improved	Pre-school possibilities investigated															
		Clinic with health assistant established															
		Awareness campaign for diseases such as malaria, cholera and HIV															
		Recreational area/kiosk established															
Transport to sports meetings																	
2.2.7 Housing assistance	Mechanisms investigated																

**Table 27: Summary and three year activity plan – PARK OPERATIONS PROGRAMME**

**OBJECTIVE 2: STAFF NUMBERS, EFFICIENCY AND MORALE OPTIMISED TO IMPROVE PARK MANAGEMENT**

TARGET	ACTION	ACTIVITY	Responsibility	Priority	Timeline - Quarters												Notes	
					2010				2011				2012					
					1	2	3	4	1	2	3	4	1	2	3	4		
<b>2.3: Housing improved and expanded at Nyamepi</b>	2.3.1 Upgrade of existing housing and accommodation facilities	Full inventory																
		Upgrades of units, ablutions and cooking in Junior Staff areas																
		Upgrade of Senior Staff housing																
	2.3.2 New staff housing	Design and location																
		Funding secured																
		Houses built																
	2.3.3 Maintenance programme	Rotational maintenance plan updated annually																
		Maintenance carried out																

**Table 27: Summary and three year activity plan – PARK OPERATIONS PROGRAMME**

<b>OBJECTIVE 3: EQUIPMENT AND CONSUMABLES SUFFICIENT FOR PARK MANAGEMENT</b>																	
TARGET	ACTION	ACTIVITY	Responsibility	Priority	Timeline - Quarters												Notes
					2010				2011				2012				
					1	2	3	4	1	2	3	4	1	2	3	4	
<b>3.1: Vehicle and boat fleet upgraded and maintained</b>	3.1.1: Procurement of additional vehicles and equipment or repair of existing	Additional light trucks															
		Tipper truck spares															
		Grader tyres and spares															
		Water bowser spares and tyres															
		Road rammer spares															
		Dam scoop tyres and tubes															
		Trailer repairs															
		Tractor overhaul															
		Generator installation															
		Banana boats repaired and suitable engines															
	Canoes repaired																
	3.1.2: Workshop upgraded	Building repaired and tools etc on site. Mechanic employed (see Obj. 2)															
		On-site maintenance															
<b>3.2: Sufficient patrol equipment available</b>	3.2.1: Basic patrol equipment	Tents, sleeping bags, water bottles, cooking equipment etc.															
	3.2.2: Communication and recording equipment	Radios, GPS, batteries etc															
<b>3.3: Adequate fuels, oils and other consumables on station</b>	3.3.1: Regular diesel and lubricants supply	Ensure allocation from HQ is increased															
	3.3.2: Regular supply of tyres, tubes and other consumables on station	Ensure allocation from HQ is increased															

**Table 27: Summary and three year activity plan – PARK OPERATIONS PROGRAMME**

**OBJECTIVE 4: USE OF MANA POOLS BY OTHER GOVERNMENT AGENCIES IS FORMALISED**

TARGET	ACTION	ACTIVITY	Responsibility	Priority	Timeline - Quarters												Notes	
					2010				2011				2012					
					1	2	3	4	1	2	3	4	1	2	3	4		
<b>4.1: Formalised agreements with Government support agencies</b>	4.1.1: Police	Formal agreements finalised																
	4.1.2: ZINWA	Formal agreements finalised																
	4.1.3: Roads Dept	Formal agreements finalised																
<b>4.2: Rukomechi Research Station effectively utilised</b>	4.2.1: Future of station determined	Meetings with Ministry of Agriculture and other agencies																
	4.2.2: Initiate funding proposals	Funding proposals																
		Identification of funding sources																
	4.2.3: Agreement formalised	Legal agreement signed																

**Table 27: Summary and three year activity plan – PARK OPERATIONS PROGRAMME**

<b>OBJECTIVE 5: FUNDING METHODS SOUGHT FOR MANA POOLS</b>																	
TARGET	ACTION	ACTIVITY	Responsibility	Priority	Timeline - Quarters												Notes
					2010				2011				2012				
					1	2	3	4	1	2	3	4	1	2	3	4	
<b>5.1: Money generated by Mana returns to station</b>	5.1.1: Projected income scenarios from Mana activities	Improved statistic used to calculate realistic income levels															
	4.1.2: Ensure that Mana income is correctly credited	Liaison with Marongora on canoeing															
		Liaison with Victoria Fall on Rukomechi fees															
4.1.3: Liaison with Harare HQ for funds	?																
<b>4.2: External funding sought</b>	4.2.1: Proposals generated for discrete elements of the management plan	Breakdown of the management plan into funding proposals															
	4.2.2: Appropriate NGOs and funding organisations approached	Standard environmental NGOs approached (e.g. AWF, WWF etc) with proposals															
		Other funding agencies approached. Possibility of more interest once TFCA becomes official															

## 4.5 ENVIRONMENTAL IMPACTS AND MITIGATION

This section provides a brief summary of the possible environmental effects of some of the activities and developments that will be carried out by this programme. Possible mitigation measures are also outlined.

**Table 28: Mitigation measures for the Park Operations Programme**

Development Activity	Potential Impact	Mitigation Measure
Nyamepi HQ Improved	<ul style="list-style-type: none"> <li>Consolidation of Nyamepi in prime alluvial woodland</li> </ul>	<ul style="list-style-type: none"> <li>Management of negative effects (wood, litter etc)</li> </ul>
Improved access	<ul style="list-style-type: none"> <li>Access for illegal use</li> </ul>	<ul style="list-style-type: none"> <li>Improved policing</li> </ul>
Equipment and plant upgraded	<ul style="list-style-type: none"> <li>Improved management</li> </ul>	<ul style="list-style-type: none"> <li></li> </ul>
More staff	<ul style="list-style-type: none"> <li>Increased wood usage</li> </ul>	<ul style="list-style-type: none"> <li>Alternatives sourced</li> </ul>

## 4.6 INDICATIVE BUDGET

The following table is an indicative budget for the Park Operations Programme summarised by objective. This programme will be the most expensive in terms of capital costs as includes equipment and infrastructure costs. Salaries are not included.

**Table 29: Indicative budget for the Park Operations Programme in US\$ (by objective)**

Objective	Capital	Recurrent
Management infrastructure, access and communications improved	154,500	11,500
Staff numbers, efficiency and morale optimised	280,000	23,000
Equipment and consumables sufficient for park management	97,000	41,000
Use of Mana Pools by other Government agencies is formalised	2,500	0
Funding for Mana Pools improved	0	0
<b>Programme Totals</b>	<b>534,000</b>	<b>75,500</b>

# 5: NEIGHBOURS PROGRAMME







## 5 NEIGHBOURS PROGRAMME

### 5.1 INTRODUCTION, PURPOSE AND KEY COMPONENTS

Mana Pools is unusual in that it is largely surrounded by other protected areas. In Zimbabwe areas to the east and west of the park are classified as safari area and, although the use of the area differs to the national park, they are still under the control of the ZPWMA. To the north, across the Zambezi River in Zambia are the Lower Zambezi National Park and the Chiawa Game Management Area. Both of these areas have protected status under Zambian law although use of the GMA is often believed to be at odds with conservation.

Only on its southern boundary does the park have true neighbours with different conservation agendas. This area, under the traditional leadership of Chief Chundu and the administrative ambit of the Hurungwe District Council, consists of the Mukwichi Communal Land, the Vuti Purchase Area and the Namakate Resettlement Area.

Prior to the establishment of the park in 1964, and its final boundaries in 1975, the area was traditionally the home of people under Chief Chundu and Chief Dandawa. Chief Chundu's people were found on the east and into the Chewore area while Chief Dandawa's people resided along the Rukomechi River and into the Hurungwe Safari Area. The establishment of the park meant that Chief Chundu's people were resettled in the Mukwichi area while Chief Dandawa's people were resettled in the Sanyati area, about 200 kilometres to the west of the park.

A large portion of the Mukwichi Communal Land abuts both the Mana Pools National Park and the Chewore Safari Area. Part of the Mukwichi Communal Area was designated as a hunting area and another part as a buffer zone for wildlife under the CAMPFIRE programme. Negotiations between the Hurungwe Rural District Council and the ZPWMA led to the leasing of a significant part of the Chewore Safari Area to add to the hunting area inside the Mukwichi Communal Land. The joint area is now a viable and attractive proposition for safari hunters and it is leased by the Hurungwe RDC on behalf of the Mukwichi community. In this way benefits accrue from the wildlife in the communal land and form the ZPWMA estate to the residents of the Mukwichi Communal Land.

Mana Pools National Park is also the heart of a transfrontier under development known as the Lower Zambezi/Mana Pools Transfrontier Area. Currently in its early stages of development, a Memorandum of Understanding is expected to be signed between the Zimbabwean and Zambian Governments before the end of 2009. Future developments may include areas inside Mozambique.

Safari hunting is the main form of land use in the adjacent protected areas. This takes two forms – “bag-hunts” whereby time slots are sold to citizens throughout the season, and long-lease safari areas, where the land is leased to an individual operator to run commercial hunts. Although the ZPWMA is the landholder these areas are managed from Marongora and Kipirinengu.

Given the above, and taking into account the exceptional resources of the park and its wider context, the purpose of the Neighbours Programme is

#### **NEIGHBOURS PROGRAMME PURPOSE:**

***Mana Pools National Park is a key component of integrated linkages both locally and internationally***

The Neighbours Programme has three key components which are briefly described below (Table 30).

**Table 30: Key components of the Neighbours Programme**

Aspect	Brief Description
Communities	The Mukwichi Communal Land and its adjacent State Land area (Vuti) are the only unprotected areas abutting the Mana Pools National Park. It is vital that links are established with these communities to assist with controlling poaching and other illegal use of the Park. In addition, the relationship could also provide opportunities for the people living in these areas to benefit from wildlife.
Trans-Frontier Issues	Zambia and Zimbabwe are poised to enter into a memorandum of understanding regarding the formation of a Trans-Frontier protected area in the middle Zambezi area. The Neighbours Programme will play a vital role in ensuring that this agreement and its implementation moves ahead.
External operators/Hunters	A good relationship with the hunters using the surrounding areas is important. Although the land falls under the ZPWMA its goals and management is different. This programme needs to ensure that the conflicting forms of resource utilisation do not cause problems. External operators could include Chikwenya and Rukomechi?

## 5.2 THREATS, ISSUES AND CONCERNS

There are a number of threats issues and concerns facing the Neighbours Programme and these are summarised in Table 31 before being described in more detail in Table 32.

**Table 31: Summary and categorisation of threats, issues and concerns**

Communities	Transfrontier	Others
<ul style="list-style-type: none"> <li>• Cultural site info unknown****</li> <li>• Community participation/ involvement needs to be improved***</li> <li>• Inadequate communications with communities</li> <li>• Mukwichi buffer zone degraded</li> <li>• Problem animals</li> <li>• Encroachment in south</li> <li>• Gold Panning</li> </ul>	<ul style="list-style-type: none"> <li>• Inadequate integration with Zambian management**</li> <li>• Zambian activities/ developments**</li> <li>• Poor TFCA awareness</li> </ul>	<ul style="list-style-type: none"> <li>• Conflicting interests with neighbours</li> <li>• Hurungwe Master Plan</li> <li>• Safari hunting monitoring</li> <li>• Boundaries</li> </ul>

<b>Table 32: Neighbours Issues and Concerns</b> (Stars indicate a measure of importance)	
<b>Issue/Concern</b>	<b>Description</b>
<b>COMMUNITIES</b>	
Cultural site info unknown****	Information is available in the written record for three cultural sites within Mana Pools. In addition a fourth site – Mazunga spring – in the Rukomechi river was described during the meeting. There should be an active investigation of these sites and new ones.
Community participation and involvement with Mana Pools needs to be improved***	There appears to be little interaction between Mana management staff and the Mukwichi Communal Land. However, some of the staff at Mana have their homes in the Communal Land and patrols pass through the area to their pick-up points. In addition, 5 or 6 of the Mana permanent staff are from the Mukwichi Communal Land. This represents about 12% of the current labour force for Mana Pools.
Communications between ZPWMA and communities, local government needs to be improved	Communications between ZPWMA, both at regional and park level, and between communities and the local Hurungwe government, are not as good as they could be. For example, the Hurungwe RDC has recently completed a master plan for the District but there is little awareness of this at the Park level.
Mukwichi buffer zone degraded	A buffer zone was declared within Mukwichi Communal land to further wildlife conservation in the area. This buffer zones abuts the Mana Pools National Park. Unfortunately parts of the buffer zone have been invaded by illegal settlers (approx 700 households) and, more recently by gold panners. This illegal settlement is a recent development – in the last three years.
Problem animals	Settlers in the designated buffer zone often complain about problem animals but there is little reaction to these from the authorities (ZPWMA at Marongora or Safari Hunters via the Hurungwe RDC) as they are deemed to be illegal settlers. The most frequently reported animal problems come from elephants, eland, lions (mainly in the Nyamakate area) and buffalos.
Encroachment in south	The southern boundary of the park with the Mukwichi Communal Land is not clearly marked. Cultivation and clearing is moving closer to the park boundary
Gold Panning	Panning for gold is carried out along the Chitake, Mvurameso and Burutsa rivers. The activity has reached Mana Pools along the Mvurameso river (see map below) and this is a cause for concern. Gold panners can legalise their operations and apply for permits through the RDC. However these activities are being carried out in the buffer zone and it should be possible to stop or control this activity in this area.

**Table 32: Neighbours Issues and Concerns**  
 (Stars indicate a measure of importance)

Issue/Concern	Description
<b>TRANSFRONTIER</b>	
Inadequate integration with Zambian management**	There have been informal exchanges including joint patrols between the Zambian and Zimbabwean authorities. However this will need to be formalised.
Zambian activities/developments**	Developments on the Zambian side of the river, especially in the Chiawa Game Management Area, appear to have mushroomed in an uncontrolled manner. Although all developments in GMAs need to be approved by ZAWA it appears that very few have gone through this process. Some large camps with generators have been established which degrade the quality of the tourism experience for both Zambia and Zimbabwe.
Poor TFCA awareness	Awareness of the middle Zambezi Trans-Frontier Conservation Area is low. This is understandable as the initiative is in its early days. However, there is a need to ensure that its profile becomes higher.
<b>OTHER</b>	
Conflicting interests with neighbours	Fortunately most of Mana Pools abuts onto ZPWMA land. However this land is designated for safari hunting and sometimes this land use option clashes with the ideals set out for a National Park.
Hurungwe Master Plan Integration	The Hurungwe District Master Plan is in its final stages and the Mana Pools Management Plan needs to take cognisance of this document. The plan will be made available to the planning team in due course.
No monitoring of safari hunting by ZPWMA	The ZPWMA does not monitor hunts taking place outside the estate. Quotas are set jointly and the Authority actually issues the quota. They will also collect the returns but there is no ZPWMA of the actual hunting. In the case of the Mukwichi this means that the southern part of Chewore is being hunted without ZPWMA presence?
Boundary demarcation	Parts of the Mana Pools NP boundary are not marked on the ground. The area that is of the greatest concern is part of the eastern boundary which follows an old road alignment which has since disappeared. In addition, the 365 metres from the Rukomechi is open to interpretation, given that the course of the river may change in the future.

## 5.3 GUIDING PRINCIPLES

The following guiding principles were elaborated for the Neighbours Programme. They are listed below before being described in more detail.

1. Tangible benefits accruing to communities
2. Community involvement and participation encouraged
3. Cultural sites will be recognised
4. Awareness of park resources is promoted
5. Citizen and educational access will be facilitated
6. Open communications with stakeholders
7. Transfrontier context will be a motivating force

## **1. Tangible benefits accruing to communities**

Although the Mukwichi community receives benefits from the ZPWMA estate in the Zambezi Valley, it currently does not benefit directly from being a neighbour to the Mana Pools National Park. In addition the Dandawa community which was related to the Sanyati area when the park was formed also does not receive any benefits from the park. It is vital that this management plan addresses this issue. – e.g Promotion of PPC Sites will be advocated

## **2. Community involvement and participation encouraged**

The community, some of whom were resettled after the formation of Mana Pools National Park and other protected areas in the Zambezi Valley, need to be encouraged to be more involved with the park. They need to be informed of the activities taking place in the park (see 7 below) and be encouraged to become involved with the future of the area.

## **3. Cultural sites will be recognised**

As outlined in the Resource Inventory document there are several known cultural sites found within Mana Pools NP. However, discussions with some community members indicate that there may also be others. It is important that these sites, which have meaning to the communities, are recognised and documented. Where required access to these sites will be given to communities.

## **4. Awareness of park resources is promoted**

Awareness of Mana Pools NP, its resources and its management needs to be promoted. A first step towards this can be achieved by liaising with key stakeholders (see 7 below and 3 above). However, it is believed that the Authority needs to be more proactive in this regard. Previously the ZPWMA was involved in active outreach and educational programmes that brought information about the park and its environment to the people.

## **5. Citizen and educational access will be facilitated**

In keeping with the Wildlife Policy citizen and educational access to Mana Pools will be facilitated where possible.

## **6. Open communications with stakeholders**

It is important for the management of Mana Pools to have open communications with stakeholders who are adjacent to the park. This includes the community members, the Hurungwe Rural District Council and hunters and tour operators who use the adjacent areas.

## **7. Transfrontier context will be a motivating force**

The Lower Zambezi Transfrontier Area is an idea that is beginning to crystallise and come of age. It is moving from an idea into a more concrete reality and the importance of this to Mana Pools cannot be underestimated. It is expected that a Memorandum of Understanding will be signed between Zambia and Zimbabwe later this year and the formalisation of the TFCA will have implications for the funding and management of Mana Pools.

## 5.4 OBJECTIVES, TARGETS AND ACTIVITIES

Five management objectives have been elaborated for the Neighbours Programme. The objectives and their targets (summarised below) were defined after an analysis of the threats, issues, concerns and guiding principles. There is a text description of the objectives and targets prior to presentation of the first three action and activity plan. Numbering in the text provides the linkage to the summary table and the three year action plan.

### **Objective 1: Mukwichi buffer zone secured and linked to Mana Pools**

#### Targets

- 1.1 Illegal activities controlled within buffer zone
- 1.2 Statutory framework to guide and control development
- 1.3 Tourism possibilities in buffer zone investigated

### **Objective 2: Community receiving tangible benefits from Mana Pools NP**

#### Targets

- 2.1 Community participating in tourism in Mana Pools NP
- 2.2 Cultural sites in Man Pools described
- 2.3 Community capacity building initiated
- 2.4 Employment of community members in Mana Pools
- 2.5 Effective problem animal control

### **Objective 3: Community awareness of natural resources in Mana Pools raised**

#### Targets

- 3.1 Outreach programmes initiated
- 3.2 Communities visiting Mana Pools

### **Objective 4: Linkages with external stakeholders improved**

#### Targets

- 4.1 Improved linkages with Hurungwe Rural District Council
- 4.2 Improved linkages with community representatives
- 4.3 Improved liaison with hunters in adjacent areas and external operators

### **Objective 5: TFCA Formalised and established**

#### Targets

- 5.1 Effective integration mechanisms formalised
- 5.2 Integrated tourism development plan finalised
- 5.3 TFCA awareness raised
- 5.4 Liaison with other regional initiatives

## **Objective 1: Mukwichi buffer zone secured**

The Mukwichi buffer zone was established in the early 1990s under the CAMPFIRE programme. Roughly following the alignment of the veterinary fence, it defined a zone of no settlement between two and five kilometres from the Mana Pools park boundary and the area designated for safari hunting within the communal land. At the time of established approximately 600 families would need to be resettled and agreement was reached with them over this. Unfortunately, this resettlement did not take place and there are still people living within the buffer zone.

It is important that the community takes cognisance of its environmental responsibilities with regard to the buffer zone. It represents an opportunity for the development of tourism related income generating activities on the communities own land rather than been reliant on the Parks and Wildlife Estate solely.

### **Target 1.1: Illegal activities controlled within buffer zone**

- 1.1.1 The southern boundary of the Mana Pools National Park is not clearly marked. The line follows an old fence line and only a few posts remain. It is important that this boundary is surveyed and marked so that there is no doubt in the minds of the community about the limits of the park.
- 1.1.2 As mentioned above there are people living within the buffer zone. As this is an agreed legal land classification these people are considered to be there illegally and they need to be resettled as per the original agreements.
- 1.1.3 In addition, panning for gold is taking place on the Chitake and Mvurameso rivers and this has already spilled over into Mana Pools. Although panning for gold is not an illegal activity per se as permits are obtainable, the fact that it occurs within the defined buffer zone means that the RDC should be able to exercise some control.

### **Target 1.2: Statutory framework to guide and control development**

- 1.2.1 It is important that there is agreement between the community, the Hurungwe Rural District Council and the ZPWMA about the types of development that should be permitted in the buffer zone. All three parties should meet to develop the framework, guidelines and protocols.

### **Target 1.3: Tourism possibilities in buffer zone investigated**

- 1.3.1 Once the buffer zone has been secured the community should pursue tourism related initiatives within it. There is the possibility that once these have been developed they could link into the community initiate proposed in the Southern Zone for Mana Pools (see Objective 2). Possibilities that could be investigated and with assistance for the ZPWMA include walking trails, 4x4 trails etc

## **Objective 2: Community receiving tangible benefits from Mana Pools NP**

Although the Mukwichi community receives benefits from the Parks and Wildlife Estate through hunting in the Chewore Safari Area, it receives few benefits directly from Mana Pools National Park. One notable exception is that approximately 15% of the permanent workforce stationed at Nyamepi is from Chief Chundu's area. Another potential concern is that Chief Dandawa's people were relocated to the Sanyati area and are no longer neighbours of the park. However, they have recently approached the ZPWMA about the possibility of becoming involved in tourism in the park.

### **Target 2.1: Communities participating in tourism in Mana Pools NP**

At present there is no community linked tourism inside Mana Pools National Park. In the early 1990s an operator established a campsite within the buffer zone but this camp has subsequently closed, the operator citing poaching and disturbance as one of the main reasons. In addition, some tour operators used the Mukwichi escarpment as a starting point for walking safaris into the park.

- 2.1.1 Meaningful participation by communities in tourism inside protected areas is difficult to achieve successfully. Firstly the model for the development needs to be carefully thought through. Perhaps the easiest is where a site is leased to the community (and here exactly who is the "community") who then forms a joint venture with a reputable tour operator to develop and manage the site. This way all three stakeholders (the community, the operator and the ZPWMA) benefit as it is vital that whatever development is in place does not downgrade the reputation of the park. The formulation of the relationship between all stakeholders is an important first step to achieving the objective.
- 2.1.2 The Mukwichi "community" should be allocated a site in the southern zone. Several sites have been considered such as Nyamawani Pan or a site on the Rukomechi river between Nyakasikana Gate and the escarpment. As defined in the tourism programme developers of a site in this area would need to develop their own game drive network and they will not be permitted access to the Chitake Spring.
- 2.1.3 Another way of communities being able to participate in tourism is by providing guiding services, both at the proposed camp and also as a service to other clients. Ways of training people by apprenticeship should be investigated.

### **Target 2.2: Cultural sites in Mana Pools described**

- 2.2.1 Several cultural sites are described in Mana Pools but there is a need to accurately define, describe and mark, if necessary, these sites. This should be carried out in conjunction with National Museums and Monuments. In addition, there are indications that there are other sites that are not described in the literature and these need to be investigated. Field trips by both ZPWMA staff and community members would need to be undertaken to the sites.
- 2.2.2 Following on from this the need for access rights and protection of site needs to be assessed.



**Target 2.3: Community capacity building initiated**

- 2.3.1 Where possible capacity building for community members should be initiated. The first step would be a needs identification and assessment. Only after this has been done can a capacity building programme be formulated and assessed if it is indeed possible,

**Target 2.4: Employment of community members**

- 2.4.1 Currently approximately 15% of the workforce at the Nyamepi HQ in Mana Pools is from Chief Chundu's area in the Mukwichi Communal Land. However, it is believed that it is possible to increase this to 25%. Suitable candidates should be interviewed for any new posts that are created (see Park Operations Programme Objective 2).

**Target 2.5: Effective problem animal control**

Problem animal control (PAC) is carried out by the ZPWMA staff at Marongora or by the safari operator utilising the Mukwichi Communal Land (on behalf of the ZPWMA). If animals are shot during the course of control activities than the meat is used by the local communities. In 2009 two elephants have already been shot in the Mukwichi Communal Land.

- 2.5.1 For PAC to be effective, the response must be forthcoming in a timely manner to ensure that community feels that the authorities are taking their problems seriously.
- 2.5.2 All records of PAC should be collected from Marongora and the Hurungwe RDC for analysis at Nyamepi, especially as there are often animals originating from Mana Pools NP.

**Objective 3: Community awareness of natural resources in Mana Pools raised**

Raising awareness of the environment and the value of natural resources in the surrounding communities is probably one of the more important tasks facing managers of a protected area. In the long-term this awareness and positive outlook on the protected area is vital for its survival as an intact unit. At present there is little official contact between the communities and management of the Mana Pools National Park and this needs to be addressed.

**Target 3.1: Outreach programmes initiated**

- 3.1.1 The ZPWMA has an outreach and educational programme but its effectiveness has been greatly reduced owing to financial and personnel constraints. In some cases this function appears to have been taken over by the CAMPFIRE programme. In some neighbouring countries the management authority will actively seek to engage the community through visits, film shows and other methods to pass the conservation message. Perhaps beyond the scope of just the Mana Pools NP planning effort this type of initiative should be institutionalised within the ZPWMA and initiated country-wide.

### **Target 3.2: Communities visiting Mana Pools**

- 3.2.1 Another way of passing the conservation message is by facilitating visits to the park by community groups, including local schools. Free or subsidised entry should be allowed for local community groups and they should be accompanied by a ZPWMA member who can explain the local environment to them. Accommodation of large groups in the park is always problematic and discussions should be initiated with the Department of Veterinary Field Services under the Ministry of Agriculture to explore the possibility of school and other community groups being allowed to stay overnight at the Rukomechi Research Station. This is linked to Objective 3 under the Tourism Programme.
- 3.2.2 Schools which are close to Mana Pools should be targeted and encouraged to visit the park. This would require visits to these schools by parks staff to explain, encourage and facilitate where possible, visits to the park.

## **Objective 4: Linkages with external stakeholders improved**

### **Target 4.1: Improved linkages with Hurungwe Rural District Council**

- 4.1.1 In terms of local government Mana Pools falls into the Hurungwe Rural District Council administrative area . The Hurungwe RDC has recently completed a master plan for the area but there appears to have been little communication on this with Mana management. Generally, there should be more communication between the RDC and Mana field management. The Hurungwe RDC offices are approximately 50 km off the main Mana to Harare road and several meetings per year should be scheduled.

### **Target 4.2: Improved linkages with community representatives**

- 4.2.1 Communications with the traditional authorities are not ideal. However, as a number of field staff are from the Mukwichi Communal Land there are linkages. A bi-annual meeting should be scheduled with identified community representatives and these should include members from the WADCOs and VIDCOs adjacent to the park

### **Target 4.3: Improved liaison with hunters in adjacent areas and external operators**

- 4.3.1 Hunting on both sides of Mana Pools is through the auction system. Originally conceived as a method to ensure that citizens have access to hunting in Zimbabwe, this seems to have changed and the areas are used for more traditional safari hunting with foreign clients. It is apparent that hunters are entering the park, especially along the Rukomechi river and when caught there are claims about ignorance of the boundary. The boundaries of Mana should be clearly indicated on maps and provided to successful bidders for the auction hunts.
- 4.3.2 Hunting statistics in the surrounding areas need to be accessed and kept at Nyamepi. It is important that park managers are aware of the utilisation of what is a shared resource.

## **Objective 5: TFCA Formalised and established**

Transfrontier Conservation Areas are becoming an accepted way to manage and promote protected areas and the Lower Zambezi TFCA which has Mana Pools and the Lower Zambezi national parks at its core is currently being formalised and a MoU is expected to be signed soon between the governments of Zimbabwe and Zambia. There is a need for integration between the TFCA and the Biosphere applications which are underway – but this is at a higher level than Mana Pools.

### **Target 5.1: Effective integration mechanisms for management, research and law enforcement formalised**

5.1.1 For the TFCA to become more than a paper exercise there need to be effective integration methods between Zambia and Zimbabwe that are practical. These methods of integration and collaboration need to cut across management, tourism, research and law enforcement. Investigations into tourism management and marketing fall under the tourism programme. Once established these mechanisms need to be linked into the MoU. There are disagreements about the international boundary and these need to be addressed.

### **Target 5.2: Integrated tourism development plan finalised**

5.1.2 A key component of any TFCA initiative is an integrated tourism plan which takes into account different markets, the different types of protected areas and ways of linking these areas. These plans are usually formulated by an external body and it is imperative that Mana field staff participate fully in any such exercise.

### **Target 5.3: TFCA awareness raised**

5.3.1 For the TFCA to be successful it should be an accepted form of conservation. It is important that the TFCA message is spread and awareness of the concept and its benefits raised at all levels in society. Internet information and paper fact sheets are ways for this to happen.

### **Target 5.4: Liaison with other regional initiatives**

5.4.1 An project to have a large part of the mid-Zambezi valley declared a Biosphere reserve is underway. There should be positive linkages to this initiative.

**Table 33: Summary and three year activity plan – NEIGHBOURS PROGRAMME**

<b>OBJECTIVE 1: MUKWICHI BUFFER ZONE SECURED</b>																	
TARGET	ACTION	ACTIVITY	Responsibility	Priority	Timeline - Quarters												Notes
					2010				2011				2012				
					1	2	3	4	1	2	3	4	1	2	3	4	
<b>1.1: Illegal activities controlled within buffer zone</b>	1.1.1: Boundary surveyed and marked	Survey carried out															
		Beacons and cutline															
	1.1.2: Illegal settlements removed	Situations assessment	Area manager, Traditional leadership, RDC														
		Relocation of settlers from buffer zone.	Traditional leadership, RDC, Police														
	1.3.1: Gold panning under control or eradicated	Situation assessment and panner sensitisation	Area manager, Traditional leadership, RDC														
		Joint force removal of illegal settlers from buffer zone	Traditional leadership, RDC, Police														
<b>1.2: Statutory framework to guide and control development</b>	1.2.1: Meetings between RDC, Community and ZPWMA	Initial meeting by end of 2009															
<b>1.3: Tourism possibilities in buffer investigated</b>	1.3.1: Possibilities explored	Liaison with community members															
		Ground assessments with potential operators															

**Table 33: Summary and three year activity plan – NEIGHBOURS PROGRAMME**

<b>OBJECTIVE 2: COMMUNITY RECEIVING TANGIBLE BENEFITS FROM MANA POOLS NP</b>																	
TARGET	ACTION	ACTIVITY	Responsibility	Priority	Timeline - Quarters												Notes
					2010				2011				2012				
					1	2	3	4	1	2	3	4	1	2	3	4	
<b>2.1: Community participating in tourism in Mana Pools NP</b>	2.1.1: Model for community participation developed	ZPWMA to develop draft of model															
		Discussions with Communities, NGOs, potential tour operators and other groups (e.g. CASS,) to refine model															
	2.1.1: Site(s) allocated for Public Private Partnership arrangements with communities,	Selection of sites															
		Development of site in partnership with operator															
	2.1.2: Training of community member as guides for walking trails	Investigation of modalities	ZPWMA, Community														
<b>2.2: Cultural sites in Mana Pools described</b>	2.2.1: Cultural sites identified, described and mapped	Meetings	ZPWMA, Community Museums														
		Field visits															
		Write-ups															
	2.2.2: Access rights and protection of sites	Discussions between communities and ZPWMA															
<b>2.3: Community capacity building initiated</b>	2.3.1: Needs identification and assessment	In conjunction with communities															
<b>2.4: Employment of community members</b>	2.4.1: Increase community employees from 15% to 25%	Identification of suitable posts in conjunction with Park Operations Prog. 2.1															

Table 33: Summary and three year activity plan – NEIGHBOURS PROGRAMME																	
OBJECTIVE 2: COMMUNITY RECEIVING TANGIBLE BENEFITS FROM MANA POOLS NP																	
TARGET	ACTION	ACTIVITY	Responsibility	Priority	Timeline - Quarters												Notes
					2010				2011				2012				
					1	2	3	4	1	2	3	4	1	2	3	4	
		Interviews with suitable candidates and appointments															
<b>2.5: Effective problem animal control</b>	2.5.1: Timely response to complaints through RDC and Marongora																
	2.5.2: Mana Pools Mgmt to be informed																

Table 33: Summary and three year activity plan – NEIGHBOURS PROGRAMME																	
OBJECTIVE 3: COMMUNITY AWARENESS OF NATURAL RESOURCES IN MANA POOLS RAISED																	
TARGET	ACTION	ACTIVITY	Responsibility	Priority	Timeline - Quarters												Notes
					2010				2011				2012				
					1	2	3	4	1	2	3	4	1	2	3	4	
<b>3.1: Outreach programmes initiated</b>	3.1.1: Possibilities of outreach programmes investigated	Assessment of programmes in other countries and past approaches by the ZPWMA															
		Institutionalise outreach approach within the ZPWMA															
<b>3.2: Communities visiting Mana Pools</b>	3.2.1: Facilitation of school visits	Subsidised entry possibilities															
		Accommodation options															
	3.2.2: Education of schools about possibilities	School visits by Mana staff															
		Promotional materials															

**Table 33: Summary and three year activity plan – NEIGHBOURS PROGRAMME**

<b>OBJECTIVE 4: LINKAGES WITH EXTERNAL STAKEHOLDERS IMPROVED</b>																	
TARGET	ACTION	ACTIVITY	Responsibility	Priority	Timeline - Quarters												Notes
					2010				2011				2012				
					1	2	3	4	1	2	3	4	1	2	3	4	
<b>4.1: Improved linkages with Hurungwe Rural District Council</b>	4.1.1: Regular meetings	At least annual meetings ZPWMA rep.															
		To attend important RDC meetings															
<b>4.2: Improved linkages with community representatives</b>	4.2.1: Regular meetings	Meetings with relevant WADCOs and VIDCOs															
<b>4.3: Improved liaison with hunters in adjacent areas and external operators</b>	4.3.1: Boundary issues clarified	Boundary surveys															
		Boundaries defined marked where necessary															
		Boundaries marked where necessary															
		Information given to hunters															
		Offenders fined															
	4.3.2: Hunting statistics kept on station at Mana	Boundary surveys															
		Boundary marked where necessary															

**Table 33: Summary and three year activity plan – NEIGHBOURS PROGRAMME**

**OBJECTIVE 5: TFCA FORMALISED AND ESTABLISHED**

TARGET	ACTION	ACTIVITY	Responsibility	Priority	Timeline - Quarters												Notes	
					2010				2011				2012					
					1	2	3	4	1	2	3	4	1	2	3	4		
<b>5.1: Effective integration mechanisms formalised</b>	5.1.1: Mechanisms discussed and formulated	Law enforcement mechanisms formulated																
		Management mechanisms formulated																
		Research mechanisms formulated																
		Process linked in MoU																
<b>5.2: Integrated tourism development plan finalised</b>	5.2.1: Plan developed between Zambia and Zimbabwe	Process initiated, usually via a facilitator but Mana staff to participate fully																
		Plan developed and finalised																
<b>5.3: TFCA awareness raised</b>	5.3.1: Internet and other information channels opened	Contributions to internet sites																
		Paper fact sheets distributed																
<b>5.4: Liaison with other regional initiatives</b>	5.4.1: Strong linkages to regional NGOS established and maintained	African Wildlife Foundation																
		Others as appropriate																
	5.4.2: Liaison with Biosphere Reserve initiative																	



## 5.5 ENVIRONMENTAL IMPACTS AND MITIGATION

This section provides a brief summary of the possible environmental effects of some of the activities and developments that will be carried out by this programme. Possible mitigation measures are outlined.

**Table 34: Mitigation measures for the Neighbours Programme**

Development Activity	Potential Impact	Mitigation Measure
Mukwichi buffer zone secured	<ul style="list-style-type: none"> <li>• Improved wildlife on community land</li> <li>• Decreased poaching in Mana Pools</li> <li>• Increased tourism</li> </ul>	<ul style="list-style-type: none"> <li>• Appropriate tourism permitted</li> </ul>
Cultural sites documented	<ul style="list-style-type: none"> <li>• National recognition of the sites</li> <li>• Possible degradation of sites</li> </ul>	<ul style="list-style-type: none"> <li>• Restricted access</li> <li>• Education</li> </ul>
Improved community awareness	<ul style="list-style-type: none"> <li>• Decreased poaching</li> <li>• More poaching...</li> </ul>	<ul style="list-style-type: none"> <li>• Appropriate awareness programmes</li> </ul>
TFCA	<ul style="list-style-type: none"> <li>• Community sidelined?</li> </ul>	<ul style="list-style-type: none"> <li>• Community representation during TFCA formalisation</li> </ul>

## 5.6 INDICATIVE BUDGET

The following table is an indicative budget for the neighbours programme summarised by objective. It is a draft indication of the likely expense of the programme and should be refined during the annual planning cycle. Expenses related to the securing of the buffer zone are not included as they will be met by the national government and not by the Authority.

**Table 35: Indicative budget for the Neighbours Programme in US\$ (by objective)**

Objective	Capital	Recurrent
Mukwichi buffer zone secured	5,500	0
Community receiving tangible benefits from Mana Pools NP	3,500	1,000
Community awareness of natural resources in Mana Pools raised	0	2,000
Linkages with external stakeholders improved	8,500	2,000
TFCA Formalised and established	5,000	1,000
<b>Programme Totals</b>	<b>22,500</b>	<b>6,000</b>



# **ANNEXES**



## ANNEX: PLANNING PARTICIPANTS

### 1 CORE PLANNING TEAM

The following were members of the core planning team. Unfortunately, owing to other commitments members were not able to attend all meetings

Name	Position
Rachel Gwazani	ZPWMA Planning Officer
Norman Monks	ZPWMA Area Manager Mana Pools
Mr Ruswa	ZPWMA Regional Manager
Ebbias Manyonganise	ZPWMA Business Development
Edson Chidziya	ZPWMA TFCA
Simukai Nyasha	ZPWMA Tourism Officer
Ian Games	Facilitator

### 2 MEETING ATTENDANCE

In all a total of seven meetings were held, two workshops and five working groups, involving 81 people. The issues regarding tourism necessitated a second meeting. The following people attended the meetings.

Name	Organisation	Ws01	WS02	BioD	Tour1	Tour2	P.Ops	Comm
Aaron	Environmental Mgmt Agency							
Arnott, Kevin	Chikwenya Camp, Sapi SA							
Baille, Elspeth	Goliath Safaris							
Banda, Martin	Department Physical Planning							
Bope, Jerifanos	ZPWMA, Senior EI Officer							
Chamisa, Andrew	Tsetse Control, Acting Director							
Chikumba, Hardwork	ZPWMA							
Chimeramombe, Felix	ZPWMA, Regional Manager							
Chirozva, Robert	Environmental Mgmt Agency							
Chisamba, Pamela	AWF Administration							
Chisvo, Charles	AWF Enterprise Officer							
Chitupa, Dickson	ZPWMA, Senior Wildlife Officer							
Chokuda, F	ZPWMA							
Chonzi, Beauty	ZPWMA, Parks Assistant							
Chundu, Picky	Chief Chundu							
Coughlan, Flo	Goliath Safaris							

Name	Organisation	Ws01	WS02	BioD	Tour1	Tour2	P.Ops	Comm
Dangare, Alec	ZPWMA TFCA							
Dube, A	ZPWMA, Senior Wildlife Officer Mana							
Elgar, Clyde	Kavinga Safaris							
Fearon, Ian	Naturways							
Ferreira, Stretch	LZ Tour Operators							
Foggin, Chris	TFCA Vet Sub Committe							
Games, Ian	AWF, Facilitator							
Goatley, Ron	Wilderness Safaris							
Gusha, P	African Teak Safaris							
Gwazani, Rachel	ZPWMA Planning Officer							
Huck, Rod	Kavinga Safaris							
Johnson, Courtney	Wilderness Safaris							
Juma, Tinashe	ZPWMA							
Lightfoot, Chris	Eco-Plan Consultancy							
Maasdorp, Richard	Outward Bound							
Mabuza, Kundai	Zimbabwe Tourism Authority							
Madzikanda, Hillary	ZPWMA							
Magadza, Cris	University of Zimbabwe, Professor							
Mandima, Jimmiel	AWF, Heartland Director							
Mandima, Leonard	Wildlife Society of Zimbabwe							
Manyonganise, Ebbias	ZPWMA, Business Development							
Mapuvire, G	CIRAD; BIO-HUB							
Marabini, Lisa	TFCA Vet Sub Committe							
Mashingaidze, Trust	ZPWMA, Corporate Human Resources							
Matipano, Geofreys	ZPWMA, Head Management Services							
Matipano, Maria	ZPWMA, Marketing Services							
McFarland, Dave	Chipembere							
Metcalfe, Simon	AWF							
Mhindurwa, A	Tsetse Control							
Monks, Norman	ZPWMA, Mana Area Manager							
Moyo, Arnold	ZPWMA, GIS							
Mufute, Olivia	ZPWMA							
Mugogororo, Newton	ZPWMA							
Mukaronda, Daphne	National Commission for UNESCO							
Munambah, Tawanda	Zimbabwe Tourism Authority							

Name	Organisation	Ws01	WS02	BioD	Tour1	Tour2	P.Ops	Comm
Mungwawashu, Lovemore	Lowveld Rhino Trust, Operations Dir.							
Murindagomo, Felix	ZPWMA Principle Ecologist							
Murray, Nick	Bushlife Safaris							
Mwedzi, Bessie	AWF							
Ndlovu, N	ZPWMA							
Nduku, Willie, K	Wildlife Society Zimbabwe, Director							
Nkhoma, Rodgers	ZAWA							
Ngulube, M	UNESCO Hre Cluster							
Nyaguse, Gregory	ZPWMA, Senior Ecologist							
Nyakabangwe, Henry	RDC, Chief Chundu Assist							
Nyamombe, Lloyd	Min Transport							
Nyasha, Simukai	ZPWMA, Tourism							
Peacocke, Margie	Wildlife Vet Unit							
Phiri, Crispin	ULKRS							
Pitman, Dick	Zambezi Society							
Pope, Steve	Chipembere, Ian Nyschens Trust							
Potera, Priscilla	Hurungwe RDC							
Rademeyer, Kerri	Conservation Lower Zambezi							
Ruswa, S	ZPWMA, Regional Manager							
Sibanda, Mxolisi	WWF Research Fellow							
Simbarashe, William	Chief Chundu							
Siziba, Nqobizitha	ZPWMA, LKFRI							
Taruva, Sukai,	Department Physical Planning							
Tariro, Murefu	Environmental Mgmt Agency							
Taruziva, Robert	Roads							
Tembo	Local Government							
Tumbare, Mike	Zambezi River Authority							
Varden, James	Natureways							
Wynn, Sally	Zambezi Society							
Yekere, T	ZTA							
<b>Totals</b>		<b>31</b>	<b>37</b>	<b>16</b>	<b>13</b>	<b>20</b>	<b>14</b>	<b>11</b>