

Management Plan

Bwabwata National Park

2013 / 2014 to 2017 / 2018



Ministry of Environment and Tourism
Directorate of Regional Services and Parks Management



Republic of Namibia







Republic of Namibia
Ministry of Environment and Tourism

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Foreword

National parks are a vital tool for conserving Namibia's essential biodiversity. By managing parks, their irreplaceable assets and unlimited potential will be conserved for future generations. In addition, every year Namibia's National Parks draw large numbers of tourists to Namibia, generating employment and stimulating development nationwide. National Parks also provide a unique opportunity to benefit local communities through rural development while providing research, education and recreation opportunities.

Bwabwata National Park is very special in that it supports a large wildlife population and a large human population. The major accomplishment of the Bwabwata National Park is that human and wildlife are now living in a status quo that offers tremendous benefits to both conservation and rural community development. In Bwabwata National Park, park neighbour and resident relations is key to long-term conservation initiatives and the quality of life for local communities. It is a win-win situation. With community game guards and resource monitors in place, the local communities have new opportunities in ecotourism and conservation, while wildlife benefits from protection and an increase in numbers.

This management plan sets out the objectives and guidelines for the management and development of the Bwabwata National Park. As such, it represents the policies and intentions of the Ministry of Environment and Tourism (MET) on how the park should be managed.

Park neighbours, traditional authorities, line Ministries, Regional Councils, conservancies, private sector, tourists, contractors, organisations, institutions, parastatals, researchers, professional hunters, and any entity or individual dealing with the park, in any way, must ensure that any actions and decisions relating to this park are in accordance with the park management plan. In addition, specific rules and regulations in accordance with the applicable legislation will apply.

Shorter-term operational plans or work plans will also be developed in accordance with the activities provided in the park management plan. These will identify specific or annual prioritised actions, which need to be performed to address the priorities specified in the park management plan.

The park management plan must be viewed as valuable and central document by all management and policy level staff involved with a specific park. They should be familiar with its contents, and should make use of it to familiarise new staff with the aims, objectives, management principles and strategies for the park.

It is every staff member's (involved with Bwabwata National Park) responsibility to ensure that the park management plan is implemented accordingly.

Uahekua Herunga, MP
MINISTER

Preface

In a briefing paper presented to the Namibian Cabinet in 1999, the North East Parks were identified as development engines for the region, due to their natural assets and the resulting tourism potential. While this management plan applies specifically to Bwabwata National Park, it takes particular account of the Park's position within a wide, regional network of conservation areas: conservancies, community forests and conservation zones in neighbouring countries.

The management plan for Bwabwata National Park was derived from several workshops involving the management of the MET, local communities and other stakeholders. The plan has been designed and structured to be priority focused and action oriented, to facilitate implementation and the achievement of outputs and outcomes.

It gives a brief background to the Park, including its purpose and objectives, and placing it in a regional setting, before focusing on park management aspects. Chapter 2 focuses on the management of natural resources in the Park while Chapter 3 addresses aspects of regional conservation, park neighbours and resident relations. The zonation of the Park is detailed in Chapter 4. The management of prospecting and mining, and tourism development are covered in Chapters 5 and 6, respectively. Detailed management considerations for infrastructure are included in Chapter 7, while the last chapter covers aspects of administration and management.

The plan is designed around a uniform structure for easy reference and use and should be used in conjunction with park legislation and regulation. The plan therefore articulates, at the strategic level, the 'What' must be done; with a brief description of the 'Why' these actions must be implemented to attain the specified objectives. It is imperative to operationalize these actions in a clear and detailed annual work plan.

The Ministry of Environment and Tourism would like to thank all its staff members, partners and stakeholders who participated in developing this management plan, specifically the Caprivi Parks Consultants, a partnership of Namibian firms appointed to help implement the Bwabwata Mudumu Mamili Parks Project which is co-funded by the Government of the Republic of Namibia and the German Government through KfW, who facilitated the compilation of the plan.

Simeon N. Negumbo
Permanent Secretary

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Abbreviations and Acronyms

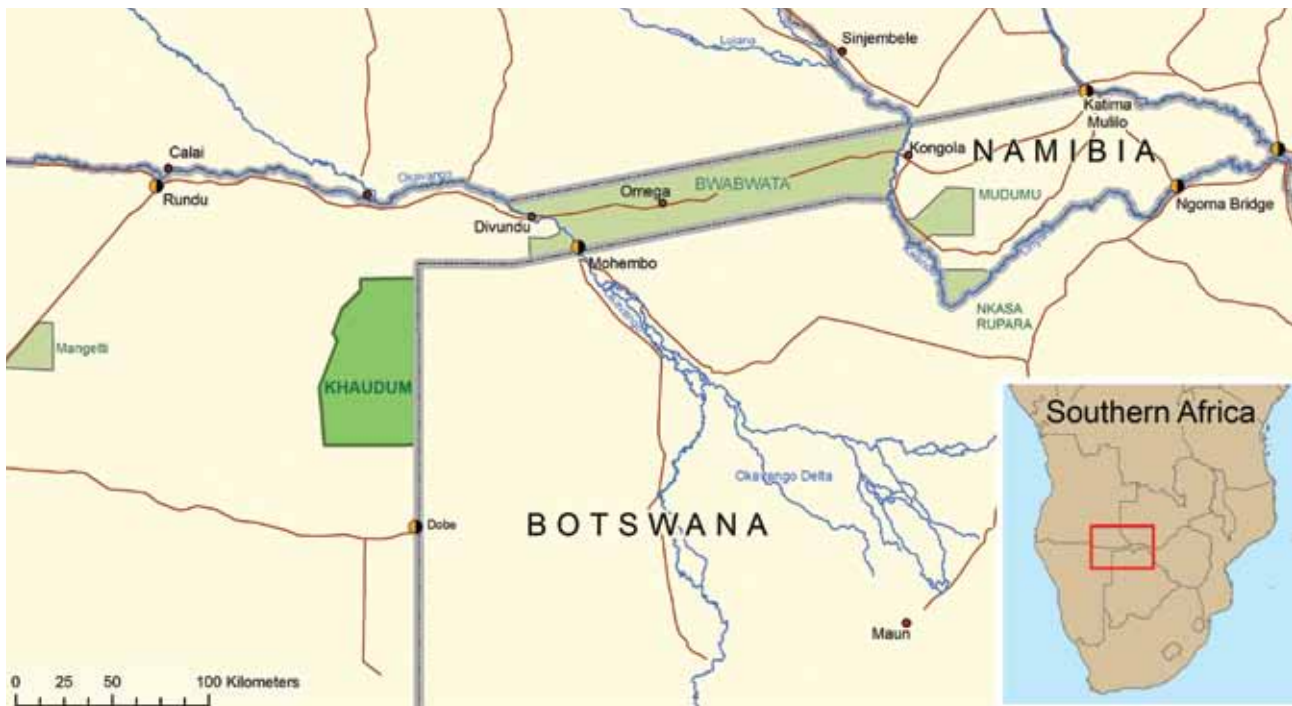
BMM	Bwabwata, Mudumu and Mamili National Parks
DSS	Directorate of Scientific Services
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
EPL	Exclusive Prospecting Licence
FMD	Foot-and-mouth disease
HWC	Human-wildlife conflict
IBMS	Incident Book Monitoring System
KAZA TFCA	Kavango Zambezi Transfrontier Conservation Area
IUCN	International Union for the Conservation of Nature
MET	Ministry of Environment and Tourism
NBRI	National Botanical Research Institute
NGO	Non-government Organisation



Chapter 1

Introduction

Shaped by water, woodlands, floods and fire, human history and ancient animal migration routes, Bwabwata National Park is rich in biodiversity and history. Effective management of Bwabwata, together with the other North-East Parks (Khaudum, Nkasa Rupara, Mangetti and Mudumu National Park) will ensure the conservation of important habitats, safeguard corridors for regional wildlife migration; provide engines for economic growth in poor rural areas; and provide access to natural areas for local, regional and international visitors.



Map 1: Namibia's North-East Parks lie close together in an area surrounded by Angola, Botswana, Zambia and Zimbabwe, and transacted by the Kwando, Kavango and Zambezi Rivers.

1.1 Overview of Bwabwata National Park

Covering a vast area of 6,274km², Bwabwata National Park is the largest of the four protected areas that make up the North-East Parks. Bwabwata is comprised of three Core Areas designated for special protection and controlled tourism – Kwando (1,345km²), Buffalo (629km²), and Mahango (245km²), and a large Multiple Use Area (4,055km²) zoned for community-based tourism, trophy hunting, human settlement and development by the resident community.

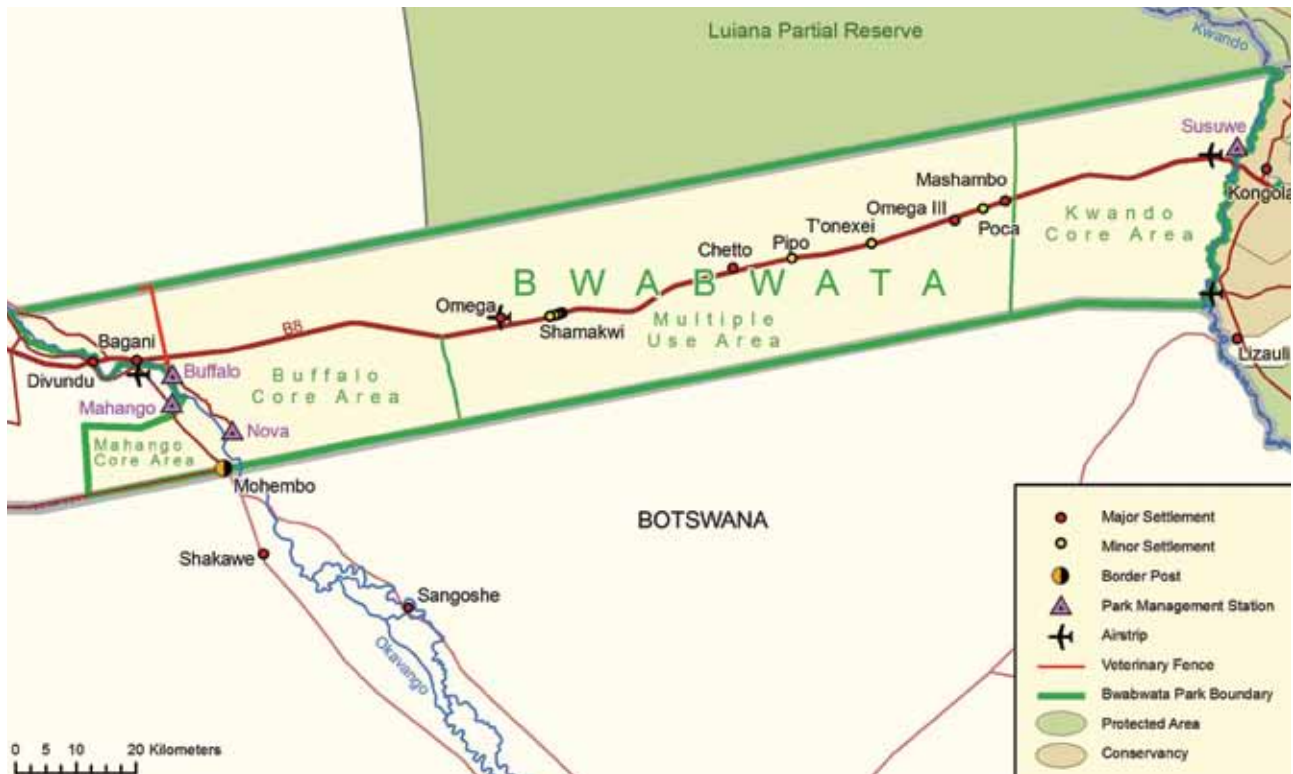
Except for Mahango, which is positioned on the western bank of the Kavango River, the Park completely covers the section of the Zambezi Strip, which extends from the Kavango to the Kwando Rivers. The boundary between the Zambezi and Kavango regions lies roughly in the middle of the strip.

The Park is bordered by Angola to the north and Botswana to the south. The northern boundary is demarcated by only a cut-line, however, the southern boundary is fenced with three veterinary standard fences, except for a 30-kilometre stretch, which lies west of the Kwando River.

At either end of the Park are small settlements – Kongola in the east and Divundu in the west. The Trans-Zambezi

Highway (B8) traverses the Park in the middle from east to west, and a minor road (C48) dissects Mahango in a north-south direction. A number of small settlements have emerged inside the Multiple Use Area, the largest of which are Mutc-iku, Omega, Chetto, Omega 3 (Tokoloshi) and Mashambo. The population of Bwabwata Multiple Use Area is approximately 5,500 residents, of which 80% are of the minority San ethnic group, the Khwe.

With only few fences, Bwabwata forms a **crucial transboundary link** for **wildlife migration** between Angola, Botswana, Namibia and Zambia and for **seasonal dispersal** to and from the rivers. Bwabwata's Core Areas serve as **core wildlife areas**, supplying wildlife to neighbouring conservancies and resident communities that can then sell trophy hunting rights to professional hunting outfits and develop tourism on their own land and the Multiple Use Area.



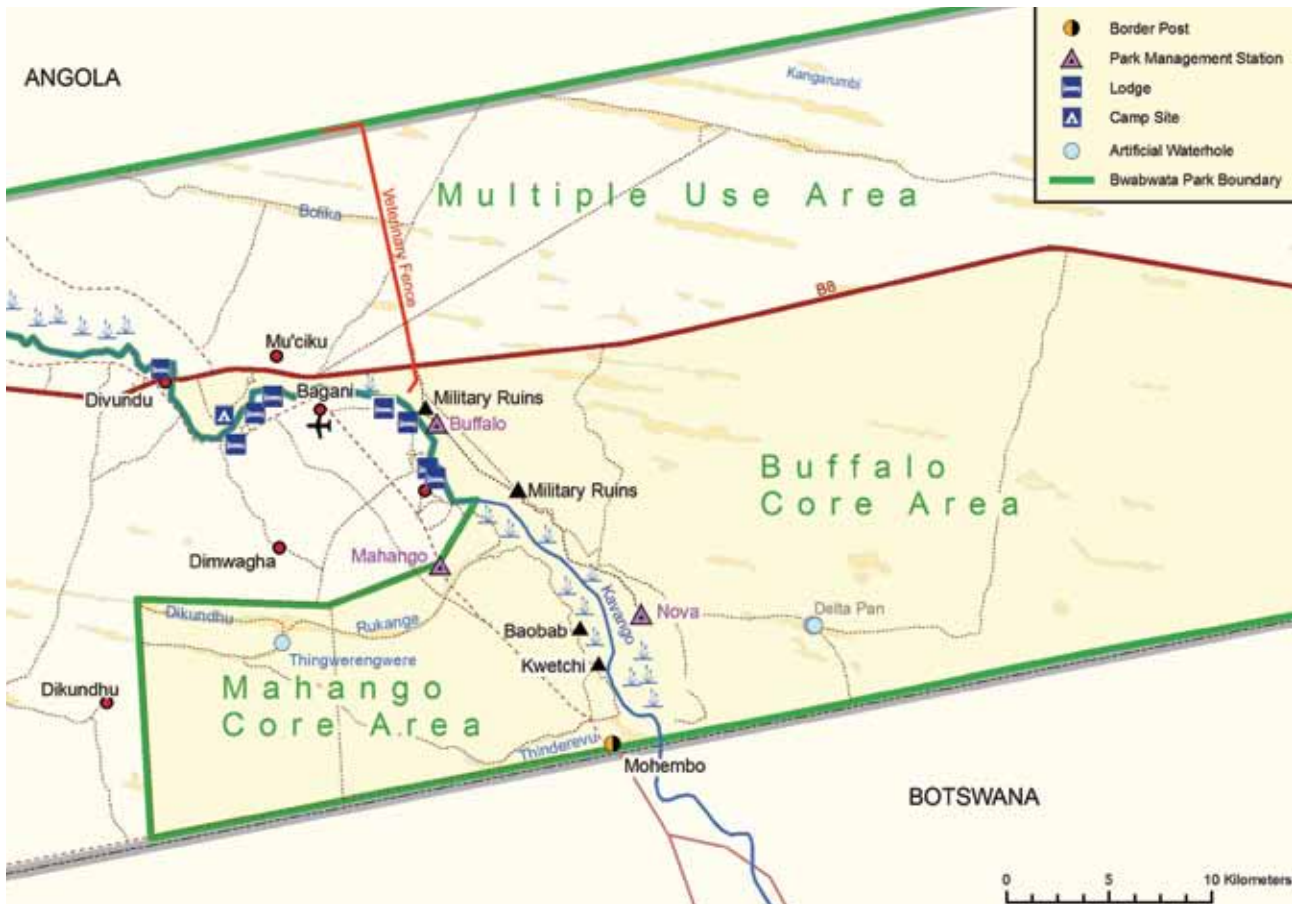
Map 2: Bwabwata National Park covers 6,274km² and extends across the Caprivi Strip.

Natural Environment

Bwabwata straddles the largest section of Kalahari Woodland in Namibia, stretching from the Kwando River in the east to the Kavango River in the west. The biodiversity of the omiramba and associated fringe woodlands is considered to be moderately sensitive and scarce, while the riparian woodlands and floodplains are highly sensitive and scarce. Broadleaved woodlands are considered to be less sensitive and scarce.

An outstanding feature of Bwabwata is the high number of large mammal and bird species that are nationally rare. The omiramba and their associated grasslands are habitat for roan, sable and tsessebe. Typical trees include *Baikia plurijuga* (Zambezi Teak), *Pterocarpus angolensis* (Teak), *Burkea africana*, Mangetti and several others, including several *Strychnos* (Monkey Orange) species. Plant species composition varies greatly between grassland, broadleaf woodland on deep sands, mixed woodland on the more loamy soils of the alluvial floodplains of the Kavango River, and riparian woodland.

Mahango Core Area is listed as an internationally important bird area (supporting globally threatened species) and is an avian diversity hotspot. Some bird species of conservation concern that occur in Bwabwata include the critically



Map 3: The Mahango and Buffalo Core Areas in Bwabwata National Park.

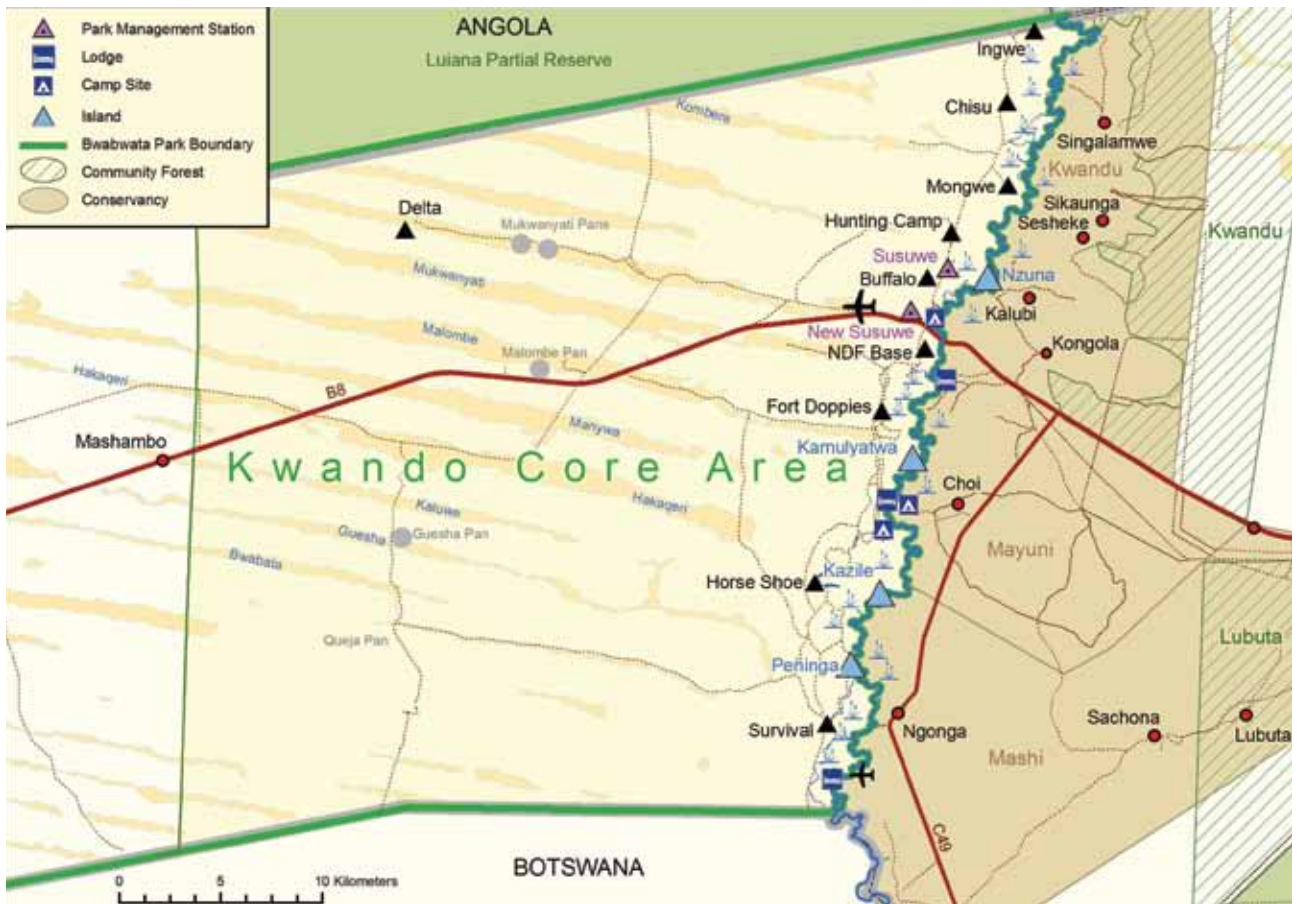
endangered Bittern and Pel's Fishing Owl, and the endangered African Marsh-Harrier, Rock Pratincole, Rufous-bellied Heron, Slaty Egret, Southern Ground Hornbill and Wattled Crane. The latter is a globally threatened species.

The primary driver of ecological patterns in Bwabwata National Park is soil types. Infertile deep sands are contained in paleo dunes interspersed with more fertile clays in broad interdunal valleys (omiramba). In general, the dunes carry broadleaved large trees (such as Zambezi Teak), while Acacia species and Leadwood dominate the interdunal omurambas where clay soils tend to dominate. The Mahango Core Area contains a large discrete area of highly erodible soils (possibly sodic) that support a distinct plant community.

Apart from the strong influence of soil types, dominance, and hence structure of vegetation, is often determined by the relative frequency and intensity of fires experienced over the last decade or more, as well as by impacts associated with elephant. Humans, both resident in Bwabwata and transient, are probably the cause of most of the fires.

Elephant populations have increased over the past few years to a decade, with high densities often occurring in the Buffalo Core Area and along the Kwando woodlands, where they regularly move between Namibia, Angola, Botswana and Zambia. Disturbances by fire and elephant are both part of the natural ecological dynamics of these woodlands. As long as water is seasonally available in the veld away from the rivers, and providing elephant are allowed to freely move between countries and not encouraged to stay in the area by provision of artificial water, they are unlikely to have irreversible impacts on the vegetation (at least at their current population levels).

Seasonal movements by several game species to and from both rivers are prominent in the omuramba systems of Bwabwata. These game species, which include elephant, buffalo, zebra, wildebeest and (to a lesser extent) roan, tend to cluster at the rivers during the dry season and move inland during the wet season. This natural seasonal cycle is an important mechanism that maintains vegetation structure, as most vegetation experiences a resting period during some part of the year.



Map 4: The Kwando Core Area in Bwabwata National Park lies to the west of the Kwando River.

Many of the riparian woodlands and thickets in Bwabwata are still intact. These areas and the rivers themselves are the habitat for highly prized (by birdwatchers) bird species such as Souza's shrike, Rock Pratincole and White-backed Night-heron. The main river channel of the Kwando River is supplemented by several smaller channels and oxbow lakes, leading to a constantly changing arrangement of dry and wet areas and the presence of some permanent islands. Permanently wet areas are home to several aquatic and semi-aquatic species, amongst which are some healthy populations of hippo and crocodile. Floodplain grasslands form important habitat for wetlands mammals such as lechwe, sitatunga and reedbeek.

Bwabwata is bisected by the Trans-Zambezi Highway, which carries large volumes of transit traffic (including heavy freight traffic). A high number of car accidents involving wild animals take place on this road, and these result in numerous human casualties and mortalities in wildlife – including rare and endangered species such as African Wild Dogs.

History of Bwabwata National Park

The history of this protected area is complex, with various proclamations and policies affecting the North-East Parks and neighbouring communities. It consists of the former Caprivi Game Park, Mahango Game Park and the Kwando Triangle, which in the past did not have explicit conservation status.

The first people to live in the area now referred to as Bwabwata National Park were the San (Khwe and Kung), before the first bantu tribes entered the area in the late 18th century. In 1945, following tsetse fly infestation, resident Hambukushu, Mafwe and Mayeye people moved out of the low lying areas in the Park.

The Zambezi Strip between the Kavango and Kwando rivers was first proclaimed as a Nature Park in 1963, mostly for strategic military reasons in view of independence struggles starting in Namibia, Angola and Zambia. In 1964, a recommendation by the Odendaal Commission to create a homeland for the Khwe in the Zambezi Strip, which would allow them to continue their traditional livelihood of hunting and gathering, was dismissed.

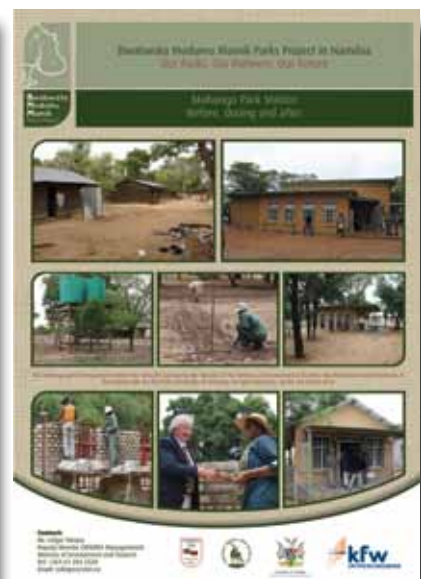
The Caprivi Nature Park had its conservation status elevated to that of Game Park in 1968 following an ecological survey that clearly confirmed the significant ecological value of the area. However, since its proclamation in 1968 up until the independence of Namibia in 1990, the entire area was treated as a military zone by the South African Defence Force, which meant that officials of the Department of Agriculture and Nature Conservation were denied access to the area. Only in 1990, when the military forces left Namibia, could conservation staff work in the Caprivi Game Park for the first time. Upon the disbanding of the South African military in Namibia, the Khwe communities staying at military bases inside the Park were allowed to continue living there.

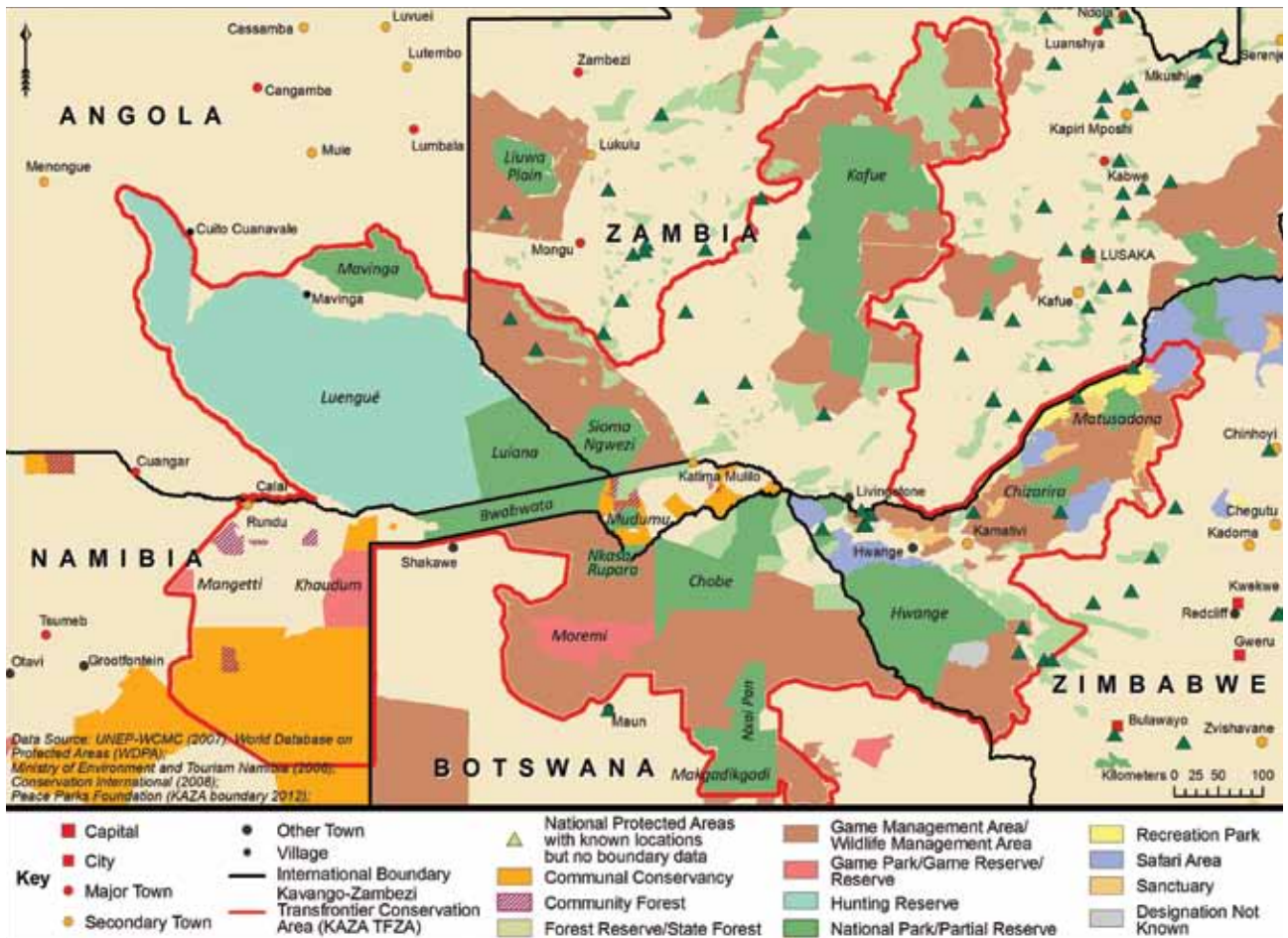
Mahango was settled by the Hambukushu around 1800 and occupied thereafter until 1982. The park has always been an important traditional hunting and fishing area to this community. In 1982 an agreement was signed between the Administration of Kavango and the Department of Agriculture and Nature Conservation to proclaim Mahango as a State protected area (along with Khaudum and Popa Falls). Based on this agreement, the Administrator General of South West Africa approved the declaration of Mahango as a game park in 1988. Mahango was officially gazetted in February 1989.

Following independence, the Ministry of Environment and Tourism (MET) commissioned a socio-ecological survey that included Caprivi Game Park and Mahango Game Park and surrounding areas. One outcome of the survey led to the introduction of legislation in 1996 to enable residents on communal land to form conservancies, thus granting them the same rights over wildlife and tourism as private land owners. Three conservancies were subsequently registered on the eastern boundary of Bwabwata: Kwandu (1999), Mayuni (1999) and Mashi (2003). Kwando is also registered as a community forest.

In 1998, also following recommendations of the socio-ecological survey, a vision for the North-East Parks was developed. This paper documented the vision shared by stakeholders for conservation, tourism development, equity and the creation of partnerships in the parks. Cabinet approved this vision in 1999, which in summary included the following:

- To merge Mahango Game Park and Caprivi Game Park to form the newly renamed Bwabwata National Park;
- To extend the eastern boundary of the Park to the middle of the Kwando River, thus including the 'Kwando Triangle';
- To zone the three Core Areas (Kwando, Buffalo and Mahango) for special protection and controlled tourism;
- To zone the central area of Bwabwata National Park to provide for a Multiple-Use Area of community-based tourism, trophy hunting, human settlement and development;





Map 5: The Kavango Zambezi Transfrontier Conservation Area (KAZA TFCA), a five-country initiative involving Angola, Botswana, Namibia, Zambia and Zimbabwe encompasses an area of about 440,000km².

- To prohibit cattle in Bwabwata National Park (and all North-East Parks);
- To give neighbouring and resident communities conditional tourism rights within the Park to allow for tourism facilities in own initiative or as joint-ventures;
- To invite tender proposals for developing a tourism lodge at Buffalo Camp in the Buffalo Core Area.

In line with this Cabinet Decision and following a lengthy consultation process, Bwabwata National Park was finally proclaimed in November 2007. Furthermore, in 2009 this Cabinet instruction became the basis for preparation of a tourism development plan for the Park, is currently being implemented.

The park residents have established a community-based natural resource management programme in the Multiple Use Area, with the support of NGOs and MET. The residents have formed a representative legal body, the Kyaramacan Association, which is managed on democratic principles and is accountable to its members.

KAZA TFCA

Supporting large herds of elephant and buffalo, plus rare and endangered species such as roan and sable antelope, Bwabwata, together with the other North-East Parks, constitutes important corridors for animal movement within the greater region in Namibia and surrounding countries. It is in this context that the North-East Parks form the geographical heart of the Kavango Zambezi Transfrontier Conservation Area (KAZA TFCA). This massive area includes numerous proclaimed national parks (including Bwabwata), game reserves, community conservation areas, forest reserves, and iconic tourism destinations such as the Victoria Falls and Okavango Delta. KAZA TFCA aims to broaden the protected areas network, thus increasing biodiversity, expanding historical game migration routes and drawing

more tourists to the area. In a place where local people often bear the costs of living with wildlife, KAZA TFCA aims to make the protection of wildlife and wild places economically more attractive to rural communities.

With a strong history of community and conservancy involvement, Namibia's North-East Parks and neighbours are well-placed to take advantage of KAZA TFCA. Namibia's establishment of conservancies is recognized as among the most successful efforts by developing nations to enhance natural resource management by increasing local responsibility and ownership over wildlife. Rural residents benefit financially from wildlife and tourism through a range of activities, including harvesting quotas, trophy hunting, sale of live game, and from tourism concessions.

Economic opportunities

Bwabwata is the most visited park in north-eastern Namibia because it is easily accessible. Tourism is a major socio-economic asset of the Park. It can offer income to local residents, jobs and business opportunities to communities and entrepreneurs, and economic benefits to the region and Namibia as a whole.

The formally protected areas are too small to conserve all ecological processes and services adequately on their own. The effectiveness of conservation also gains as it increases in scale: the greater the area under conservation status and management, the larger the benefit. It is therefore in everyone's interests to promote conservation activities, compatible land-use practices, and management and development initiatives, ultimately to benefit all collaborating partners throughout the broader area around Bwabwata National Park and the North-East Parks.

It is also important to develop synergies with cropping and livestock activities and mitigate conflicts between land uses. For example, the adoption of planned grazing and herding of livestock can improve pastures, crop yields and decrease predator-livestock conflicts significantly. Local planning is also required to ensure that grazing areas are secured for livestock and wildlife over the long term.

As Chief Mayuni of the Mashi Traditional Authority said, *"We cannot invite tourists to come and see our maize fields, but we can invite them to see the wildlife that is so close to us."*

1.2 Purpose

There are several reasons for the compilation and publication of this management plan. First, the plan describes the objectives, principles and strategies for the management of Bwabwata National Park so that all interventions can be



planned, focused and co-ordinated according to agreed principles.

As an official document issued by the MET, the management plan is secondly a statement of commitment that binds its staff to manage Bwabwata National Park according to provisions of the plan. While senior public servants of the MET are ultimately accountable for implementation of the plan, the document also makes clear the responsibilities of other staff, in particular those appointed to manage the Park.

Thirdly, the plan obliges the wide variety of people and organisations (private sector contractors, public service agencies, neighbours, tourists, etc.) associated with Bwabwata National Park (and the North-East Parks) to ensure that all their activities are congruent with provisions of the plan.

Finally, implementation of the principles provided in this plan will reduce the need for reactive, unplanned responses to unexpected events. Indeed, the management plan should provide guidance over the next ten to five years.

1.3 Objectives

- **To protect and maintain biodiversity** - this captures all the management strategies directly related to the MET's first core function of protecting and maintaining biodiversity. This specifically includes the protection of indigenous species, red data species, diversity of habitats and natural ecological processes, law enforcement, monitoring and research as well as rehabilitation of human-degraded habitats.
- **To maximise regional economic development, based on the principle of sustainable utilisation** - this captures all the management strategies directly related to the MET's second core function of maximising the sustainable economic benefit from biodiversity. This includes all aspects of tourism management and direct consumptive use of resources by local people. The aim is to support the MET's strategic theme of rural development by utilising the basic resource of biodiversity.
- **To develop, implement and maintain effective and efficient systems, infrastructure and equipment that can support core functions** - this captures all management strategies related to the non-human resources that the Park Warden can use in his/her management activities (infrastructure, equipment and the management system itself), as well as an outreach programme.
- **To develop, implement and maintain an efficient and sensitive human resources management programme** - this captures all management strategies related to the Park's human resources. This is the main theme through which health, education and gender issues can be mainstreamed into park activities.
- **To develop, implement and maintain regional conservation synergy through effective interaction with all park neighbours** - this captures all management strategies related to liaison with park neighbours, including local communities, conservancies, other ministries, regional development planning institutions (government and non-governmental organisations) and processes, regional and local business and neighbouring countries. The latter is specifically included with reference to the KAZA TFCA initiative.
- **To develop, implement and maintain an efficient and functioning management system** - this captures all management strategies related to the design, review, revision and implementation of the Park's operational plans (annual work plan, monthly work plans, development plans, and financial planning systems). It also includes the monitoring of effectiveness of planning systems, in terms of both the biodiversity resource and the achievement of annual targets.

Chapter 2

Management of natural resources

The biodiversity in the Bwabwata National Park, together with that occurring in the nearby conservancies and the Nkasa Rupara and Mudumu complex, is unique within Namibia. This is primarily due to the Kavango, Kwando and Linyanti Rivers and their associated habitats as well as the relatively higher rainfall experienced within the region. Many species of plants, game, birds and other animals are supported by the riparian forests and wetlands of these rivers, which include rapids, open water, swamps and pans. There are also a number of special features away from the rivers that deserve special management, particularly the drier woodlands and grasslands. The structure and composition of these are currently threatened by the scale and frequency of fire, while wildlife poaching has been a problem in the past and continues to be so in specific areas. Although the protected areas are relatively large, appropriate land uses in adjoining areas are crucial to preserve natural processes, conserve biodiversity and optimise economic benefits.

The high potential for tourism offered by the rivers and their associated habitats can be used to generate economic benefits for both local people and Namibia generally. Biodiversity and landscape features must thus be managed in a way that optimises these benefits, without excluding large, so-called “wilderness” areas from sustainable tourism activities. Simultaneously, negative impacts from human uses must be avoided for these economic benefits to be sustainable.

2.1 Habitats and special sites

Vegetation within the Park will be managed to achieve the overall objective of maintaining open ecosystems that form part of the larger Kalahari woodland system. Essential ecological processes, such as fire, will be managed to obtain the best outcomes for biodiversity in general. To assist in the management of activities and developments, vegetation types have been divided into habitat categories on the basis of their scarcity, sensitivity and threats that the habitats face in the Park and elsewhere. These different categories will direct management and the allocation of budgets, resources and activities, and the categories will require different levels of environmental impact management during the development of infrastructure or economic activities.

Sensitivity, scarcity and threats are not static, and can be expected to change as different pressures or forces are brought to bear on the Park and its surrounding areas.

Objective

To actively maintain and rehabilitate all habitats in the Park, but with special emphasis on riparian forests, rivers, floodplains, swamps, sensitive plant communities, heritage sites, and to minimise the negative impact of fire on woodlands and optimise its use as a management tool.

Strategies and Principles

Two categories are recognised for park habitats. A habitat’s significance may be adjusted as conditions change, and additional habitats may be added. The habitats and their status are:

Very important: All rivers, floodplain and swamp (wetland) areas, and riparian forests;

Important: Omiramba grasslands and pans and fringe woodland, Mopane woodlands and deciduous woodlands.

In addition, exceptional sites have been zoned as SPECIAL MANAGEMENT AREAS that contain features of particular significance such as unique plant communities, important animal habitats, special landscape features, cultural, historical or archaeological sites, highly erodible soils, etc.

Tools to manage habitats include the use of fire, the use of mechanical and/or chemical interventions, adjusting

wildlife numbers and species ratios, changing the distribution and temporal management of man-made water points, re-establishing plant populations, protecting specific high-value areas against damage by elephants, and rehabilitating degraded areas.

Activities

- a) Key habitats, special sites and invasive alien species should be clearly identified and mapped, and management guidelines developed in year two.
- b) The status and threats to habitats and special sites must be reviewed every five years and new management strategies developed to counter any significant threats.
- c) Threats posed by aliens must continually be assessed and addressed.
- d) An active, adaptive fire management programme (see below) must be used to achieve specific stated habitat objectives every year (e.g. to create habitat for rare species like roan or sable).

2.2 Fire

Fire has, and will continue to play an important role within the Park. For example, frequent intense fires over large areas of the Park have led to the degradation of woodlands, while conversely, an absence of burning has caused the developments of shrub thickets or bush encroachment in certain areas. Appropriate protective measures may therefore be needed for rehabilitation and/or to limit degradation, and fire may also be used as a management tool to achieve other objectives. These measures include the reduction of fuel loads, early dry-season burning and the control of run-away wildfires.

Objective

To use fire as a management tool for actively maintaining and rehabilitating all habitats in the Park.

Strategies and Principles

- a) An adaptive burning strategy for each habitat must be developed since different habitats may require different fire regimes, and should include:
 - the spatial designation of the habitats on maps;
 - the purpose of fire management for each area;
 - an outline of the specified fire regime, which should include burning frequency, the percentage of area to be burnt in a season or burning cycle, the type of burn, and the season of burn.
- b) The burning strategy will guide the development of a three-year burning plan. The plan must be revised late in the wet season of each year to take into account:
 - the extent and severity of the previous seasons' fires;
 - the current standing biomass (fuel loads) in different areas of the Park;
 - the need to protect life and property;
 - the availability of forage and refuge for wildlife, especially for 'Important Species'; tourism requirements and logistical considerations.
- c) Management should strive to prevent the occurrence of extensive wildfires that burn more than 35% of a contiguous area in a season (with this target being regularly reviewed in the context of fire monitoring data). Appropriate pro-active fire management strategies must be developed to reduce extensive burns. The strategies are to:
 - take account of past woodland losses due to killing of mature trees and lack of recruitment and regeneration, and address these in the future;
 - institute preventive measures such as fire breaks near the park boundaries and to protect property;
 - ensure the reduction of fuel loads to minimise the severity of fires;
 - use early burning as a strategy to reduce the danger of late season hot wildfires;
 - take note of the impact of fires on tourism;
 - recognise the importance of veld foods for communities;
 - use natural boundaries (rivers, areas of low vegetation cover, areas with low fuel loads, etc.) as firebreaks rather than linear barriers such as roads and firebreaks.

- d) Proactive fire management must be used to protect infrastructure.
- e) Park staff will work with residents and neighbours (communities, other departments and institutions, other countries) to manage burning with specific reference to the Park's position in the KAZA TFCA.
- f) Fires will only be controlled or suppressed under the following conditions:
 - when they pose a threat to life or property;
 - once the specific goals of set fires have been met;
 - if they are likely to burn excessive areas or threaten the survival of certain species and/or habitats.
- g) Plant species and communities, which are identified as important and potentially threatened by fire, are listed in Appendix 2. They may well require special management attention, which must be implemented to an extent both practical and appropriate.

Activities

- a) Develop a burning strategy that addresses the specific requirements of each habitat or sub-habitat in year one.
- b) Develop a three-year burning plan which will be revised at the end of each summer growing season, based on the results of the previous season's fire patterns, and on monitoring data.
- c) Establish a burning 'team' to evaluate past burns and future possible burning areas in year two.
- d) Continually improve the knowledge and understanding of fire in these ecosystems.
- e) Establish a fire monitoring programme, based on a burn register and making use of remote sensing data provided by the National Remote Sensing Centre, Directorate of Forestry, Ministry of Agriculture, Water and Forestry, as well as field surveys to detect fire effects in year two.
- f) Establish fire emergency procedures in year two.
- g) Establish forums with local communities and other agencies to manage burning in year two.

2.3 Rehabilitation

Human activities have led to the degradation of many areas in and around Bwabwata National Park. The activities include clearing of land for cultivation, and the construction of military bases, trophy hunting camps, road borrow pits, and ad hoc infrastructure.

Objective

To rehabilitate degradation caused by humans especially where it severely impacts on ecosystem functions and processes, and where rehabilitation is practical and appropriate.

Strategies and Principles

The visual or other impacts of degraded areas must be assessed against the costs and benefits of rehabilitation. Derelict structures or old military equipment (including unexploded ordinances) must not pose a threat to residents, visitors and staff.

Activities

- a) Identify and map areas where ecosystem functions or processes are compromised by human activities every year.
- b) Make use of old structures or material for building and/or recycling where practical, cost-effective and feasible.
- c) Explore the possibility of allowing tourism operators to rehabilitate areas allocated to them within concessions every year.
- d) Liaise with the National Heritage Council and other agencies to ensure that important cultural, historical or other assets are not lost or inadvertently damaged during rehabilitation every year.



2.4 Wildlife population management and introductions

Appropriate and strategic management of wildlife is required for a number of reasons. First, several animal species in Bwabwata National Park have been identified as priorities for management within Namibia. Second, some species of large mammals have become locally extinct, uncommon or rare in the Park. Third, the North-East Parks form part of important corridors for animal movement across the greater region of Namibia and surrounding countries. Fourth, there is a need to increase wildlife numbers to develop the tourism potential of the North-East Parks. Finally, some species cause human-wildlife conflicts, which increase tensions between local residents and the MET.

A variety of interventions may be employed to manage wildlife, although not all are appropriate for use in Bwabwata National Park. Interventions include the provision and innovative management of artificial water sources; creation of wildlife corridors and grazing areas around the Park that can act as buffer zones; reintroduction of species; monitoring of populations; patrolling; fencing; park zonation; and control of livestock and wildlife/livestock diseases.

Objective

To sustainably manage, and reintroduce where necessary, the full complement of species that occurred recently, with special emphasis on wetland and priority species (listed in Appendix 2).

Strategies and Principles

- a) Identify (through appropriate research), remove or minimise factors that lead to local species extinctions or significant declines in their numbers.
- b) Where practical, manage wildlife populations to:
 - maintain the ecological integrity and sense of place of the Kavango and Kwando Rivers and swamps, riparian woodlands and forests;
 - develop and maintain tourism attractions of high quality;
 - allow sustainable use of fauna;
 - support management practises that improve habitat for fauna both inside and outside the Park;
 - reduce or eliminate the impacts of alien species, with an emphasis on species that pose an immediate and high threat, such as domestic cats that may cross-breed with wild species.
- c) Manage key species, which have been prioritised by the MET (such as sable, roan, tsessebe, sitatunga and lechwe) to achieve conservation targets for those species.
- d) Ensure that only appropriate species, and no 'genetically exotic species'¹, are introduced and that re-introductions are cost-effective.
- e) Permit the migration and movement of fauna where possible, and investigate anthropogenic factors that may limit movements (such as inappropriate land-use practices on the Park boundaries), with a view to eliminating them.

Activities

- a) Implement and maintain the Incident Book Monitoring System (IBMS) to monitor populations of key species every year.
- b) Investigate, and if necessary develop strategies to meet population performance targets for important species which are threatened or rare in year two.
- c) Implement existing species management plans (e.g. buffalo, elephant, roan/sable/tsessebe, hippo and wetland grazer management plans) and update when necessary and collaboration with the directorate responsible for wildlife research and monitoring.
- d) Develop effective anti-poaching programmes to eliminate or reduce the impact of poaching, as a major potential threat to the economic value of the Park and surrounding areas in year one and two.
- e) Take the following steps before species are re-introduced or populations bolstered through introductions:
 - explore what management actions may be taken to create conditions for the species to increase or re-populate the areas;
 - undertake appropriate research to understand why populations are low or locally extinct, and to determine whether causal factors can be eliminated;

¹ Only animals of the same genetic origin as those already present in and around Bwabwata National Park.

- develop re-introduction plans to ensure that pre-release and post-release management strategies and resources are in place.

2.5 Artificial water points and management

The provision and management of artificial water is a complex matter. On the one hand, rivers provide perennial sources of water for many animals, but certain other species have evolved to occupy areas that are devoid of surface water for much of the year. While the provision of artificial water may increase populations of these species, it may affect other species adversely. These impacts are often poorly understood and any intervention to supply water must therefore always be carefully considered.

Seasonal movements by several game species to and from both rivers are very prominent in the omuramba systems of Bwabwata. These game species, which include elephant, buffalo, zebra, wildebeest and (to a lesser extent) roan, tend to cluster at the rivers during the dry season and move inland during the wet season. This natural seasonal cycle is an important mechanism that maintains vegetation structure, as most vegetation experiences a resting period during some part of the year. This is a key process, both because it represents one of the last large-scale intact biotic ecological processes in southern Africa, and because it will be sensitive to poorly planned and implemented developments, including the provision of artificial water for tourism.

Objective

To maintain the current status quo with regards to water distribution, with periodic evaluation thereof. In general, additional artificial water points for wildlife within the Park are discouraged. However, subject to risk analysis, water may be strategically located (a) to increase the numbers of vulnerable, rare or threatened species, or (b) for economic reasons, such as tourism or trophy hunting in the Park and in neighbouring conservancies, provided this does not adversely impact on priority habitats or important species.

Strategies and Principles

- The provision of any artificial water points must demonstrably contribute to one or more of the goals of the above objective. The goal(s) must always be clearly stated.
- The effects of water points must be reviewed regularly in the light of objectives.
- Total benefits (environmental and economic) must outweigh the likely management and environmental costs.
- In natural ecosystems water may be a highly variable resource; provision of artificial water should thus, as far as possible, mimic natural variability over time and space.
- For the placement of any additional artificial water points deemed essential, the following should be considered:
 - the preferable location of water points near existing natural pans to supplement ephemeral pan supplies;
 - the possible location of water points in conservancies and in multiple-use areas to encourage dispersal to these areas where wildlife can contribute to sustainable uses such as trophy hunting.
- Where artificial water points are used for tourism, conservation objectives will remain as the highest priority; as a result such water points may be decommissioned or left dry to promote conservation or if serious negative environmental impacts occur.

Activities

- Conduct risk analyses for all artificial water points in year three.
- Establish a baseline monitoring system to assess negative impacts on vegetation and key animal species; particular attention must be paid to roan, sable and tsessebe and other priority species in year three.
- Maintain a register of all artificial water points; this must include the purpose of each point and its associated monitoring data every year.
- If possible, develop a water-point rotation strategy to encourage wildlife movement every year.
- Liaise with other Ministries to ensure any water provision in the area does not conflict with objectives of this management plan.

2.6 Domestic animal management

While domestic animals are important resources for some local residents and neighbouring communities of Bwabwata National Park, the animals must be managed to contain associated risks. For example, contact with certain wildlife species can result in the spread of disease and human-wildlife conflict, and habitats may be degraded by concentrated grazing and browsing of livestock. Note that this section is only applicable in the Multiple Use Area of the Park.

Objective

To ensure that all domestic animals authorised to be within Bwabwata National Park must be confined and managed in a manner that prevents the spread of harmful diseases, and limits conflict and habitat degradation.

Strategies and Principles

- a) Management practices such as planned grazing and herding will be promoted to avoid habitat degradation and minimise livestock-predator conflicts.
- b) The status of all existing domestic animals within the Multiple Use Area of the Park must be clarified and confirmed in collaboration with Veterinary Services.
- c) Management of domestic animals will be done collaboratively between MET, local residents and other ministries and agencies (particularly Agricultural Extension and Veterinary Services).

Activities

- a) In collaboration with Veterinary Services, clarify and confirm the status of all existing domestic animals within the Multiple Use Area of the Park in year two.
- b) In collaboration with affected stakeholders, develop and enforce a livestock management strategy aimed at reducing human-wildlife conflict, preventing the spread of disease, and maintaining habitats for conservation and livestock grazing in year three.
- c) Implement the National Policy on Human Wildlife Conflict Management and ensure that resident and neighbouring communities are aware of the requirements of the Policy.
- d) In collaboration with affected stakeholders, develop and enforce a cattle removal strategy for the Multiple Use Area of the Park in year two.

2.7 Fencing

Bwabwata National Park is an important link between Namibia, northern Botswana, southern Angola and Zambia. The Park safeguards and fosters the movement of wildlife across this broad area of Southern Africa. However, this region is also prone to outbreaks of various livestock and wildlife diseases, which State Veterinary Services prefer to control with fences.

While fences can disrupt wildlife movements, they may contribute to effective management if the barriers are properly located, designed, erected and maintained. Fences may therefore be provided in strategic locations to achieve specific goals, but always with due regard to animal movement.

Currently fencing in and around the Park include the boundary fence of Mahango Core Area, the buffalo fence extending north of Buffalo Core Area to the Namibia-Angola border, and the southern boundary extending from Mahango Core Area to a point 30km west of the Kwando River.

Objective

To ensure that fencing is discouraged but strategically used to (a) significantly reduce livestock and/or wildlife diseases, (b) reduce human-wildlife conflict, (c) demarcate settlement and/or grazing areas, (d) demarcate national borders, and (e) increase cross-border disease control.



Strategies and Principles

- a) The objectives of each fence must always be clearly stated, and feasibility studies undertaken to ensure that the aim will be achieved.
- b) Environmental assessments including risk analysis must be undertaken for all major new fencing projects.
- c) Fencing may be used to demarcate approved boundaries around settlements and to control the movement of cattle.

Activities

- a) Continue negotiations with Botswana regarding the removal of sections of the Botswana border veterinary fence to re-establish wildlife movements as a matter of priority².
- b) In co-ordination with Veterinary Services, contribute to disease control and other livestock/ wildlife interactions. Staff should map and maintain a register of all fences within and around the Park. Registers should include the type of fence, reason for establishment, condition and any impacts.

2.8 Human wildlife conflict management

The unrestricted movement of wildlife within the Multiple Use Area and between the Park and surrounding areas leads to serious conflicts between humans and wildlife. In addition to damage suffered by people, conflicts pose a significant threat to the viability of conservation in and around the Park. Ways of mitigating the impacts of conflicts therefore need to be found and managed.

Objective

To actively engage with communities to ensure there are effective and responsive mechanisms in place to minimise conflicts.

Strategies and Principles

- a) Due to the mobility of wildlife, HWC will be managed at a local level and collaboratively between park managers,

² Except for the southern boundary of Mahango Core Area and about 40km of the southern boundary of Buffalo Core Area.

conservancies, community forests and other relevant stakeholders.

- b) Within the parameters allowed by legislation, greater decision-making authority will be given to local MET officials to manage problem animals.
- c) In line with national policy on HWC management, plans and operating protocols will be developed collaboratively with park residents and neighbours.

Activities

- a) Develop and refine HWC management plans and procedures in collaboration with local communities, and ensure these are widely communicated to community members and relevant staff within MET.
- b) Support the introduction of planned grazing and herding that has benefits for pastures, livestock farmers as well as mitigating livestock-predator conflicts in the Multiple Use Area.

2.9 Diseases and parasites

Many diseases and parasites are a threat to people and the economy of the region. Some, such as malaria, are detrimental to humans while others are exclusively animal diseases. Management of these diseases and their control have wide ramifications, including environmental impacts.

Objective

To ensure collaboration with other relevant public service agencies to find solutions to the management and control of notifiable and contagious human, livestock and wildlife diseases.

Strategies and Principles

- a) Wildlife introduced from other areas should not be infected with exotic diseases such as TB or with diseases that are already endemic to the area.
- b) National veterinary regulations should be adhered to.
- c) Fences may only be used to control the risk of diseases when this is absolutely essential and following environmental assessment and feasibility studies.

Activities

Work with other government agencies and local institutions such as conservancies and community forests to find environmentally acceptable solutions to the control of human, livestock and wildlife diseases and ensure that appropriate technologies and methods are applied.

2.10 Alien species

Alien species are species that were introduced since historical times by humans into habitats far outside their native range. These species have the potential to cause significant ecological damage, often out-competing native species or changing the environment to such an extent that entire indigenous ecosystems may become threatened. Not all alien species are invasive, however, the chances of an invasive species being introduced increased rapidly with the number of alien introductions. It is therefore widely accepted that alien species should be controlled, or better still, removed from areas where biodiversity conservation is the main objective.

Bwabwata National Park is relatively free of alien species, with some exceptions being the noxious aquatic weed *Salvinia molesta* (which is aggressively invasive), chilli and garden ornamentals such as *Bougainvillea*.

Objective

To ensure that alien species are controlled or removed in the park.

Strategies and Principles

- a) Staff must be vigilant and report any occurrences of alien species immediately.
- b) Where practical, manage wildlife populations to reduce or eliminate the impacts of alien species, with an emphasis on species that pose an immediate and high threat, such as the aggressive invasive aquatic weed *Salvinia molesta*, or domestic cats that may cross-breed with wild species.
- c) Alien species control must be planned and implemented in a systematic manner with clear targets, and the results must be monitored regularly.

Activities

- a) Clearly identify and map key habitats, special sites and invasive alien species, and develop management guidelines in year two.
- b) Manage and where practical eradicate invasive alien species throughout Bwabwata National Park.
- c) Continually assess and address threats posed by all alien species.
- d) If high infestations of *Salvinia molesta* are found within the Park, these should be reported to Water Affairs of the Ministry of Agriculture, Water and Forestry in Katima Mulilo or Rundu.



2.11 Law enforcement and wildlife crime prevention

The illegal use of natural resources, particularly for commercial purposes, generally poses a threat to conservation and remains a major management issue for MET. As illegal activities are generally conducted in unsustainable ways, they further undermine the ability of the environment to support growing human populations and plant and animal life. Poaching of plants and animals, cutting down of trees and unsustainable land uses are a few examples. In addition to these illegal activities, people may also enter the Park to intimidate, harm and rob tourists.

To ensure that the Park is able to offer a product of high quality to tourists, it is important to undertake law enforcement at the appropriate scale and apply a zero tolerance approach on the illegal use of resources and inappropriate use of the Park in general.

Objective

To control and limit the illegal use of wildlife and natural resources within Bwabwata National Park and, through all efforts possible, to ensure the safety and security of tourists.

Strategies and Principles

- a) Develop a practical, harmonised approach to the implementation of law enforcement within the context of this management plan, relevant legislation and regulations, by working closely with resident and neighbouring communities and the Namibian Police and other law enforcement agencies.
- b) Plan, develop and implement an efficient and effective tourism management and access control system.
- c) Ensure security and anti-poaching patrols and surveillance are conducted for all natural resources (including harvesting and theft) in partnership with resident and neighbouring communities, at regular but unpredictable intervals.
- d) Develop a system of rewards (financial or otherwise) for the reporting of illegal activities and let it be widely known in the area.
- e) Ensure that MET staff are adequately trained in law enforcement to ensure that they operate within relevant policies and laws and to preserve and collect evidence so that arrests result in convictions.

Activities

- a) Develop (with relevant partners) a practical plan for implementing law enforcement in the context of this management plan and relevant legislation in year one. This plan will include but not be limited to sections on patrolling (foot, boat, vehicle), roadblocks, informer network, and communication with a particular focus on identified poaching problem areas.
- b) Regularly review and inspect poaching problem areas: along the main highway running through the Park (B8), along the Botswana border (Sanzo omurambas and Guesha Pan), river islands (Chihoku and Small Lagoon), and the Angolan border, i.e. Mukwanyati area, Chisu/Ingwe area and along inland roads every year.
- c) Develop (with relevant partners) an effective tourism management and access control system with particular attention to holiday seasons in year three.
- d) Develop good relations with all tourism operators and, with their help, develop a systematic reporting process whereby they can report any illegal or illicit activities that they observe during their normal activities.
- e) Disseminate information on law enforcement approaches and reward schemes.
- f) Carry out regular patrols to ensure a high level of presence and visibility.

2.12 Environmental impact assessment and management

Activities associated with both conservation management and tourism may degrade or change vegetation, disturb or alter animal populations, destroy archaeological artefacts and sites, and affect cultural habits and social systems. The assessment and subsequent management of these potential impacts are key principles in ensuring that the utilisation of Park resources is done sustainably.

Objective

To prevent and mitigate negative effects and enhance positive effects of conservation management and tourism activities on the environment, by conducting a due environmental impact assessment and management process.

Strategies and Principles

- a) Environmental Impact Assessments are to follow relevant legal and policy guidelines as provided by Namibia's

Environmental Management Act of 2007.

- b) Some conservation management activities undertaken in the normal course of biodiversity protection are intended to affect habitats or populations of species. Such types of conservation management actions (e.g. burning regimes, elephant management and the provision of water) are not subject to a formal environmental assessment process, but decisions should always be taken within the framework of adaptive management and be fully informed of potential outcomes and risks.
- c) Guidelines provided for each zone in the Park are the key management tool to guide the environmental assessment and management process during planning and implementation of tourism activities and the development of any infrastructure to be used for Park management.
- d) Environmental management should always include a careful evaluation of potential impacts and of ways to prevent, avoid or mitigate these impacts to a point where the environmental cost is commensurate with the overall purpose of the Park as well as with any legal requirements.

Activities

- a) Ensure that zonation plans and guidelines are followed in the planning and implementation of all activities and developments.
- b) For tourism related activities and developments make use of the environmental management plan developed in association with the BMM Parks Tourism Development Plan.

2.13 Consumptive resource utilisation

It is widely agreed that while protected areas should serve the purpose of conservation, natural resources within those areas may be used on a sustainable basis for economic and social gain. The consumptive use of wildlife and other natural resources in Bwabwata National Park (including trophy hunting) will therefore occur within the guidelines directly and indirectly stated in this management plan.

Objective

To ensure that sustainable use of natural resources is allowed in Bwabwata National Park to (a) support livelihoods (especially for residents in the Multiple Use Area), (b) as wildlife management strategy, (c) to supply the needs of residents and neighbours with venison during festivals, and (d) as an incentive to support conservation by communities for economic development.

Strategies and Principles

- a) All resource utilisation should be economically and ecologically sustainable, and conform to policies established for habitats, wildlife and park zonation.
- b) All plans for resource utilisation must be approved by MET.
- c) Harvesting of natural resources that are essential to the livelihoods of park residents will be permitted within the Multiple Use Area.
- d) Harvesting by park residents may be permitted within the Core Areas of the Park under exceptional circumstances and only if essential natural resources are not available in the Multiple Use Area.
- e) All harvesting by residents of the Park must be confirmed ahead of time in written agreements between the park management and resident community.
- f) Park neighbours will only be allowed to utilise natural resources within the Park under exceptional circumstances, and in terms of written agreements with conservancies or community forests.
- g) Determination of number of individual animals hunted will be carried out according to adaptive management principles.
- h) All harvesting must be cost effective, and should take into account the full costs of managing the resource, including the costs of control, monitoring and effects on the environment.
- i) Trophy hunting is allowed in all areas of the Park under controlled hunting concessions.
- j) Trophy hunting is subject to careful zonation (see Chapter 4) and quota setting.
- k) MET will only harvest wildlife in specially identified zones for annual festivals of traditional authorities and for other important functions.

- l) The Park may be used as a source of wildlife for introduction to other areas.
- m) While trophy hunting can provide important economic benefits, it may conflict with the priorities of other users. In deciding on hunting zones and wildlife quotas for removal, the following need to be considered:
 - the purpose of the Park or Core Area;
 - economic returns from trophy hunting compared to other uses;
 - the practicalities of implementing and controlling trophy hunting;
 - the implications of trophy hunting for other tourism operations or visitors; and
 - other potential negative impacts of trophy hunting activities, such as the increase in aggressiveness of elephants.

Activities

- a) Before any hunting or harvesting is undertaken, assess the resource to ensure that ecological objectives are not violated.
- b) Before any harvesting is undertaken inside the Core Areas of the Park, determine the feasibility of replenishing natural resources for consumption on community land or in the Multiple Use Area of the Park.
- c) Implement Park zonation for hunting activities to prevent impacts on other users.
- d) Establish procedures and protocols for how, where and when the harvesting will be conducted and managed in year two.

2.14 Research

Park management decisions and activities should be based on accurate available information. This section specifies strategies and activities for the acquisition of such data, including the commissioning of research.

Objective

To base Park management on pertinent available information and data to support an adaptive management approach, and to create a research-friendly environment, encouraging non-invasive research within the Park.

Strategies and Principles

- a) A coordinated approach to research will be created between park staff and other research agents, such as the Bwabwata Ecological Institute, the directorate responsible for wildlife research and the National Botanical Research Institute (NBRI).
- b) A supportive environment will be created for national and visiting scientists, including the facilitation of research permits, with preferential support given to applied research projects in support of priority Park information or management needs.
- c) A prioritised and open-ended list of key research topics will be developed for the Park and disseminated to appropriate research institutions.
- d) Research will be supported, primarily through collaboration, and will focus on the following:
 - high value areas such as wetlands and riparian forests, as well as game movements and re-introductions, paying particular attention to the appropriate ecological spatial scale and context;
 - improving management effectiveness, especially that which pertains to human-wildlife conflict, fire, community wildlife-and-tourism-related impacts;
 - the socio-economic impact of the Park.
- e) Appropriate mechanisms will be developed to ensure that optimum feedback and other values from national and visiting researchers are obtained to inform Park management decisions on all levels.

Activities

- a) Identify gaps in knowledge relating to management and where appropriate, through collaboration, find solutions to improve the understanding of the natural system and the socio-economic benefits from the Park in year two.
- b) Develop an open-ended list of priority research topics based on information needs for the management of Bwabwata National Park in year one.

- c) Ensure research outputs and findings are made available to park staff and integrated with monitoring data to inform park management decisions on all levels.

2.15 Monitoring

While monitoring at Bwabwata National Park relates both to natural resources as well as to management effectiveness, this section only focuses on natural resource monitoring.

Regular monitoring and data collection will feed into adaptive management and decision-making for Bwabwata National Park and inform all relevant management decisions. Modern methods such as the Incident Book Monitoring System (IBMS) will be used to collect data on the variables to be monitored. The IBMS will allow for comparison between parks, obviously accounting for bio-geographic, climate and environmental differences.

Objective

To monitor a limited number of carefully selected indicators of ecosystem integrity (in general) and wildlife population dynamics to allow for timely and judicious adaptive management; to monitor the efficiency of management systems and procedures.

Strategies and Principles

- a) Natural resource monitoring will focus on key indicator processes, impacts, habitats and species, with an emphasis on ensuring regular data collection at appropriate intervals, cost efficiency and sustainability.
- b) Monitoring will also assess the effectiveness of management of Bwabwata National Park, using standardised park inspection sheets and performance assessment.
- c) Monitoring systems shall apply approved tools already being widely used, e.g. IBMS, and shall also continue with systems already established and running within the Park.
- d) Monitoring systems will be balanced to ensure that the entire range of critical information needs is covered.
- e) Information will be made widely and freely available, in accessible format to all stakeholders to feed into adaptive management decision-making.

Activities

- a) Develop an appropriate monitoring framework to include the monitoring requirements of Bwabwata National Park, and incorporate ongoing monitoring initiatives and where appropriate, adapt other national systems such as the IBMS with appropriate training for staff and other implementing partners in year two.
- b) Make time-series data and analysed information available for adaptive management and for distribution to interested stakeholders, decision-makers and the general public in year two.

Chapter 3

Regional conservation, park neighbour and resident relations

The Bwabwata National Park is too small to conserve all regional ecological processes and services adequately. The effectiveness of conservation also gains from scale: the greater the area under conservation management, the larger the benefit. For example, animals have larger areas over which they can move, a greater variety of attractions are available for tourists, and management costs are significantly lower per unit area. Benefits therefore increase exponentially. Moreover, relationships between parks and neighbouring communities are more harmonious if they also derive benefits from conservation.

It is therefore in everyone's interests to promote conservation activities, compatible land use practices, and management and development initiatives to the benefit of all collaborating partners throughout the broader area around the Park. This will be achieved through effective and collaborative management, monitoring and development with local and international neighbours. Good working relations must be pursued with all neighbours to achieve regionally integrated conservation.

Collaboration and integration will occur at three levels: internationally through the KAZA TFCA initiative, locally through liaison and collaborative management with communities and public service agencies, and finally with the private sector.

3.1 Transfrontier conservation

The North-East Parks including Bwabwata National Park form a critical component of the KAZA TFCA shared by Namibia, Angola, Botswana, Zambia and Zimbabwe.

Objective

To manage the park within the context of a regionally integrated conservation area that encompasses neighbouring Namibian conservation areas and communities, and conservation areas in Angola, Botswana, Zambia and Zimbabwe.

Strategies and Principles

- a) Where appropriate and to the greatest extent possible, management of the Park should harmonise with management approaches used for other conservation areas in Namibia and neighbouring countries.
- b) KAZA TFCA institutions will be used for purposes of collaboration and dialogue with conservation managers in Angola, Botswana, Zambia and Zimbabwe.
- c) The integrity of the Namibian natural resources will not be compromised by activities or requirements of neighbouring countries.

Activities

- a) Collaborate at the appropriate level with and through KAZA TFCA structures and other inter-governmental cross-border structures to ensure that the objectives of this plan are aligned with the plans and objectives of other conservation areas in Namibia and in neighbouring countries.
- b) Encourage and support knowledge and information exchange programmes between conservation managers in Namibia and neighbouring countries.
- c) Develop and conduct joint management activities with neighbouring countries.

3.2 Regional land use planning and landscape level management

A number of ministries are responsible for various planning programmes within and around the Park. It is important that key provisions of this management plan and other MET plans be accommodated within these planning initiatives.

Objective

To liaise with other ministries to ensure that requirements for the management of the Park are incorporated into regional land use plans where appropriate.

Strategies and Principles

- a) MET should cooperate with relevant authorities in the regional planning process to ensure that the conservation of biodiversity is recognised as a vital use of land and a component of the regional landscape.
- b) Land-use planning outside the Park should be influenced in such a way that it is aligned and fully integrated with zonation of the Park and conservancies.
- c) MET management must keep abreast of all regional government initiatives, and ensure that Park plans are brought to the attention of relevant authorities.

Activities

- a) Ensure that the key elements of this management plan are accommodated in all regional planning.
- b) Ensure that regional authorities are fully aware of the economic impacts of the Park, and of the negative impacts that inappropriate planning will have on conservation and its ability to contribute to the regional economy.
- c) Pro-actively embark on planning at the local and regional level to mitigate conflicts and maximise synergies between land uses.

3.3 Park residents and neighbours

Bwabwata National Park can contribute to the prosperity of local communities through the establishment of viable businesses based on natural resources. Communities living inside and around the Park therefore have much to gain, especially if the Park is managed in a way that proactively extends economic benefits to these communities. However, such a scenario is only possible if relations between park management and communities are constructive. The interactions must be based on trust so that the wider landscape of the Park and community areas can be managed and developed for mutual benefit.

The need to encourage, support and use established joint management structures is critical for engagement between the Park and its neighbours. Simplicity, operational efficiency and the achievement of goals are vital to the success of these structures. Following this, the obligations of park managers and community members should also guide the process.

Objective

To maintain relationships between the managers of the Park and the existing regional joint management structures will be maintained for the mutual benefit of communities and the objectives of the Park.

Strategies and Principles

- a) Engage with communities through appropriate structures and according to the MET's National Policy on Protected Areas, Neighbouring and Resident Communities to
 - agree on areas and activities for collaboration;
 - agree on working arrangements to achieve shared visions and goals;
 - leverage benefits from the Park, and optimise economic benefits from natural resources;

- achieve regional conservation priorities.
- b) Use existing park neighbour and resident relations structures and community institutions.
- c) As specified, supply wildlife to, and use it in neighbouring areas, subject to agreed joint management plans (see 2.4 Wildlife population management and introductions).
- d) The rights and obligations of the various parties should be defined and secured in joint management agreements between appropriate institutions.
- e) The communities must be partners in the formulation of ongoing management policies and procedures which should be binding to both park management and communities.
- f) The MET will be guided by the National Policy on Tourism and Wildlife Concessions on State Land (2007) when awarding any tourism rights to communities. In addition, the MET will do its very best to:
 - give priority to concessions that add security to the Park, promote corridors between conservation areas and those that improve conservation in areas that surround the Park;
 - continue to acknowledge the rights of residents of the Park in terms of settlement, movement, social services and livelihood needs in its management of the Park;
 - reach agreement on the management of the broader landscape and the benefits that may be achieved through wider planning, often beyond the park boundaries;
 - devolve the responsibility to achieve national and international development and conservation goals to all participants;
 - support the development and long term economic and environmental sustainability of conservancies, community forests and other community conservation bodies.

Activities

- a) Identify areas that are critically important for biodiversity, engage with the relevant communities and explore opportunities for leveraging benefits to communities for the protection of these areas.
- b) Establish and maintain joint management forums with communities living inside and adjacent to the Park.

3.4 NGOs and Private partnership

The private sector, either through small local enterprises or large businesses and NGOs that support communities leaving inside the Bwabwata National Park can contribute in various ways to the achievement of the vision and objectives of the Park.

Strategies and Principles

- a) Partnerships with the private sector and NGOs must achieve one or more of the following outcomes:
 - add value to the product, including conservation and biological diversity;
 - reduce the risk to government of some activities and investments;
 - bring investment and skills development;
 - provide employment and other economic benefits.
- b) Partnerships must be driven by needs and initiated by the MET, and may not detract from the core function of the Park.
- c) Certain functions and activities may be outsourced, but ultimate control and responsibility will vest with the MET.
- d) All partnerships must be restricted to parties that understand and contribute to the achievement of the vision, goals and policies of the MET and this management plan, and must:
 - be regulated by formal contractual agreements that define the roles, responsibilities, term and other conditions of operation;
 - comply with relevant policies and procedures, in particular the concessions policy;
 - be cost-effective to the MET.
- e) In order to ensure that proper services are provided to communities residing in the Bwabwata National Park, MET will enter into partnerships with NGOs, the private sector and other organizations and sign Memorandum of Understandings for their operations in the park.

3.5 Environmental education

Education plays an important role in building strong environmental awareness among people, especially the youth. This is critically important around Bwabwata National Park where communities need to understand the regional, national and international importance of conservation areas and their biodiversity. The MET should identify and implement mechanisms to ensure that local people have access to the Park. Particular attention should be paid to school children, leaders and business people.

Strategies and Principles

- a) Ensure that the Park is open and accessible to local people through formal interactions with schools and environmental groups.
- b) Interact with other public service agencies or donors to support environmental education.
- c) Engage with custodians of indigenous knowledge to use this information for environmental education.
- d) Actively pursue an environmental education programme through directed outreach activities.

Activities

- a) Develop and implement a strategy for promoting environmental education in the Park in year two.



Chapter 4

Zonation

As an important tool for planning and managing parks, zonation helps prioritise management activities and resources, focuses economic opportunities, and provides guidance for medium to long-term development.

The determination of zones follows a hierarchy of requirements and objectives. Those of primary importance are the legally delimited areas of the Park, the scarcity and sensitivity of natural resources, as detailed in the chapter on the management of natural resources, and features that require special management, for example as a result of heritage or social factors, would also be addressed in the primary layer. Economic and management uses are zoned at a secondary level, taking into account the objectives of the Park, as well as management, social and practical considerations, such as existing or planned infrastructure. Special attention is given to the potential for tourism and its marketability. The zonation plan primarily addresses zonation in the Core Areas of Bwabwata National Park.

Objective

To ensure that zonation of the park is based on formally agreed and/or legislated uses and ecological criteria, and then on economic and management factors to achieve the purposes of the Park.

Strategies and Principles

- a) Zonation will be applied to:
 - comply with formal agreements or legislation;
 - protect scarce and sensitive landscapes, habitats and organisms;
 - protect important ecological processes, such as game movements;
 - protect cultural, heritage and other important sites;
 - achieve the economic goals of the Park;
 - achieve specific management requirements.
- b) The following will be used in applying this hierarchy:
 - habitats will be classified into zones according to sensitivity, scarcity and threat using an appropriate scale such as high, medium and low;
 - all unique landscape features, plant assemblages, cultural, historical or heritage sites should be identified and zoned appropriately to ensure correct conservation management;
 - areas for tourism and other public use must be identified in pursuance of the broader economic objectives of this management plan;
 - areas allocated for public use areas must be located in zones where environmental costs are least and economic benefits greatest. Environmental Impact Assessments (EIA) are to be undertaken as prescribed and particularly if significant environmental costs are anticipated;
 - all developments inside the Park should be subject to a cost/benefit analysis through an environmental assessment process. The analysis should examine all costs and benefits, including those of an ecological, economic, social and political nature;
 - activities or developments are not automatically precluded from zones having 'high conservation' status. However, higher levels of EIA scrutiny will be required in these zones.
- c) The zonation may be reviewed periodically if new information becomes available. The following principles apply to amendments:
 - zones of primary importance will be modified if new legislation or Cabinet decisions are passed requiring amendments to boundaries, or if information shows that existing economic or management uses have, or may have high negative impacts;
 - modifications to tourism zones may require consultation with affected parties if existing rights have to be altered.

Activities

- a) Implement the zoning system prescribed in this document during park level operational planning each year.
- b) Continually assess zones and sites allocated for economic purposes to ensure that socio-economic goals are optimised. This should be done in collaboration with interested and affected parties.
- c) Continually update and refine the habitat zones as new information is obtained.



Chapter 5

Prospecting and Mining

The commercial value for Bwabwata National Park for mining is expected to be low and the Park does not have a history of large-scale commercial exploration and mining activities. The relatively small size of the Park, and in particular the Core Areas, makes it environmentally sensitive to mining activities. Prospecting and mining within the Park should therefore comply with the relevant conservation, environmental and economic regulatory framework. The potential economic value of prospecting and mining for Namibia is acknowledged, but both environmental and other socio-economic costs should be taken into consideration before commencing any activities.

Objective

To ensure that any future prospecting and mining activities are controlled and that rehabilitation and restoration will take place. In addition, to attempt to prevent any prospecting and mining activities in very sensitive areas in order to limit any negative impacts to the character, ecology and tourism potential of the Park.

Strategies and Principles

- a) Key zones categorised for high conservation values will be marked and closed to prospecting and mining.
- b) Prospecting and mining in other parts of the Park will only commence when rehabilitation is guaranteed.
- c) Any prospecting and mining activities are done in accordance with the National Policy on Prospecting and Mining in Protected Areas.
- d) The long-term national benefits from the use of the land for mining must clearly outweigh benefits from other appropriate forms of land use, such as recreation and sustainable tourism. The onus is on the proponent to demonstrate such national comparative benefits, taking into account ecosystem services and non-monetary benefits of peoples' perceptions and how residents and visitors wish to use their countryside.
- e) Applying safeguards is a key strategy for avoiding and/or reducing impacts to acceptable levels. All prospecting and mining activities MUST be preceded by an EIA in accordance with the word and spirit of Namibia's EA Policy (1995) and legislation (Environmental Management Act No. 7 of 2007, and Minerals (Prospecting and Mining) Act, 2003.). The logical consequence of the EIA is the compilation of an EMP. The EMP must define objectives as well as both outcomes and the methodology (in some detail) as to how the outcomes will be achieved.
- f) The costs of any reclamation, restoration and/or decommissioning must be included in any feasibility (cost-benefit) studies and in any agreement, concession, mining licence or exclusive prospecting licence (EPL).
- g) Bio-prospecting, if it is to occur, and other uses of biodiversity must take place within a formal agreement. This may require an EIA and EMP to determine the impact and rehabilitation needs.
- h) Mining areas should be rehabilitated and/ or landscapes restored. Priority areas should be identified with MET and an approach put in place for rehabilitation/ restoration.

Activities

- a) Compile an inventory of all prospecting and mineral licenses in the Park, noting type of license, its boundaries, conditions of approval, ownership, status, timeline and contact person in year two.
- b) Develop and implement a monitoring schedule.

Chapter 6

Tourism development and management

Tourism in the Park has potential to bring socio-economic benefits to the resident and neighbouring communities, the region and the State as a whole. This may be achieved by generating income from entry and concession fees, creating jobs and business opportunities and attracting investment. Furthermore tourists derive information, and aesthetic and recreational enjoyment from their visits to the Park.

The Park's main tourism attractions include its rivers, wetlands and associated birdlife, its largely intact riparian forests and Kalahari woodland, the opportunity of seeing rare and endangered wildlife such as roan and sable, as well as large herds of elephant and buffalo, lion and various wetland species. Game-viewing in Bwabwata is typically good all year round, especially within the three Core Areas, while Mahango offers probably the best and most accessible game viewing in north eastern Namibia.

Visitor numbers in Bwabwata vary significantly between the Core Areas, due primarily to their location in terms of established destinations, accommodation, tourism routes and gateways. In 2010 the Park received a total of 27,504 tourists and N\$979,944 was generated from entry fees (Mahango received 15, 854 tourists, Buffalo 4,683 and Kwando 6,967).

In the west there are eight lodges situated on western bank of the Kavango River, opposite the Buffalo Core Area and adjacent to Mahango. Furthermore, there is one community campsite situated on the Kavango River inside the



³ Includes administration, infrastructure, staff time, equipment, marketing and supplies, as well as any opportunity costs, which may be relevant.



Multiple Use Area, which was awarded as a concession to the resident community. In the east, there are four lodges situated on eastern bank of the Kwando River, opposite the Kwando Core Area – these are all operated as joint ventures between the neighbouring conservancies and the private sector. Furthermore, there are two community campsites situated on the Kwando River inside the Kwando Core Area, which were awarded as concession to the neighbouring conservancies.

The Park also hosts Namibia's most valuable trophy hunting concession, which in 2010 was awarded for five years to the resident community. The concession is being privately operated on behalf of the community under sub-concession agreements with two professional hunting outfitters. In 2011 these concessions generated approximately N\$4m in fees (half of which was paid to the Game Products Trust Fund) as well as 20 local jobs. The Kwando Core Area serves as an important wildlife area in support of trophy hunting concessions in the three neighbouring conservancies.

Objective

To promote tourism in the Park in order to help address the socio-economic needs of the region (particularly adjacent communities), while also providing access to wetland and woodland tourism experience for local, regional and overseas tourists, without compromising the conservation and integrity of the natural resources.

Strategies and Principles

- a) In developing tourism in the Park MET will be guided by the BMM Parks Tourism Development Plan, this management plan, the Cabinet Decision (18th/20.07.99/004), the National Policy on Tourism for Namibia (2008) and the National Policy on Tourism and Wildlife Concessions on State Land (2007).
- b) Based on the Cabinet Decision of 1999 regarding the North-East Parks (18th/20.07.99/004), MET should award tourism rights inside the Park to the neighbouring communities.
- c) Tourism developments or activities may be undertaken by MET, or by external partners such as communities or

the private sector. Tourism developments or activities undertaken by communities or the private sector must be done in accordance with the concessions policy and regulated through written agreements (see Appendix 3 for tourism concession recommendations for Bwabwata National Park).

- d) MET should use existing stakeholder forums, such as the Bwabwata Joint Management Forum (inside Bwabwata), the Bwabwata Technical Committee, Mudumu North Complex or the Mudumu Landscape Committee, to ensure effective cooperation and liaison, and create synergy in the management of tourism in and around the Park.
- e) MET should engage with the KAZA project to ensure strategic interventions are implemented that will increase the viability of tourism in the Park.
- f) Feasibility studies should precede any tourism developments or concessions inside the Park. Such studies should include, among other components, a cost/benefit analysis whereby objectives are stated, and where financial/economic, environmental and social costs and benefits are evaluated. This would include costs and benefits to all relevant parties, such as MET, communities, and the private sector.
- g) Tourism developments in the Park should (a) cover the full³ cost to the MET of managing and developing the products and related infrastructure, and/or (b) meet defined socio-economic goals, and/or (c) meet defined access goals in terms of attracting local, regional and overseas tourists into the Park.
- h) MET will plan and develop tourism in the Park to take account of different source markets, product types and affordability, and the experience required by the respective markets.
- i) Tourism zonation (see BMM Parks Tourism Development Plan) may be periodically reviewed in line with changing demands and environmental considerations, while being mindful of the possible impacts on any existing products.
- j) High levels of exclusivity should only be considered where the economic returns are also high, or where potential environmental impact is high if there are too many different users.
- k) The maintenance of accommodation facilities and support infrastructure (water, sewerage, electricity, etc.) will be the responsibility of the operator of the facilities. The standards for these must be agreed to, monitored and controlled by the MET.
- l) The density of visitors can affect enjoyment or experience of an area. If densities increase to unacceptable levels, MET may impose temporary or permanent limits on the number of users or use other mechanisms to ensure that tourism experiences are commensurate with the type of product offered.

Activities

- a) Periodically review the recommended tourism developments and activities for the Park (see BMM Parks Tourism Development Plan), taking into account the purpose of the Park, the needs of different target markets, and the intended experience offered to tourists.
- b) Implement the Park's tourism use zones (see BMM Parks Tourism Development Plan, based on the following:
 - environmental zoning and considerations;
 - proximity of services and support infrastructure;
 - the sense of place offered by an area;
 - the need to separate different users groups, especially in small areas;
 - optimisation of economic benefits and costs.
- c) Based on the Cabinet Decision of 1999 regarding the North-East Parks (18th / 20.07.99 / 004), identify priorities for the award of tourism rights to neighbouring communities and start implementation in accordance with the concessions policy.
- d) Clearly state and monitor the objectives of each tourism product or concession to ensure they are achieved, and to implement corrective action where objectives are not being met.
- e) Identify priorities for visitor management such as maps, interpretative materials, visitor facilities, etc. from this management plan and other associated plans, and start implementation.
- f) Address accessibility within the Park by evaluating and realigning the track network, particularly in the woodlands away from the two rivers, which have potential for tourism activities, but currently have a limited track network and are not promoted to visitors.

Chapter 7

Infrastructure

Infrastructure within the Park can play a critical role in realising the economic potential of the Bwabwata National Park, and in improving management efficiency. However, infrastructure may also have negative impacts on landscapes, biota and tourism if not properly planned, designed, located and developed.

Existing old buildings at Mahango (old hunting camp and MET workshop), old military infrastructure along the Kavango River in the Buffalo Core Area and along the Kwando River in the Kwando Core Area should be removed and rehabilitated according to MET guidelines and, where possible, old building material should be incorporated into new structures.

Infrastructure requires maintenance if it is to function properly. Annual budget allocations for maintenance can be kept low if these fixed improvements are properly designed, appropriately located, constructed by skilled contractors using materials of good quality, staff are properly trained, quarterly inspections are carried out on time and small maintenance tasks are carried out immediately.

Objective

To keep infrastructure to a minimum; to properly design, build and maintain all infrastructure that contributes to the overall purpose of the Park.

Strategies and Principles

- a) Decisions about building park management infrastructure will be based on strategic planning and feasibility studies using a master plan approach.
- b) Infrastructure dedicated to park management and to tourists should be physically separated, for example at park entry stations.
- c) Where appropriate, infrastructure planning should be done in consultation with resident and neighbouring communities to optimise conservation and economic objectives.
- d) Infrastructure design should take cognisance of the Park's major ecological divers: elephant and fire.
- e) All infrastructure must be planned in appropriate zones, and be approved in terms of MET procedures and development policies.
- f) Before any new fixed infrastructure is developed, annual maintenance costs must be estimated and provided for in annual budgets.
- g) All developments in the Park must comply with the Environmental Management Act (2007), and have environmental clearances issued by the appropriate authority.
- h) Developments should have access to support services, such as reliable sources of water, telecommunications, electricity (unless solar is used) and road access.
- i) Water, electricity and communication lines should be visually unobtrusive, for example by being buried and/or aligned along roads.
- j) All national infrastructure standards must be followed, for example those on water extraction and discharge, engineering and design standards, etc.

Activities

- a) MET will develop an infrastructure master plan for all park management infrastructure.
- b) Given the current poor condition of park infrastructure, MET will actively raise funds and undertake infrastructure upgrade projects as a high priority.
- c) MET will compile annual maintenance plans for all new and existing infrastructure, specifying planned works, cost estimates and the need for any specialised skills.

⁴ This implies materials which are energy efficient in their manufacture and transport to site.

7.1 Access and roads

The Park is traversed from east to west by the Trans-Caprivi Highway (B8) and a minor road (C48) dissects Mahango in a north-south direction. There are three main access points to the Core Areas of the Park, each of which has a controlled entry gate: Mahango Gate and Buffalo Gate giving access to Mahango and Buffalo Core Areas respectively and Susuwe Gate on the eastern side to Kwando Core Area. A network of tracks, mainly along the rivers, traverses the Core Areas.

Strategies and Principles

- a) Official entry points should be kept to a minimum, they must be signposted and the entry control measures must be commensurate with their costs and benefits.
- b) The following must be complied with at controlled entry points:
 - opening and closing times are agreed and publicised;
 - a register is maintained of all people and vehicles entering and leaving;
 - an operating protocol is agreed and enforced;
 - all permits or entry fees are collected and paid, and there is an audit procedure.
- c) At official park entry points, visitor facilities and management infrastructure must be physically separated.
- d) To add value to the benefits of conservation and tourism, concessions for special access may be given to lodges, tour operators/concession holders provided the benefits outweigh the costs of management.
- e) MET should engage with relevant authorities to reduce the impacts of public roads, road network extension around the park periphery and within the Park including use of signage and enforcing speed reductions in strategic areas.
- f) Where possible, the impacts of roads and tracks on biodiversity and tourism must continually be assessed and options explored to minimise the impacts.
- g) Environmental clearance, an EMP and approval by MET are required before any road-building material is collected in the Park. Where necessary, the reclamation of the site of extraction must be secured with a performance bond.
- h) Park roads should be kept to a minimum, and be designed to be cost-effective so that development and maintenance costs (financial and environmental) are commensurate with the benefits of the roads.
- i) Existing road networks are to be reviewed and recommendations made regarding any changes including the realignment of roads to improve tourism, to reduce environmental impact and to improve management efficiency.
- j) Where possible, road construction needs to be done with minimal use of local material and disturbance of soil, to



ensure minimal environmental and visual impact. The grading of un-surfaced park roads is strongly discouraged.
k) The park road network must be provided with appropriate branded park signage.

7.2 Buildings

New management infrastructure at Mahango has been built in 2010/11 and is being constructed at Susuwe. All infrastructure in the Buffalo Core Area still originates from old military bases and is beyond its intended design life.

Strategies and Buildings

- a) Restrict building height and ensure that the building style blends with the environment to reduce visual impact.
- b) Use building materials produced in an energy-efficient manner⁴, including local and recycled materials, provided they are cost effective.



- c) Use water and energy efficient fittings in all facilities.
- d) Design buildings so they are protected from damage by elephants and fire.
- e) Use cross ventilation, high ceilings, cavity walls and other passive cooling methods as far as is practical.
- f) Position buildings to maximise cooling in summer and heating in winter.
- g) Design compact development sites to minimize disturbance footprints.
- h) Standardise materials, fittings and fixtures for easy maintenance.
- i) Ensure that structures containing fuels meet national requirements, and erect containment structures to minimise the effects of leakage and spillages.
- j) The location of staff accommodation should be determined to optimise:
 - management efficiency;
 - proximity to entrance gates;
 - proximity to visitor areas;
 - proximity to services such as schools, clinics, shops, etc.;
 - the desirability of being accommodated in nearby towns or formal settlements.
- k) Staff facilities must comply with acceptable safety standards for people who reside in the Park and commute to work, and comply with MET staff housing policy.

7.3 Tourism infrastructure

For the purpose of this plan tourism infrastructure includes accommodation and all its associated support infrastructure (which should be constructed and maintained by concessionaires), as well as facilities provided by MET specifically for visitors, such as park entry facilities, access roads and tracks, signage, view points, hides, etc. Such infrastructure should adhere to the relevant strategies and principles specified within this chapter.

Strategies and Principles

- a) Tourism infrastructure should be commensurate with the needs of the dominant markets visiting the Park and their specific needs. In the case of Bwabwata National Park, the majority of visitors seek a 'natural bush experience'. Infrastructure should therefore be simple, unobtrusive, rustic and in keeping with maintenance of a 'bush experience'.
- b) Tourism infrastructure should be located in accordance with a cost-benefit analysis to maximise tourism appeal and value, while complying with zonation parameters and other conditions, which may be applicable.
- c) Infrastructure should be located as close to existing services and major access routes as the product will allow.
- d) Environmental guidelines for tourism infrastructure should be prepared and included as part of all concession agreements and works contracts.

7.4 Airstrips and aircraft

A 1,500 metre gravelled and fenced airstrip is located at Bagani village approximately 12 km from the Mahango entrance. The airstrip is extensively used for fly-in tourism, natural resource management purposes (i.e. game counts, game capture, etc.) and for regular visits by officials and consultants for government projects in the area. The airstrip is managed and maintained by the Ministry of Works and Transport and by Divava Lodge.

Another 1,700 metre surfaced, unfenced airstrip is located at Omega village in the Multiple Use Area, which was built by the South African Defence Force. This airstrip is not used often. The airstrip does not fall under the responsibility of MET and is managed and maintained by the Ministry of Works and Transport.

The 1,600 metre gravelled, unfenced Immelman airstrip is located near Susuwe in the Kwando Core Area. The airstrip is occasionally used for fly-in tourism, natural resource management purposes (i.e. game counts, game capture, etc.) and visits by officials and consultants. The airstrip does not fall under the responsibility of MET and is managed and maintained by the Ministry of Works and Transport.

Strategies and Principles

- a) While airstrips provide important access to the Park for tourists and management, new airstrips should only be considered following thorough investigation.
- b) Where possible, existing airstrips should be used and new ones should be located outside the Park.
- c) Construction of new airstrips and major renovations of existing ones should require environmental clearance certificates.
- d) Helicopters should use airstrips, and helipads should only be permitted if there is no impact on other park users.
- e) A 'no flying' restriction below 1,000 metres will generally apply, and no low level aerial sightseeing will be permitted without written approval of MET.
- f) Noise pollution and disturbance of other park users will be avoided as far as possible.
- g) Use of airstrips will only be done so under the permission of the MET.

7.5 Waste management

The disposal of waste is often problematic in remote areas, and the volume of waste will grow as the use of the Park increases. The proper treatment and discharge of wastewater is especially critical where developments are close to wetlands, omiramba and boreholes.

Strategies and Principles for solid waste

- a) Management should be based on the principle of "use less, use the correct materials and recycle more".
- b) In the long term, management will strive to remove all waste from the Park to formal waste management sites, although biodegradable waste may be composted where appropriate and environmentally feasible.
- c) Tourism providers and employers of staff living in the Park are responsible for the removal of their own household waste, or that generated by tourists and staff, to approved waste disposal sites.
- d) Waste storage facilities must be properly enclosed to prevent access by wildlife and pollution by wind-blown litter. These facilities must be approved by the MET and may hold waste for a maximum of 28 days; shorter periods will apply if high volumes accumulate and health issues arise.
- e) Where practical, waste must be sorted for recycling.
- f) Transport of waste to storage or dumpsites must be in properly constructed vehicles or containers to ensure that no littering occurs.
- g) All new and existing developments must develop an EMP for waste management.

Activities for solid waste

- a) Park management must assess existing sites and if necessary initiate a monitoring programme to ensure they comply with national legislation, policy and standards.
- b) Disposal sites/temporary storage sites that are found to be inadequate, especially where water is being polluted, or at risk, must receive urgent attention to resolve any problems, if necessary closing the existing sites and relocating them.
- c) Park management must develop an appropriate waste management procedure and enforce compliance by all staff, tourism providers and other agencies.

Strategies and Principles for liquid waste

- a) Liquid waste must be processed according to the most appropriate system, taking into account the practicalities, volumes of waste, availability of water, costs of disposal and environmental impact.
- b) The MET and other relevant ministries must approve all liquid waste handling systems, which should comply with national standards and legislation.
- c) The pollution of groundwater is to be avoided, but also monitored, if necessary by enlisting the help of relevant government departments.
- d) Any toxic substances and the disposal of the empty containers must comply with national regulations and the use of all cleaning and other potentially toxic substances must be approved by MET.

Activities for liquid waste

- a) Park management must assess the existing sites and if necessary initiate a monitoring programme to ensure that they comply with national legislation, policy and standards.
- b) Those found to be inadequate, especially where water is at risk of or is being polluted, are to receive urgent attention and a strategy implemented to resolve any problems.

7.6 Human safety

Wildlife and wildfire pose threats to tourist and staff safety within Bwabwata National Park. Park management must monitor those instances and areas where this is likely to happen. Proactive action can often prevent or minimise these problems and therefore strategies and activities for human safety need to be set and implemented.

Strategies and Principles

- a) Protective barriers, e.g. trenches or electric fencing, should be erected where the threat of elephants is likely to be high. These barriers should be monitored to assess their effectiveness.
- b) Clearing of firebreaks or regular back-burning around key infrastructure should be done to minimise risks to staff and visitors. Other strategies and activities related to fire management outlined in this plan should be adhered to.
- c) Proactive and adaptive management principles should be applied to human safety in the Park, particularly if new threats have been identified or incidents occurred.
- d) Notices and warning signs must be displayed in appropriate places and in several languages.
- e) Access to the Park is conditional on a waiver of liability for visitors and families of staff.
- f) Actions, which will increase the likelihood of injury or death must be prohibited and drawn to the attention of all park users. These may include feeding animals, and straying from vehicles, etc.
- g) Facilities must be designed and developed to ensure risk to life or property is minimised, while allowing visitors to still enjoy the wildlife viewing and tourism experience.

Activities

- a) All protective and precautionary measures, such as barriers, firebreaks, notices, and signs should be regularly maintained and assessed for their functionality and effectiveness.
- b) New threats or human safety incidents need to be monitored and acted upon immediately by park management and staff.

7.7 Fencing

The southern boundary of Bwabwata National Park is fenced with three veterinary standard fences, except for a 30-kilometre stretch west of the Kwando River. In addition, due to the high value species (e.g. sable and roan) in Mahango Core Area, it is imperative that its borders are effectively fenced. The Mahango fence is also effectively a veterinary fence (FMD control) as it prevents the movement of wildlife, especially of buffalo further west. The boundary between Mutc-iku area and the Multiple Use Area is fenced with an electrified game proof fence. The function of this fence is to restrict the eastward movement of cattle into Bwabwata National Park and prevent the mixing of cattle and buffalo. There are a few fences within the Park to protect existing infrastructure and for human safety.

Objectives

- To safeguard the high value species against breakouts and preventing the spreading of any diseases from/into the Park,
- To comply with veterinary and animal health regulations, and
- To protect existing infrastructure from wildlife damage and in return to prevent harm to wildlife by accidents, as well as to guarantee human safety within Bwabwata National Park.

Strategies and Principles

- a) All existing fences should be maintained regularly and kept in functional and good condition.
- b) Formal liaison with the Directorate of Veterinary Services of the Ministry of Agriculture, Water and Forestry should be established for the continued inspection and maintenance of the Mutc-iku cattle fence.
- c) All border fences should conform to the Nature Conservation Ordinance Number 4 of 1975 (as amended) and, where appropriate, also to veterinary health specifications.
- d) Appropriate fencing and protective barriers, e.g. electric fencing, should be erected to keep wildlife away from existing infrastructure to ensure the safety of people, to protect the infrastructure from potential damage as well as protecting the wildlife from potential harm.
- e) Fences and barriers should be monitored to assess their effectiveness and removed, replaced or upgraded if their intended purpose is not achieved.

7.8 Water supply

Water provision within the Park is critical for use by park staff and tourists. Water for domestic consumption is currently supplied primarily from the rivers by means of engine driven pumps. These installations pose a threat of fuel and oil spillage into the river systems, and also pose health risks to staff and tourists.

Objective

To provide potable water for domestic use within Bwabwata National Park to a sustainable and environmentally appropriate standard.

Strategies and Principles

- a) Where appropriate, all domestic water supply should be of potable quality from boreholes.
- b) Any domestic water supply from river water should be treated to prescribed quality.
- c) Any river abstraction installation should be constructed and located in such manner as to prevent fuel and oil spillage into the river.

Activities

- a) All domestic water supply installations should be regularly maintained and assessed for their functionality and effectiveness.
- b) Park management must monitor all water supply installations on a continuous basis and when found not to be compliant, to be acted on immediately.

Chapter 8

Administration and management

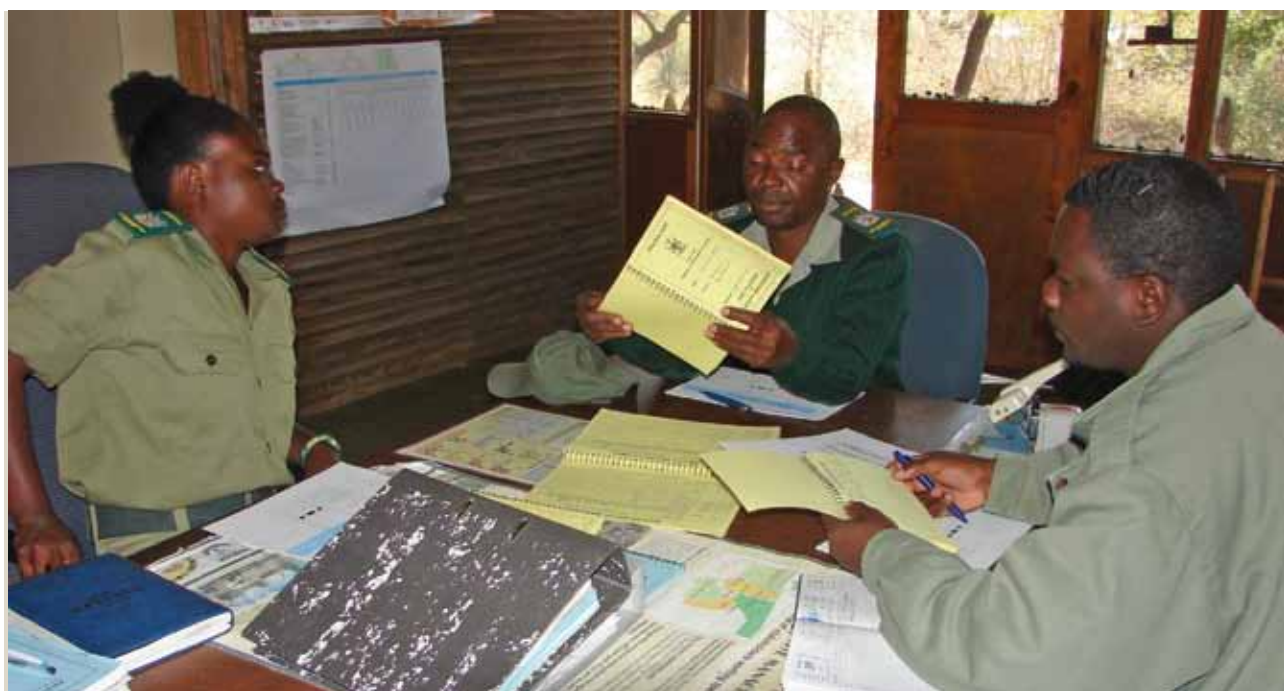
Since management and administration underpin all operations, an efficient administrative structure is required to support financing, procurement, human resources, stores and supplies, and maintenance of the Park. Many of these aspects are controlled by public service and/or MET policy, procedures or legislation. These measures limit the autonomy of park administrators and managers. Innovative operating procedures could nonetheless be implemented to address issues specific to local conditions.

Objective

To ensure compliance with public service policies and procedures within which an efficient operating system is implemented for the conservation and economic development of Bwabwata National Park.

Strategies and Principles

- a) **MANAGEMENT PLAN:** The current document represents Bwabwata National Park's management plan that includes the following minimum components: the purpose and objectives of the Park; a summary of core ecological, social, and economic principles and drivers. The management plan must be in standardised, useable, practical format that is easy to implement and adapt and complies with the MET's 'Framework and Guidelines for Development of Park Management Plans'. Bwabwata National Park further has an operational plan that summarises and guides all the normal activities and developments conducted by park management. This operational plan comprises eight management tools: 1) a summary of the policy framework, 2) an annual work plan, 3) a monthly work plan, 4) a development planning calendar, 5) zonation plan and guidelines, 6) a financial planning system, 7) a compilation of background information, and 8) a monitoring and evaluation system.
- b) **LAW ENFORCEMENT:** Illegal hunting remains a major management issue for MET as well as conservancies and community forests since poaching poses a major risk to wildlife and tourism products. Vigilance against wildlife crime is therefore a very high management priority.



- c) **COMMUNITY INVOLVEMENT:** Since communities have close links to the Park and its natural resources, mechanisms must be found that improve management efficiency by employing or outsourcing work to local people, and through joint implementation of key activities such as law enforcement, fire management, etc.
- d) **RESEARCH AND MONITORING:** An active monitoring system of carefully selected and agreed indicators, both bio-physical and socio-economic, is essential if management effectiveness is to be improved and adapted as conditions change. Monitoring systems, such as the IBMS must therefore provide key information, especially regarding threats or opportunities. Monitoring on an operational level is not limited to the natural resource base, but also includes management efficiency. Research will be supported, primarily through collaboration, and will focus on the following:
 - high value areas such as wetlands and riparian forests, as well as game movements and re-introductions;
 - improving management effectiveness, especially that which pertains to human-wildlife conflict, fire, community wildlife-and-tourism-related impacts;
 - the socio-economic impact of the Park.
- e) **HUMAN RESOURCES** play a critical role in the management of the Park, and therefore training and continuous staff development are essential. The MET policy on HIV/AIDS must be implemented. Procedures should be implemented to redress past gender imbalances.
- f) **FINANCIAL CONTROL AND FUNDING:** Financial controls as required under MET and other policies and legislation must be complied with. However, a broader, proactive business approach that continually resets targets of performance must be adopted. Resource and cost estimates must be monitored to ensure that targets for specific deliverables are met and improvements made. Alternative sources of funding should continually be explored to improve the management and operating efficiency of the Park.
- g) **GENERAL ADMINISTRATION:** Mechanisms, which improve effectiveness of delivery, must always be explored. All assets must be accounted for, maintained and applied to their intended uses. Where appropriate, new technologies, equipment and fixed infrastructure must be explored and introduced.

Activities

- a) Prepare and implement the eight management tools of the operational plan for Bwabwata National Park, namely a summary of the policy framework, an annual work plan, a monthly work plan, a development planning calendar, a zonation plan and guidelines, a financial planning system, a compilation of background information, and a monitoring and evaluation system.
- b) Formulate annual work plans with outputs and budget allocations (this task falls to park managers) that are agreed to by senior staff. Monitor implementation of the plans. Plans are to address major challenges and should ensure that important opportunities are optimised, for example:
 - activities must be resourced with appropriate staff, equipment and funding;
 - mechanisms should be provided to overcome challenges;
 - opportunities to review and modify work plans must be created, and adaptive management applied as circumstances change;
 - work plans with expected deliverables and dates should always be communicated to people responsible for these functions.
- c) Decision makers at all relevant levels should support park managers in their endeavours to implement this plan.
- d) Ensure that all MET assets are accounted for, protected and maintained in working order and deployed to contribute towards this plan.
- e) Monitor any changes in legislation and advise on their impact on the Park and associated operations.
- f) Identify gaps in knowledge relating to management and where appropriate, through collaboration, find solutions to improve the understanding of the natural system and the socio-economic benefits from the Park.
- g) Establish a system of monitoring and recording all aspects of the Park so that control can be exercised and management improved, especially with respect to:
 - the socio-economic benefits which result from the Park;
 - the development and responsible operation of tourism products;
 - compliance with all collaboration agreements;
 - adherence to budgets, and accountability for finances.
- h) Develop a respectful and efficient working relationship with staff and other stakeholders, especially resident and neighbouring communities.
- i) Make recommendations and follow up on any reviews or changes to this plan, relevant legislation, development requirements, funding, research and other management related issues.

Bibliography

- Backer HJ. 1989. *Letter to the Secretary of the Department of Agriculture and Nature Conservation*. Administration for Caprivians. Katima Mulilo. Namibia.
- InterConsult. 2001. *Natural resource mapping of the Kavango*. Report for the Directorate of Environmental Affairs, MET. Namibia.
- Mendelsohn J & Roberts C. 1997. *An environmental profile of the Caprivi*. Directorate of Environmental Affairs, MET. Namibia.
- MET. 2007. *MET Strategic Plan 2007/8 – 2011/2*. MET. Namibia.
- MET. 2009. *BMM Project: Addendum to Project Report of the Park Operational Planning Component*. MET. Namibia
- MET. 2009. *BMM Project: Strategic Management Plan for Namibia's North-East Parks*. MET. Namibia.
- MET. 2009. *BMM Project: Tourism Development Plan – Bwabwata, Mudumu & Mamili National Parks*. MET. Namibia.
- MET. 2011. *Framework and Guidelines for Development of Park Management Plans*. MET. Namibia.
- Rousset K. 2003. *Bwabwata National Park plans: Perspectives of the residents of Caprivi Game Park*. IRDNC. Katima Mulilo. Namibia.
- Tinley KL. 1966. *Western Caprivi Conservation Area, South West Africa: A proposal of natural resource land use*. Nature Conservation Department, South West Africa.

Glossary

ALIEN SPECIES: Any plant or organism that has been introduced to by humans into habitats far outside their native range, either directly or indirectly and intentionally or unintentionally. These species have the potential to cause significant ecological damage, often out-competing native species or changing the environment to such an extent that entire indigenous ecosystems may become threatened. Not all alien species are invasive, however, the chances of an invasive species being introduced increased rapidly with the number of alien introductions.

CONSERVATION: The management of the human use of the biosphere so that it will yield the greatest sustainable benefit to present generations, while maintaining its potential to meet the needs and aspirations of future generations. It includes preservation, maintenance, sustainable use, restoration and enhancement of the natural environment.

HABITAT: The natural home of a plant or animal species. Generally those environmental features or characteristics of an area, which are essential to the survival of an animal or a plant.

OMURAMBA: Herero word for an ephemeral river, plural omiramba.

SUSTAINABLE: Using a resource so that the resource is not depleted or permanently damaged

SUSTAINABLE USE / UTILISATION: Harvesting of a given species of plants or animals in such a way that their stocks do not decline in number over time.

WILDLIFE: All the indigenous biota, which occur within the area.



Appendices

Appendix 1

Biophysical zonation of the North-East Parks and its application to Bwabwata National Park

Introduction

The management plan for Bwabwata National Park prescribes the two core purposes of the Park, namely to protect biodiversity and to maximise the potential for regional economic development. The plan further explicitly recognises the position of Bwabwata National Park in KAZA TFCA.

The management plan also prescribes the zonation scheme to be used. This is applied as different layers in a hierarchical manner, with the legally prescribed or agreed land uses zoned first, followed by zonation of the biological and physical aspects of the parks, and finally by zonation of the economic uses. The zonation plan primarily addresses zonation in the Core Areas of Bwabwata National Park. Zonation in the Multiple Use Area will be addressed in a separate document that is currently being developed.

The approach taken therefore allows economic uses in most areas, but only after assessment of environmental impacts and with significant regulation. Crucially, and in line with the prescriptions of the MET Concessions Policy, utilisation is to be regulated through the standard process of EIA. In the zonation of Bwabwata National Park emphasis is thus placed on guiding the level and intensity of the EIA process.

For comparative purposes, and in order to contextualise Bwabwata within the region and relative to the other North-East Parks, this appendix describes the approach to biophysical zonation of all the North-east Parks. The term biophysical here includes two aspects:

- a) It defines zones based on the sensitivity, scarcity and threat to different habitats, and in terms of their social, cultural, historical or biological uniqueness. These represent the Habitat and Special Management Zones.
- b) It defines the positions of infrastructure development sites related to a) park management, and b) tourism developments.

In addition, rules and guidelines applicable to the respective zones are described, and maps that define the zones for each of the Parks are provided.

Types of zones

- **Very important:** All rivers, floodplain and swamp areas, and riparian forests.
- **Important:** Omuramba grasslands and pans and fringe woodland, mopane woodlands in Mudumu and deciduous woodlands.

SPECIAL MANAGEMENT ZONES

Sites that contain features of particular significance such as unique plant communities, important breeding sites, special landscape features, cultural, historical or archaeological sites, highly erodible soils, etc.

INFRASTRUCTURE DEVELOPMENT SITES

These are divided into those that relate to park management, and those that relate to tourism use. Park management zones consist of sites where management buildings, including housing, offices, and workshops and related infrastructure are located. This includes infrastructure of other ministries, which is accommodated inside parks, e.g.

infrastructure of the Ministry of Defence in Susuwe.

The boundaries of the management-related infrastructure development sites have been determined in the Park planning process, an EIA process was conducted and an EMP drafted. Tourism-related infrastructure development sites include actual and potential sites of lodges, camp sites, and picnic sites, but none of these have undergone an EIA process yet. Some tourism development sites have not yet been identified, in particular those that form part of concessions that will have to undergo an EIA process before the sites are determined.

Zonation maps

Habitats in Bwabwata, Mudumu and Mamili were identified using the Caprivi Vegetation Map as a basis. Each vegetation type was assigned a diversity and conservation value.⁵ These values, together with the basic division between riparian, omuramba and woodland habitats, were used to define the zonation.

All riparian and wetland vegetation (floodplain grasslands, and riparian thickets, woodlands and forests), and open water types were assigned to the Very Important category. All omuramba grasslands and their associated fringe woodlands were assigned to the Important category. Mopane woodlands in Mudumu were also assigned to this category because of their intact state, the presence of many tall, mature trees, and the special nature of the clay and clay-loam soils on which they occur. All deciduous woodlands, comprising mainly *Baikiaea* and *Burkea*-dominated woodlands with differing canopy cover and stature of the woody species were grouped in the Less important category. More detail on this process can be found in the full Zonation Report.⁶

Because the zones were based on vegetation types, they tended to have very convoluted boundaries, which were often not visible on the ground. Where relevant and for practical management purposes, these boundaries were then moved to the closest roads. In Mahango the national road now separates the Very Important zone from the other zones.

Cross-cutting guidelines and rules for zones and uses

Within some broad thresholds, and with specific exceptions, many types of activities may be conducted in all types of zones provided an appropriate EIA process is conducted to manage specific impacts. Although there are therefore no strict limitations on developments, there are a few critical factors to consider in assessing (a) the desirability of development and activities and (b) the management of environmental impact. The guidelines below apply across all the parks.

- a) An important principle to be used during the EIA process is that tourism facilities and activities should maximise social, economic or political benefits and minimise environmental costs.
- b) Proposed developments (including tourism and management infrastructure or road developments) must be evaluated against the total number of developments recommended in this management plan and any tourism development plans for the parks.
- c) Development will not be permitted in areas that have a special appeal. These areas are zoned as *Special Management Areas*.
- d) The whole region has a long history of settlement and contains some pre-historical sites that have not been adequately mapped. EIA processes must thus consider the potential occurrence of sites of archaeological significance in proposed development areas.
- e) Preference must be given to developments close to park boundaries and existing service infrastructure such as major access roads, power lines and so on.
- f) Where possible new developments should be done on so-called *brownfield* sites (sites that have previously been impacted, such as old military bases).
- g) In keeping with the general aim of sustainable utilisation, preference will be given for developments with small environmental footprints. This means that low-impact building materials⁷ and techniques must be used and

⁵ C.J. Hines in Mendelsohn, J. & Roberts, C. (1997) An environmental profile and atlas of the Caprivi. Directorate of Environmental Affairs, Ministry of Environment and Tourism, Republic of Namibia.

⁶ Bwabwata, Mudumu and Mamili Parks Project, BMM Project: Park-level Biophysical Zoning. 2009. Addendum to Project Report of the Park

⁷ Operational Planning Component, Ministry of Environment and Tourism, Republic of Namibia. For example, locally-sourced materials usually have less embedded energy than materials that have to be transported from far, steel has less embedded energy than concrete for a similar range of structural strengths, and second-hand building materials have already discounted some of the embedded energy.

energy and carbon budgets minimized.

- h) Sites may be secured against large mammals or predators through the use of appropriate fencing material, and against fires through the use of firebreaks. Fencing material should blend in as much as possible with the immediate environment.
- i) The emphasis is on managing total environmental impact, from construction or implementation to operational environmental impacts.
- j) In general, road construction should be minimised to conform to the agreed road network. Emphasis must be placed on the re-alignment and upgrading of existing roads, rather than construction of completely new roads. New road construction will be allowed only with a very good justification. Where roads are re-aligned, redundant roads should be ecologically restored.
- k) EIA processes for all road construction activities should include at the very least a scoping and an EMP.
- l) Each development proposal will be required to show, even in broad terms, how it will minimise waste and carbon production and energy use (the detail of these plans will depend on the total extent of the proposed development or activity). In addition, waste management protocols must be drafted wherever relevant, with the general aim to reduce, re-use and recycle (in that order of priority).
- m) Commercial tourism operations are required to dispose of their waste outside the parks in a properly appointed facility designed for that purpose. No permanent waste disposal is allowed inside the parks.
- n) No potentially polluting activities (such as frequent vehicle servicing and/or other mechanical maintenance or repair activities) may be conducted in any zone. Within reasonable limits, vehicles may undergo small services, providing all hydrocarbon fuels, lubricants and waste products are handled according to national regulations and in line with the applicable EMP, and disposed of outside the Park in a properly appointed facility.
- o) Where relevant, handling, storage and disposal of all hydrocarbon or any other potentially polluting substances must be an explicit part of all EMPs. The use and storage of pesticides and herbicides are not allowed, except in small quantities such as may be required to control insect pests in dwellings.
- p) The regulatory framework for hunting provided by the Nature Conservation Act of 2004 takes precedence over these guidelines. However, the following additional measures apply to hunting in the North-East Parks. Hunting activities – including the construction of camps or roads, hunting on foot, and use of vehicles or boats during hunts – will not be limited to specific zones, and are thus subject to the same usage rules as any other form of tourism or consumptive use. In certain places where photographic tourism and hunting overlap, and depending on the terms of concession contracts, hunting may be limited to certain times of the year when normal tourist access may be controlled.
- q) No off-road driving is permitted in any zone.

Guidelines and rules for each zone

VERY IMPORTANT HABITAT ZONE

Environmental impact assessment (EIA) process

- a) There is a very high likelihood that a full EIA will be required for any development in this zone. The justification for anything less than a full EIA must be strong. At the very least the EIA process will include a scoping and an EMP. In each case the benefit of placing a development in this zone must be compared with the option of placing it in an Important or Less Important Zone.
- b) The EIA process must include the potential cumulative impacts of all tourism activities, including number and periodicity of game drives and boat trips, as well as the environmental impact of existing and other planned lodges.

Construction guidelines

- c) Although some level of EIA will still be required, locating a development on a brownfield site will mean less chance that a full EIA will be required. Greenfield sites can be used, but this must be well justified and the EIA process must show not only that the impacts will be minor or positive, but that they can be easily managed.
- d) Non-permanent structures are preferred for tourism developments, with a strong emphasis on using low-impact building materials and building methods (in terms of energy, carbon and waste).
- e) Where possible, fencing should preferably be limited to a few electrified strands. Other types of fencing may be needed provided there is an appropriate justification.

Management approach and particular activities

- f) Park management must prioritise their resources to reduce or eliminate threats to these areas.

- g) Management actions must include the monitoring and regulation of tourism activities.
- h) The provision of artificial water to attract game is not allowed in this zone.
- i) No waste storage, other than temporary storage for sorting activities, is allowed in this zone. No permanent waste dumpsites are allowed here.
- j) A road that has become redundant because it has either been re-routed or replaced must be restored. Trenches dug for services (water, sewer or power lines) must be restored, regardless of whether it is inside a concession construction area or not.

General tourism rules and guidelines

- k) Where concession agreements permit, motorised boating access is allowed on open water, but number of boats and density must be subject to an assessment of cumulative impacts.
- l) The intensity and frequency of both land- and water-based game viewing and other recreational uses will be frequently reviewed in terms of single and cumulative impacts on ecological processes and/or biodiversity properties and/or physical geography. Limits for either or both aspects may consequently be changed as part of the overall adaptive management approach.
- m) Where applicable boat speed must be kept below non-wake speed at all times; fuel and oil to be stored at least 50 m from water; fuel to be kept in floatable watertight containers; the volume of all fuel and oil to be stored on site to be determined in the EIA process as part of each concession. Boats to have maximum 50 hp motors.

IMPORTANT HABITAT ZONE

Environmental impact assessment (EIA) process

- a) The likelihood that a full EIA will be required is smaller than in the Very Important Zone. At least an environmental scoping and a full EMP may be necessary for new structures and activities.
- b) The EIA process must include the potential impacts of all tourism activities, including number and periodicity of game drives, and must assess these in view of potential cumulative impacts across the whole Park.

Construction guidelines

- c) Developments should ideally be located on sites that are already impacted. Greenfield sites can be used, but these must be well justified.
- d) Semi-permanent structures (e.g. wood and thatch with concrete bases) are permitted, within the limits imposed by the specific site conditions, such as by the clay soils in Mudumu.

Management approach and particular activities

- e) This zone has lower priority in the allocation of management resources for reducing or eliminating threats. Management actions must still include the monitoring and regulation of tourism activities, but the frequency and intensity of such monitoring may be less than in the Very Important Zone.
- f) Subject to the conditions defined in the management plan, artificial water provision is allowed. Conditions include the definition of the intended purpose of the water provision, an appropriate risk analysis, and a management strategy. The risk analysis must include clear ecological and/or economic goals, potential cumulative effects on the wildlife, habitat structure and ecological processes. The management strategy must consider all options, which range from seasonal or even longer-term closing of the water hole through to continuous operation.
- g) No waste storage, other than temporary storage for sorting activities, is allowed in this zone. No permanent waste dumpsites are allowed here.
- h) A road that has become redundant because it has either been re-routed or replaced must be restored. Trenches dug for services (water, sewer or power lines) must be restored, regardless of whether they are inside a concession construction area or not.

General tourism rules and guidelines

- i) The intensity and frequency of game viewing and other recreational uses will be frequently reviewed in terms of their single and cumulative impacts on ecological processes and/or biodiversity properties and/or physical geography. Limits of use may consequently be changed as part of the overall adaptive management approach.

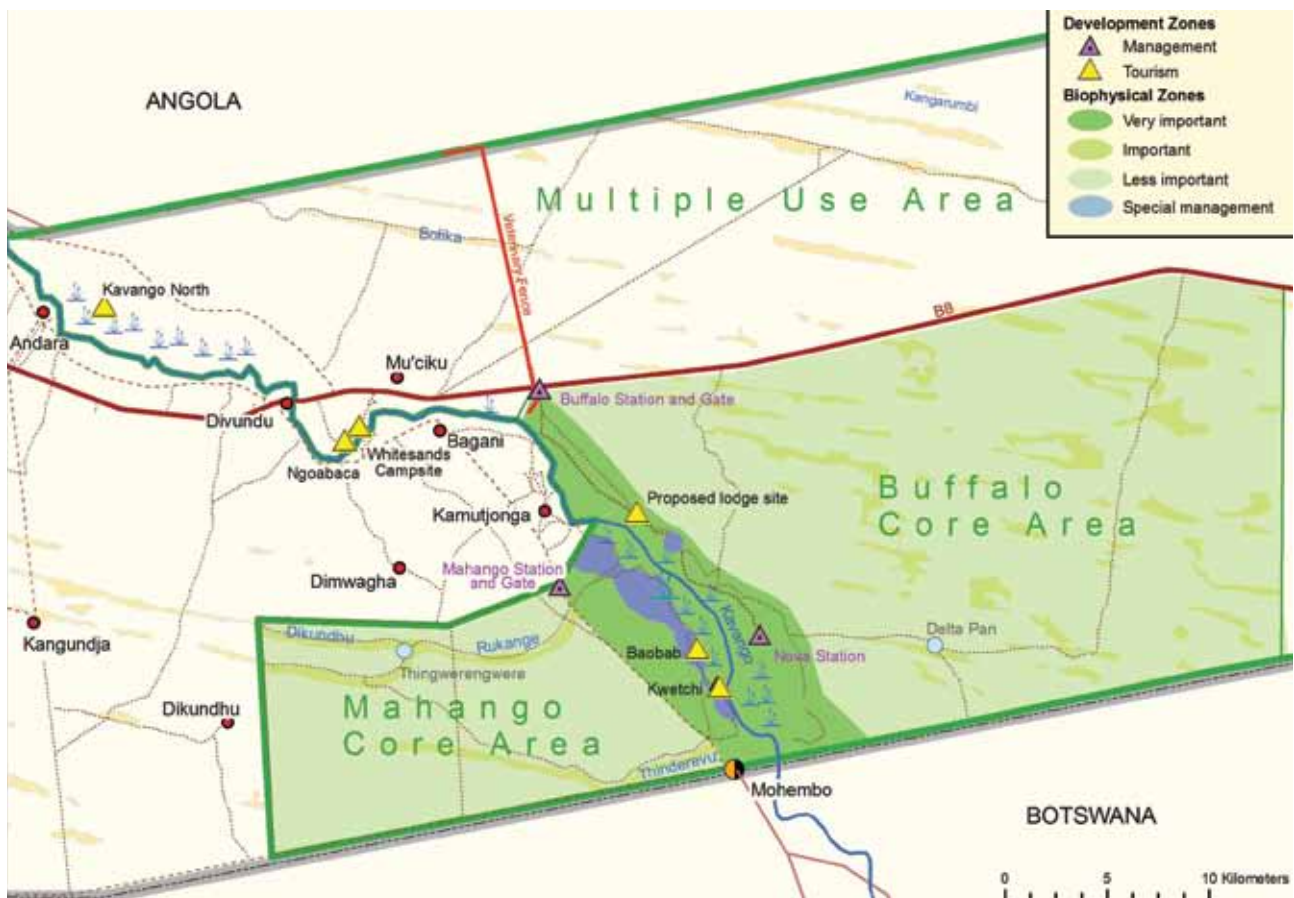
SPECIAL MANAGEMENT ZONE

- a) No construction of any infrastructure will be allowed, other than that required to protect specific areas (such as grave sites) if this proves to be necessary.
- b) Site-specific guidelines will regulate activities conducted there. For instance, some Special Management Zones in Mahango Core Area are Baobab trees where picnicking may be allowed, while highly erodible soils in Mahango are generally off-limits to vehicle or foot access (except on existing roads). Some grave or sacred sites that have special cultural significance may also be off-limits.

- c) Special Management Zones that are defined because of their unique species or other biological features may be fenced (using appropriate material) to secure them from elephant or other agents that may cause damage.
- d) Except in very unique situations, no hunting, including commercial and management hunting or culls, is allowed in any Special Management Zone.

INFRASTRUCTURE DEVELOPMENT SITES

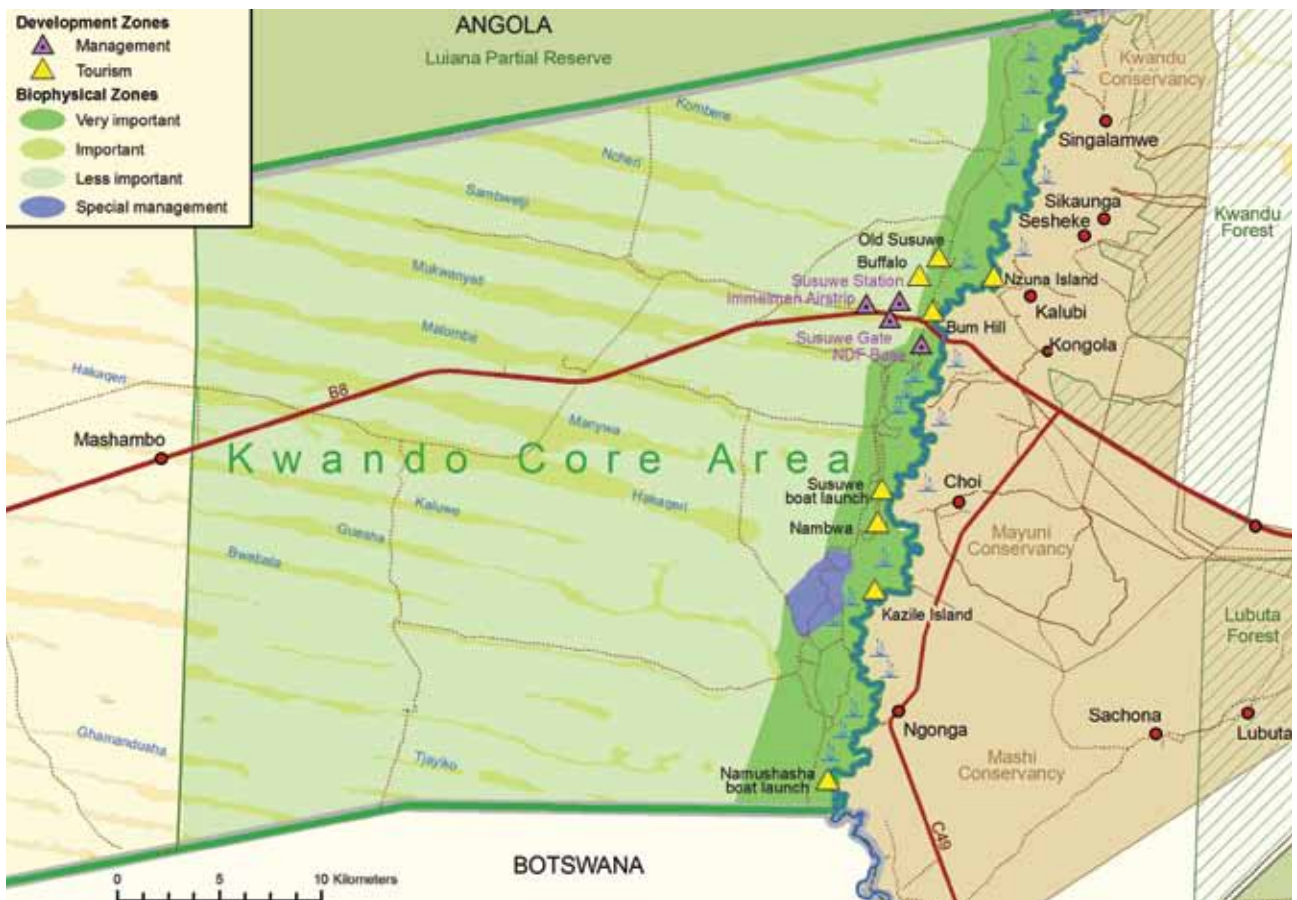
- a) Development of these sites will be subject to the environmental and other guidelines outlined in this plan and Appendix. Additional development zones may be added following the conclusion of concession agreements and further planning at park level. However, the total number and extent of these development zones will be subject to the assessment and management of potential cumulative impacts by all developments.
- b) Construction is allowed here, within the limits imposed by the management plan, business plan for Bwabwata, Mudumu and Mamili, tourism development plans, specific concession agreements, and guided by the MET's Concessions Policy and the strategic objectives of the North-East Parks. These limits, and the approved extent of construction within each development area, must be reviewed from time to time.
- c) Some sites may be secured against large mammals or predators through the use of appropriate fencing material, and against fires through the use of firebreaks.
- d) Waste production must be minimised through implementation of sound strategies that focus on reduce, re-use and recycle.
- e) Energy use must be minimised through adopting appropriate technologies and sensible energy use policies.



Map 6: Habitat zones and infrastructure development sites in Mahango Core Area, Bwabwata National Park. The Giant Baobab and Kwetchi are both Special Management areas (both contain remarkable baobab trees) with adjacent picnic sites. The exact location of the Buffalo lodge site is subject to a concession agreement to be negotiated.

Zone descriptions and guidelines for Bwabwata National Park

Descriptions of the zones in Bwabwata National Park are provided in the maps below. The key properties that should be considered during the EIA process are listed for each zone, as well as general guidelines and rules for use and management, and red flags (critical issues that have to be incorporated in planning and management). Locations for tourism developments are indicated as point features on the maps. The scale of these maps prevent more detailed mapping of these areas; moreover, the exact location of some of them still need to be determined as part of a concession agreement and its associated EIA process.



Map 7: Habitat zones and infrastructure development sites in Kwando Core Area, Bwabwata National Park. The exact locations of the Nzuna and Kazile Island, and old Susuwe and Buffalo sites are subject to concession agreements to be negotiated.

Bwabwata West (Mahango and Buffalo Core Areas)

Zone descriptions	Key properties	Specific rules and guidelines
Very Important Zone:		
<p>Mahango Core Area</p> <ul style="list-style-type: none"> This zone encompasses the whole area between the national road running between Divundu and Mohembo, and the Kavango River. It includes the floodplains and associated reed beds and grasslands. It encloses far more than just the riparian vegetation, which is seldom very dense and is probably suffering some elephant impact. It also surrounds most of the Special Management Zones: the area of erodible soils and some scenic features such as the Baobabs, as well as a particularly good example of riparian <i>Acacia nigrescens</i> knobthorn woodland. <p>Buffalo Core Area</p> <ul style="list-style-type: none"> The area between a line drawn approximately 1km inland from the road running more or less parallel with the Kavango River and the River's centre line. It includes the riparian woodlands, floodplains and grasslands associated with the river. It encloses an old military base and graves. The graves have been designated as a Special Management Zone. 	<ul style="list-style-type: none"> Vulnerable to elephant impact. A few small fragments of riparian woodland, characterised by tall jackal berry (<i>Diospyros mespiliformis</i>) trees remain in Mahango. Buffalo contains some excellent examples of closed riparian woodland, with knobthorn (<i>Acacia nigrescens</i>), leadwood (<i>Combretum imberbe</i>), sausage tree (<i>Kigelia africana</i>) and jackal berry. Highly erodible soils (which may include sodic soils) may cover larger areas than the area zoned as Special Management Zone. This zone is the habitat for wetland grazer species such as red lechwe, reedbeek and hippo, as well as of high value species such as buffalo, roan and sable. Floodplains and grasslands also breeding habitat for rare Wattled Crane, as well as numerous other bird species. The river itself is breeding habitat for African Skimmers, while certain sections of the river banks are breeding sites for Carmine Bee-eaters. Important access to water for elephant breeding herds. This zone contains a number of large old baobab trees, which have all been declared as Special Management Zones. This zone contains the greatest diversity of animals and plants 	<ul style="list-style-type: none"> Boats to be launched at designated launch site/s only. Only non-permanent patrol camps (using tents that are removed after patrol period). Where Buffalo Core Area abuts the Mahango Core Area, only concession and Park management motorised boats are allowed on open water, no public boats of any type. Where Buffalo Core Area is adjacent to communal or other public lands, boat use should conform to local river user group agreements. No motorised access to floodplains allowed, except on floodplain boundary at designated game viewing and lookout points. Foot access to floodplains only allowed under tightly controlled conditions. Where possible, current roads to be re-routed (e.g. road leading to Nova) to avoid current environmental pitfalls and to optimise tourist experience and old parts rehabilitated. EIA process for all re-routed road construction to include at least a scoping and an EMP. <div style="border: 1px solid red; padding: 5px; margin-top: 10px;"> <p>Red flags</p> <ul style="list-style-type: none"> New roads are likely to result in unacceptable environmental impacts. Disturbance of riverine, floodplain and grassland species, particularly those that breed there. The effect of any development or activity on soil stability should be considered and appropriate measures taken to avoid erosion. </div>

Bwabwata West (Mahango and Buffalo Core Areas)		
Zone descriptions	Key properties	Specific rules and guidelines
Important Zone:		
<p>Mahango Core Area</p> <ul style="list-style-type: none"> Only the Dikundhu and Thinderevu omiramba are included here. This zone contains the Thingwerengwere borehole. <p>Buffalo Core Area</p> <ul style="list-style-type: none"> Several omiramba in the hinterland of the core area. 	<ul style="list-style-type: none"> This zone contains particularly good examples of <i>Acacia erioloba</i> (camel thorn) and typical omiramba grasslands and fringe woodlands. The omiramba contain pans that fill seasonally and may last throughout the dry season in some cases, providing a valuable resource for wildlife. Soils are loamy clays to clays. This zone is habitat for roan, sable and tsessebe, which are all nationally rare and highly valuable. 	<ul style="list-style-type: none"> Less suitable for roads than the Less Important Zone Where re-routing of roads is required (e.g. around Thingwerengwere water hole in Mahango), old parts should be rehabilitated. No new roads may be constructed in this area. <div style="border: 1px solid red; padding: 5px; margin-top: 10px;"> <p>Red flags</p> <ul style="list-style-type: none"> None </div>

Bwabwata West (Mahango and Buffalo Core Areas)		
Zone descriptions	Key properties	Specific rules and guidelines
Special Management Zone:		
<p>Mahango Core Area</p> <ul style="list-style-type: none"> An area between the Kavango River and the Divundu-Mohembo road contains a very erodible soil type, possibly related to sodic soils, but more sandy. Vegetation cover is sparse and <i>Hyphaene petersiana</i> is a prominent species. The soil surface appears to be fragile and sensitive to any disturbance. Two Baobabs have also been designated as Special Management Zones. The north-eastern corner of Mahango Core Area. An area bounded in the east by the Kavango River, the north by the northern Mahango fence, in the south by the tourist road and in the west by the main Divundu-Mohembo road contains a good example of intact knobthorn woodland and is thus zoned as Special Management Zone. <p>Buffalo Core Area</p> <ul style="list-style-type: none"> An area of approximately 12 hectare surrounding a group of graves associated with the old military base. 	<ul style="list-style-type: none"> The erodible soils won't be able to withstand high-density traffic unless the road is properly surfaced and maintained. The vegetation type, in terms of the particular combination of species occurring together, is probably unique in the area. The military graves in Buffalo are of social and historical significance. 	<ul style="list-style-type: none"> No new developments allowed, except minor tourist game viewing infrastructure (e.g. hides and parking areas) where this zone approaches the floodplain. Road condition and maintenance is a key management issue here. No motorised or foot access by tourists to erodible soils areas, other than on existing roads. No new management roads. New tourist roads to be subjected to proper EIA process including hydrological, soil and civil- and geo-engineering assessments. Game viewing infrastructure to be subjected to EIA process that includes at least a scoping and EMP. Tourist activities at baobab trees to be limited to picnicking; parking areas here should be located so as to avoid compaction of soil surrounding the baobab trees. No infrastructure developments allowed on the military graves site in Buffalo, only foot access by tourists. <div style="border: 1px solid red; padding: 5px; margin-top: 10px;"> <p>Red flags</p> <ul style="list-style-type: none"> Any activity that may disrupt the soil surface. </div>

Bwabwata West (Mahango and Buffalo Core Areas)

Zone descriptions	Key properties	Specific rules and guidelines
Very Important Zone:		
<ul style="list-style-type: none"> • The area between a line drawn approximately 1km inland from the road running more or less parallel with the Kwando River and the river's centre line. It includes the riparian woodlands, floodplains and grasslands associated with the river. • It encloses an old military base and some MET infrastructure. • It encloses the Horseshoe Lagoon Special Management Zone. 	<ul style="list-style-type: none"> • Vulnerable to elephant impact. • Some fragments of riparian woodland, characterised by Strychnos species remain and should be protected. • This zone is the habitat for wetland grazer species such as red lechwe and hippo, as well as of buffalo, roan and sable. • Floodplains and grasslands also breeding habitat for numerous other bird species. • Important access to water for elephant breeding herds. 	<ul style="list-style-type: none"> • Types of boat, frequency of use and times of access should conform to local river user group agreements. • Boats to be launched at designated launch site/s only. • No motorised access to floodplains allowed, except at designated game viewing and lookout points. • Some new roads may be constructed here, while current roads may be re-aligned (to avoid easily flooded areas and to optimise tourist experience) and simultaneously upgraded. • Tourist access to the floodplain should be via frequent link roads from main tourist route to game viewing areas located at optimal positions along the edge of the floodplains (dependent on the BMM Tourism Development Plan). • Construction of game viewing infrastructure will require at least an environmental scoping and EMP. • Only non-permanent patrol camps (using tents that are removed after patrol period). <div style="border: 1px solid red; padding: 5px; margin-top: 10px;"> <p>Red flags</p> <ul style="list-style-type: none"> • Disturbance of floodplain and grassland species, particularly those that breed there. • Disruption of seasonal movement and dispersal of mammal species to and from the river. </div>

Bwabwata West (Mahango and Buffalo Core Areas)

Zone descriptions	Key properties	Specific rules and guidelines
Important Zone:		
<ul style="list-style-type: none"> Several omiramba in the hinterland of the Kwando Core Area, with some particularly good examples in the central area. 	<ul style="list-style-type: none"> This zone contains good examples of typical omuramba grasslands and fringe woodlands. This zone is habitat for roan, sable and tsessebe, which are all rare and highly valuable. The omiramba contain pans that fill seasonally and may last throughout the dry season in some cases, providing a valuable resource for wildlife. Seasonal movement of a number of species (e.g. buffalo and blue wildebeest) to and from the Kwando River). Soils are loamy clays to clays. 	<ul style="list-style-type: none"> Less suitable for roads than the Less Important Zone. Where possible, current roads to be re-routed away from any clay areas into the sandy fringes of the broadleaved woodland vegetation types, as these are better suited to this. Redundant roads to be rehabilitated. <div style="border: 1px solid red; padding: 5px; margin-top: 10px;"> <p>Red flags</p> <ul style="list-style-type: none"> Disruption of wildlife use of seasonal pans. Disruption of seasonal movement and dispersal of wildlife. </div>

Bwabwata West (Mahango and Buffalo Core Areas)

Zone descriptions	Key properties	Specific rules and guidelines
Special Management Zone:		
<ul style="list-style-type: none"> An approximately 10 ha area surrounding the Horseshoe oxbow lagoon in the southern section of the Core Area, bounded by the edge of the floodplain and some vehicle tracks. 	<ul style="list-style-type: none"> Contains a feature of special significance that is a valuable resource especially for elephant. Provides a unique tourist experience. 	<ul style="list-style-type: none"> Only small game viewing infrastructure (e.g. a game viewing hide, a picnic area and a parking space, the location of which is subject to the BMM Tourism Development Plan) allowed. New road is allowed, subject to the limitations placed by the BMM Tourism Development Plan. EIA process for all new road construction to include at least a scoping and an EMP. Some current roads to be re-routed to avoid interference with elephant coming down to drink. Old and redundant roads to be restored. No patrol camps allowed in this zone. <div style="border: 1px solid red; padding: 5px; margin-top: 10px;"> <p>Red flags</p> <ul style="list-style-type: none"> Disturbance of wildlife that use the lagoon for drinking. Disruption of the unique 'sense of place' </div>

Appendix 2

Species of special concern in the North East Parks

Plant species of special concern in Bwabwata National Park		
Scientific name	Common Name	Comments on Status
<i>Acacia erioloba</i>	Camel thorn, Munthu ¹ , Muhobo ² , Muthu ³	Protected, important useful woody species
<i>Acacia sieberiana</i>	Paperbark acacia, Muheneva ¹ , Mughombe ³	Protected
<i>Adansonia digitata</i>	Baobab, Livuyu ¹ , Mubuyu ² , Divuyu ³	Protected, important useful woody species
<i>Ansellia Africana</i>	Orchid, Dikogha ³	Protected
<i>Baikiaea plurijuga</i>	Rhodesian teak, Uhahe ¹ , Mukushi ² , Mukuthi ³	Protected, important useful woody species
<i>Berchemia discolor</i>	Bird plum, Wild date, Mukerete ^{1,3}	Protected, important useful woody species, fruit tree
<i>Bolusia amboensis</i>		Endemic
<i>Boscia albitrunca</i>	Shepherd's tree, Munkudhi ¹ , Muhepu ³	Protected, important useful woody species
<i>Burkea Africana</i>	Red syringe, Mutundungu ¹ , Musheshe ² , Muhehe ³	Protected, important useful woody species
<i>Cadaba termitaria</i>		IUCN status: rare ⁴
<i>Ceropegia lugardiae</i>		Protected
<i>Ceropegia nilotica</i>		Protected
<i>Ceropegia stenantha</i>		Protected
<i>Colophospermum mopane</i>	Mopane, Mupane ²	Protected, important useful woody species
<i>Combretum collinum</i>		Important useful woody species
<i>Combretum imberbe</i>	Leadwood, Munyondo ¹ , Mubimba ² , Muzwile ² , Munyondo ³	Protected, important useful woody species
<i>Combretum psidioides dinteri</i>	Mupupu ³	Important useful woody species
<i>Combretum psidioides psidioides</i>	Mupupu ^{2,3}	Important useful woody species
<i>Commicarpus decipiens</i>		Endemic
<i>Crinum carolo-schmidtii</i>		Near endemic
<i>Dialium engleranum</i>	Kalahari podberry, Utimba ¹ , Guthimba ³	Important useful woody species
<i>Digitaria eriantha</i>		Near endemic
<i>Diospyros lycioides lycioides</i>	Monkey plum, Shihorowa ¹ , Muvitji ³	Important useful woody species

<i>Diospyros lycioides sericea</i>	Wild persimmon	Important useful woody species
<i>Diospyros mespiliformis</i>	Monkey guava, African ebony, Utunda ¹ , Muchenje ² , Mukuchumwa ² , Mutunda ³	Important useful woody species
<i>Elaeodendron transvaalense</i>	Kakere ²	Protected, important useful woody species
<i>Erythrina decora</i>	Namibian coral tree	Protected
<i>Eulophia walleri</i>	Orchid	Protected
<i>Ficus burkei</i> (formerly: <i>F. thonningii</i>)	Mutata ¹ , Uhoro ¹ , Muminamboma ² , Mutata ³	Protected
<i>Ficus sycomorus sycomorus</i>		Protected, important useful woody species, fruit tree
<i>Fissidens capriviensis</i>		Endemic
<i>Friesodielsia obovata</i>	Mukondekonde ^{1,3}	Important useful woody species, fruit tree
<i>Garcinia livingstonei</i>	Mangosteen, Ghushika ³	Important useful woody species, fruit tree
<i>Grewia avellana</i>	Makopa ¹ , Shikopa ¹ , Mavoyo ³ , Thivoyo ³	Important useful woody species
<i>Grewia bicolor</i>	Ngogo ¹ , Muwhana ² , Mungovo ³	Important useful woody species
<i>Grewia falcistipula</i>	Maka ^{1,3} , Shimaka ^{1,3}	Important useful woody species
<i>Grewia flavescens</i>	Makore ³	Important useful woody species
<i>Grewia monticola</i>		Important useful woody species
<i>Grewia retinervis</i>	Mupundu ^{1,3} , Muzuzimyane ²	Important useful woody species
<i>Grewia schinzii</i>	Mudu ¹ , Maka ³	Important useful woody species
<i>Grewia subspathulata</i>		Important useful woody species
<i>Guibourtia coleosperma</i>	False mopane, Rhodesian mahogany, Ushivi ¹ , Muzaule ² , Mushi ³	Protected, important useful woody species
<i>Harpagophytum procumbens procumbens</i>	Grapple plant, Likakata ¹	Protected
<i>Indigofera rautanenii</i>		Endemic
<i>Kigelia africana</i>	Sausage tree, Uvunguvungu ¹ , Mupungungo ² , Muzungulu ³	Important useful woody species
<i>Lannea discolor</i>	Live long, Musamba ² , Mushama ³	Protected, fruit tree
<i>Ochna pulchra</i>	Udjwe ¹ , Muywela ² , Munyelenyele ² , Ghuywe ³	Protected
<i>Parinari curatellifolia</i>	Mobola plum, Úsha ¹ , Ntja ¹ , Mubula ² , Ghutha ³	Important useful woody species, fruit tree
<i>Peltoporum africanum</i>	African wattle, Muparara ¹ , Munyele ² , Muyeve ³	Protected, important useful woody species
<i>Philenoptera nelsii</i>	Apple leaf, Mupanda ¹ , Mukololo ² , Mukororo ³	Protected, important useful woody species
<i>Philenoptera violacea</i>	Mupanda ¹ , Mukololo ² , Mukororo ³	Protected, important useful woody species
<i>Phoenix reclinata</i>	Wild date palm, Shikerewa ¹ , Sipupa ² , Dikhindu ³ , Makindhu ³	Important useful woody species, fruit tree
<i>Piliostigma thonningii</i>	Camel-foot, Mupapama ^{1,3} , Mubaba ²	Important useful woody species

<i>Protea gaguedi</i>	Muririra ¹	Important useful woody species, thought to be extinct/rare in Namibia due to over-harvesting
<i>Pterocarpus angolensis</i>	Kiaat, Dolf, African teak, Ughuva ¹ , Mukwa ² , Ghughuva ³	Protected, important useful woody species
<i>Salix mucronata mucronata</i>		Protected
<i>Schinziophyton rautanenii</i>	Manketti nut, Ugongo ¹ , Mwangwamui ² , Mungongo ² , Mughongo ³	Protected, important useful woody species, fruit tree
<i>Sclerocarya birrea caffra</i>	Maroela, Uwongo ¹ , Mulala ² , Ghuge ³ , Murwa ³	Protected, important useful woody species, fruit tree
<i>Sesamum schinzianum</i>		Near endemic
<i>Sesbania pachycarpa dinterana</i>		Endemic
<i>Strychnos cocculoides</i>	Corky monkey orange, Maguni ¹ , Uguni ¹ , Liguni ¹ , Maghumi ³	Protected, important useful woody species, fruit tree
<i>Strychnos pungens</i>	Bushman orange, Matu ¹ , Grutu ¹ , Mukola ² , Muwana ² , Ghutu ³ , Ditu ³	Protected, important useful woody species, fruit tree
<i>Syzygium cordatum</i>	Mukwe ³	Important useful woody species, fruit tree
<i>Syzygium guineense afromontanum</i>	Water berries, Mukurikuré ¹ , Mytoya ² , Musompe ² , Mukudikudi ³	Important useful woody species, fruit tree
<i>Syzygium guineense barotsense</i>	Water berries, Mukurikuré ¹ , Mytoya ² , Musompe ² , Mukudikudi ³	Important useful woody species, fruit tree
<i>Terminalia prunioides</i>	Purple-pod terminalia, Uhama ¹ , Mulumba ² , Mutororo ³	Important useful woody species
<i>Terminalia sericea</i>	Silver terminalia, Mugoro ¹ , Namasimba ² , Mushosho ³	Important useful woody species
<i>Vahlia capensis vulgaris</i>		Near endemic
<i>Vangueria infausta infausta</i>	Wild medlar, Mubilo ²	Important useful woody species
<i>Willkommia sarmentosa</i>		Near endemic
<i>Ximenia americana</i>	Sour plum, Mutemyahambya ³	Important useful woody species, fruit tree
<i>Ximenia caffra</i>	Wild plum, Hambya ³	Important useful woody species, fruit tree
<i>Xylopiya odoratissima</i>		Important useful woody species, fruit tree
<i>Ziziphus mucronata mucronata</i>	Buffalo thorn, Mukete ¹ , Mukekete ^{1,3}	Protected, important woody species



¹ local plant name in Rumanyo/Gciriki

² local plant name in Silozi

³ local plant name in Thimbukushu



Bird species of special concern in the North East Parks

Common name	Scientific name	IUCN status
African Finfoot	<i>Podica senegalensis</i>	Endangered
African Fish-Eagle	<i>Haliaeetus vocifer</i>	Vulnerable
African Marsh-Harrier	<i>Circus ranivorus</i>	Endangered
African Skimmer	<i>Rhynchops flkavirostris</i>	Vulnerable
Bateleur	<i>Terathopius ecaudatus</i>	Endangered
Bittern	<i>Botaurus stellaris</i>	Critically endangered
Black Stork	<i>Ciconia nigra</i>	Endangered
Black-cheeked Lovebird	<i>Agapornis nigrigenis</i>	Critically endangered
Black-winged Pratincole	<i>Glareola nordmanni</i>	Near threatened
Booted Eagle	<i>Hieraeetus pennatus</i>	Endangered
Crowned Crane	<i>Balearica regulorum</i>	Near threatened
Egyptian Vulture	<i>Neophron percnopterus</i>	Regionally extinct
Great White Pelican	<i>Pelecaus onocrotalus</i>	Vulnerable
Lappet-faced Vulture	<i>Torgos tracheliotus</i>	Vulnerable
Lesser Kestrel	<i>Falco naumanni</i>	Near threatened
Marabou Stork	<i>Leptoptilos crumeniferous</i>	Near threatened
Martial Eagle	<i>Polemaetus bellicosus</i>	Endangered
Pallid Harrier	<i>Circus macrourus</i>	Near threatened
Pel's Fishing Owl	<i>Scotopelia peli</i>	Critically endangered
Peregrine Falcon	<i>Falco peregrinus</i>	Near threatened
Rock Pratincole	<i>Glareola nuchalis</i>	Endangered
Rufous-bellied Heron	<i>Butorides rufiventris</i>	Endangered
Saddle-billed Stork	<i>Ephippiorhynchus senegalensis</i>	Endangered
Slaty Egret	<i>Egretta vinaceigula</i>	Endangered
Tawny Eagle	<i>Aquila rapax</i>	Endangered
Wattled Crane	<i>Grus carunculatus</i>	Endangered
White-backed Vulture	<i>Gyps africanus</i>	Near threatened
White-headed Vulture	<i>Trigonoceps occipitalis</i>	Vulnerable
Yellow-billed Oxpecker	<i>Buphagus africanus</i>	Endangered

Mammal species of special concern in the North East Parks

Common name	Scientific name	Comments on status
Swamp Musk Shrew	<i>Crocidura mariquensis</i>	Status insufficiently known
Hairy Slit-Faced Bat	<i>Nycteris hispida</i>	Status insufficiently known
Damara Woolly Bat	<i>Kerivoula argentata</i>	Status insufficiently known
Lesser Woolly Bat	<i>Kerivoula lanosa</i>	Status insufficiently known
Greater Long-Fingered Bat	<i>Miniopterus inflatus</i>	Status insufficiently known
Pygmy Gerbil	<i>Gerbillurus paeba</i>	Endemic, status insufficiently known
Woosnam's Desert Rat	<i>Zelotomys woosnami</i>	Rare
Vlei Multimammate Mouse	<i>Mastomys shortridgei</i>	Rare
Small Spotted Cat	<i>Felis nigripes</i>	Specially protected
African Wild Cat	<i>Felis lybica</i>	Vulnerable
Serval	<i>Leptailurus serval</i>	Status insufficiently known
Lion	<i>Panthera leo</i>	Specially protected
African Civet	<i>Civettictis civetta</i>	Status insufficiently known
Rusty-Spotted Genet	<i>Genetta maculate</i>	Status insufficiently known
Water Mongoose	<i>Atilax paludinosus</i>	Status insufficiently known
Selous' Mongoose	<i>Paracynictis selousi</i>	Status insufficiently known
White Tailed Mongoose	<i>Ichneumia albicauda</i>	Status insufficiently known
Brown Hyaena	<i>Parahyaena brunnea</i>	Status insufficiently known
Cape Fox	<i>Vulpes chama</i>	Vulnerable
Bat-Eared Fox	<i>Otocyon megalotis</i>	Vulnerable
African Wild Dog	<i>Lycaon pictus</i>	Specially protected
Spotted-Necked Otter	<i>Lutra maculicollis</i>	Specially protected
African Clawless Otter	<i>Aonyx capensis</i>	Specially protected
African Striped Weasel	<i>Poecilogale albinucha</i>	Status insufficiently known
Hippopotamus	<i>Hippopotamus amphibius</i>	Specially protected
Bush Pig	<i>Potamochoerus larvatus</i>	Specially protected
Giraffe	<i>Giraffa camelopardalis</i>	Specially protected
Reedbuck	<i>Redunca arundinum</i>	Status insufficiently known
Waterbuck	<i>Kobus ellipsiprymnus</i>	Specially protected
Red Lechwe	<i>Kobus leche</i>	Vulnerable
Puku	<i>Kobus vardonii</i>	Specially protected
Roan Antelope	<i>Hippotragus equinus</i>	Specially protected
Sable Antelope	<i>Hippotragus niger</i>	Specially protected
Tsessebe	<i>Damaliscus lunatus</i>	Specially protected
African Buffalo	<i>Syncerus caffer</i>	Specially protected
Sitatunga	<i>Tragelaphus spekei</i>	Specially protected
Chobe Bushbuck	<i>Tragelaphus scriptus</i>	Specially protected
Eland	<i>Tragelaphus oryx</i>	Status insufficiently known
Black Rhino	<i>Diceros bicornis</i>	Specially protected
African Elephant	<i>Loxodonta Africana</i>	Specially protected



Reptile species of special concern in the North East Parks

Common name	Scientific name	Comments on status
Nile Crocodile	<i>Crocodylus niloticus</i>	Protected
Kalahari Tent Tortoise	<i>Psammobates oculiferus</i>	Specially protected
Speke's Hinged Tortoise	<i>Kinixys spekii</i>	Specially protected
Tropical House Gecko	<i>Hemidactylus mabouia</i>	Rare
Tree Agama	<i>Acanthocercus atricollis</i>	Status insufficiently known
Veld Leguaan	<i>Varanus albigularis</i>	Vulnerable
Water Leguaan	<i>Varanus niloticus</i>	Specially protected
Southern African Python	<i>Python natalensis</i>	Specially protected
Cape Centipede Eater	<i>Aparallactus capensis</i>	Status insufficiently known
Common Purple-glossed Snake	<i>Amblyodipsas polylepis</i>	Status insufficiently known
Eastern Congo Stiletto Snake	<i>Atractaspis congica</i>	Status insufficiently known
Blotched Wolf Snake	<i>Lycophidion multimaculatum</i>	Status insufficiently known
Grey-bellied Grass Snake	<i>Psammophylax variabilis</i>	Status insufficiently known
Ornate Water Snake	<i>Philothamnus ornatus</i>	Status insufficiently known
White-lipped Snake	<i>Crotaphopeltis hotamboeia</i>	Status insufficiently known
Rhombic Night Adder	<i>Causus rhombeatus</i>	Status insufficiently known

Appendix 3

Tourism concession recommendations for Bwabwata National Park

Tourism concession recommendations for Bwabwata National Park		
Concession name	Concession type	Implementation method
Kwando North Concession	Renewal and restructuring of existing campsite concession Roadside lodge and campsite (60-beds, plus campsite)	Direct award to Kwando Conservancy , followed by tendering to identify a development and management partner
Kwando South Concession (Nambwa)	Renewal and restructuring of existing campsite concession Upper / mid-market lodge concession (16-beds)	Direct award to Mayuni Conservancy, followed by tendering to identify a development and management partner
Kwando South Concession (Kazile Island)	Upper / mid-market lodge concession (16-beds)	Direct award to Mashi Conservancy, followed by tendering to identify a development and management partner
Bwabwata Trophy Hunting Concession - currently being implemented	Trophy hunting – divided into east and west concessions	Direct award to KA , followed by tendering to identify a professional trophy hunting operator
Bwabwata Tour Route Concession	Guided or unguided, multi-day self-drive tour route	Direct award to KA , followed by tendering to identify a development and management partner
Kavango North Concession	Roadside lodge and campsite (60-beds, plus campsite)	Direct award to a suitable, representative local legal-entity (west of Kavango River) , followed by tendering to identify a development and management partner
Kavango Central Concession (Popa Falls) – currently being implemented	Roadside lodge and campsite (60-beds, plus campsite)	Direct award to KA , followed by tendering to identify a development and management partner
Kavango South Concession (Buffalo)	Roadside lodge and campsite (60-beds, plus campsite)	Award by the State via tender, but with an empowerment plan to directly benefit local communities
Mahango Concession (Kwetchi / Singweligweli) – currently being planned	Upper / mid-market lodge concession (16-beds) and / or campsite – could be spread across two sites	Direct award to a suitable, representative local legal-entity , followed by tendering to identify a development and management partner
Bwabwata Activity Concessions	Special activity concessions for neighbouring lodge / campsite operators Provide regulated special use for alternative Park entry, river use, walking, after hours use, access to exclusive areas, etc	Depends on the individual circumstances of each concession, but with priority given to concessions that directly benefit neighbouring and resident communities







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