

STRATEGIC MANAGEMENT PLAN
FOR NAMIBIA'S
NORTH-EAST PARKS



Republic of Namibia
Ministry of Environment and Tourism

STRATEGIC MANAGEMENT PLAN FOR NAMIBIA'S NORTH-EAST PARKS



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Abbreviations

BMM	Bwabwata, Mudumu and Mamili National Parks
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
KAZA TFCA	Kavango-Zambezi Trans-frontier Conservation Area
MET	Ministry of Environment & Tourism
IUCN	International Union for the Conservation of Nature



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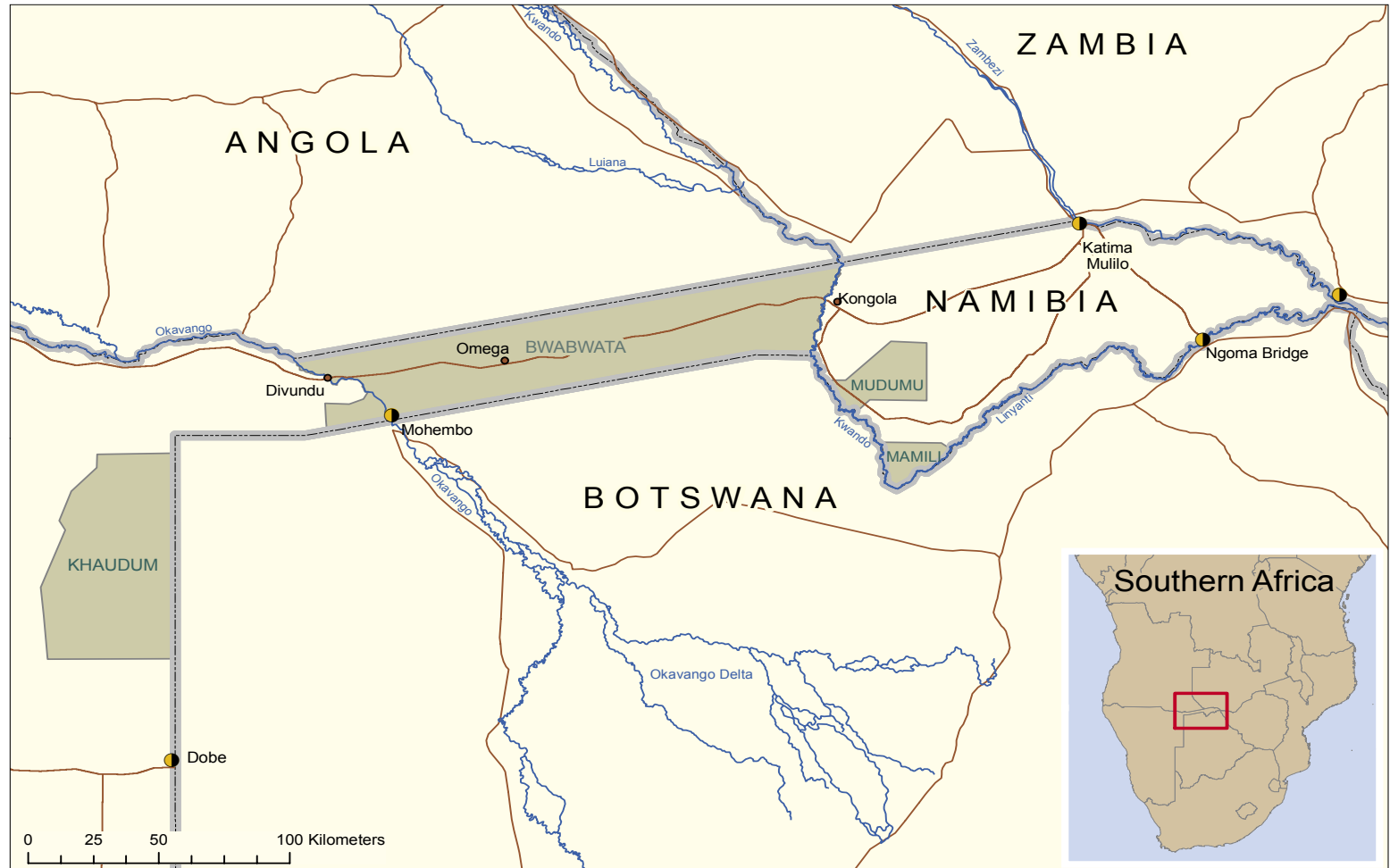
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1. THE NORTH-EAST PARKS IN CONTEXT

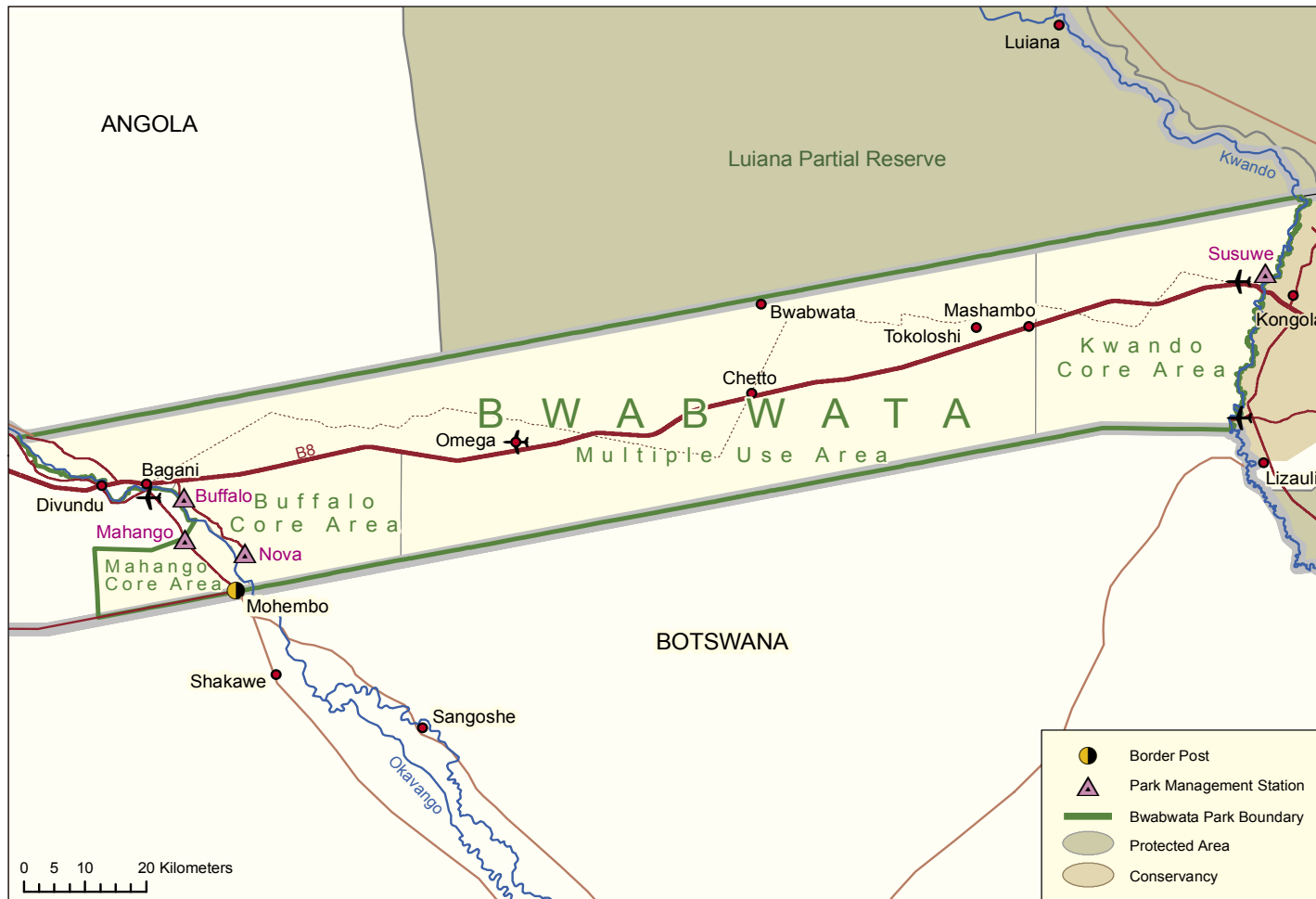
Shaped by water, woodlands, floods and fire, human history and ancient animal migration routes, the parks of Namibia's north-eastern regions are rich in biodiversity and history. Effective management of the North-East Parks will ensure the conservation of important habitats, safeguard corridors for regional wildlife migration; provide engines for economic growth in poor rural areas; and provide access to natural areas for local, regional and international visitors.



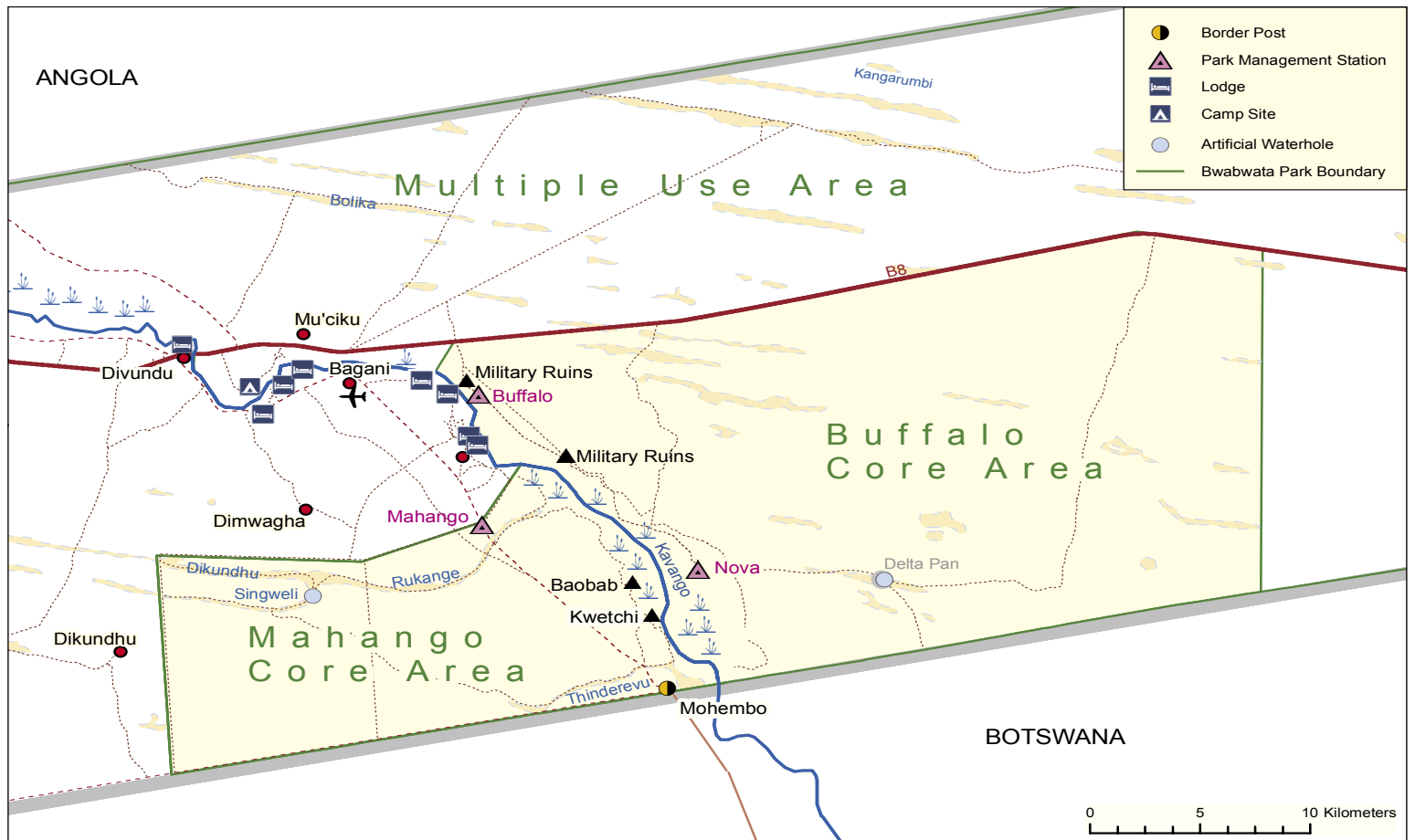
Namibia's North-East Parks (Khaudum, Bwabwata, Mudumu and Mamili) lie close together in an area surrounded by Angola, Zambia, Zimbabwe and Botswana, and transected by the Okavango, Kwando and Zambezi Rivers.

Bwabwata

Bwabwata National Park is the largest of the four protected areas which make up the North-East Parks. 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. Except for Mahango, positioned on the western bank of the Kavango River, the park completely covers the section of the Caprivi Strip which extends from the Okavango to the Kwando River. The boundary between the Caprivi and Kavango regions lies roughly in the middle of the Strip. Bwabwata is bordered to the north, by Angola and to the south, by Botswana.

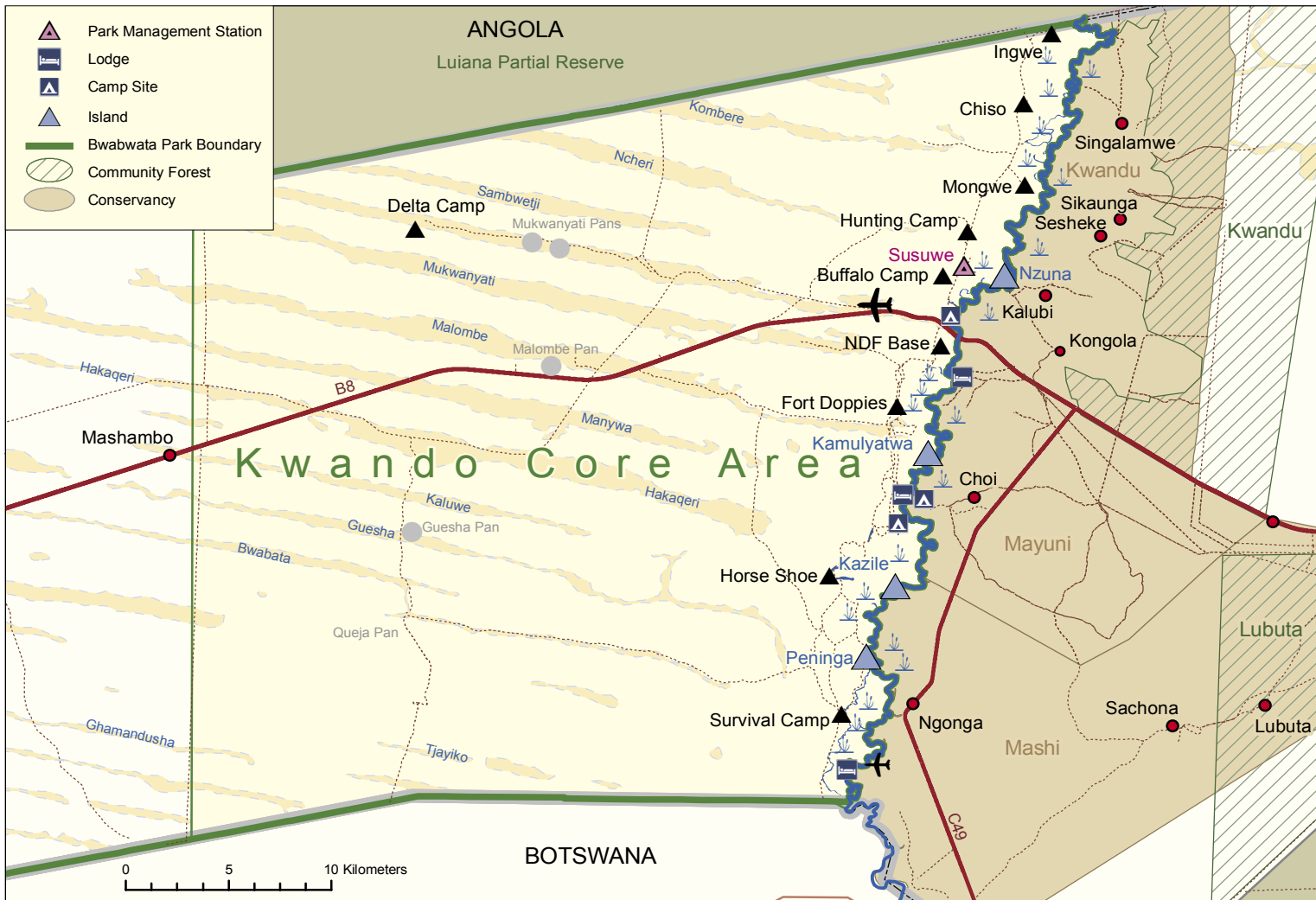


Bwabwata National Park covers 6,274 square kilometres and extends across the old caprivi strip.



The Mahango and Buffalo Core Areas in Bwabwata National Park

The latter boundary is fenced except for a 30-kilometre stretch which lies east of the Kwando River. Three community conservancies - Kwando, Mayuni and Mashi are its neighbours to the east. The Okavango River forms part of the western border. Bwabwata consists of three core areas designated for special protection and controlled tourism: Kwando, Buffalo, and Mahango, and a large area with multiple uses, zoned for community-based tourism, trophy hunting, human settlement and development by the resident community. An outstanding fea-

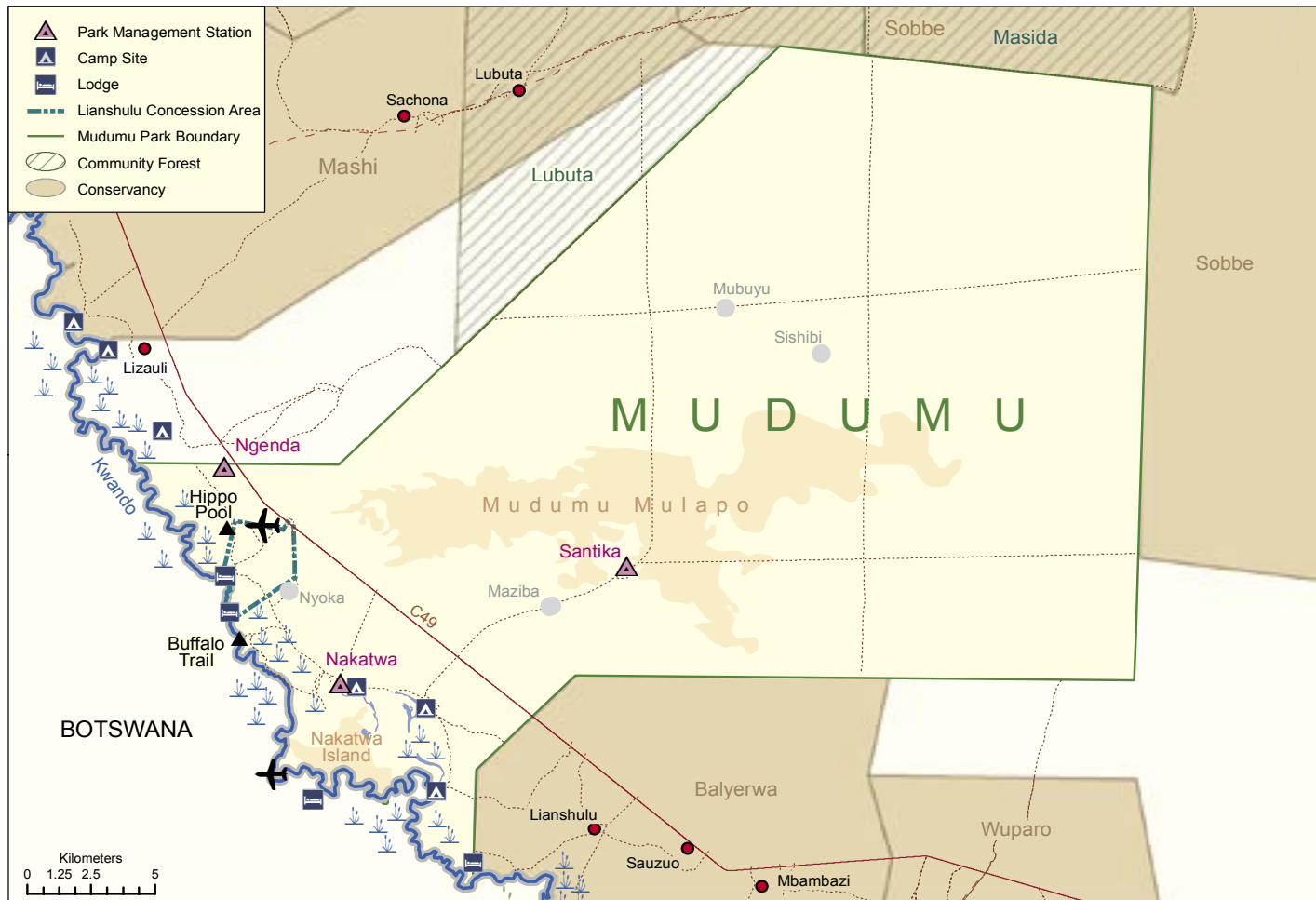


The Kwando core area in Bwabwata National Park lies to the West of The Kwando River.

ture of Bwabwata is its high number of large mammals that are both rare and of important economic value. The omurambas and their associated grasslands provide habitat for roan, sable and tsessebe, while Mahango is listed as an internationally important bird area – an avian diversity hotspot that also supports globally threatened species.

Mudumu

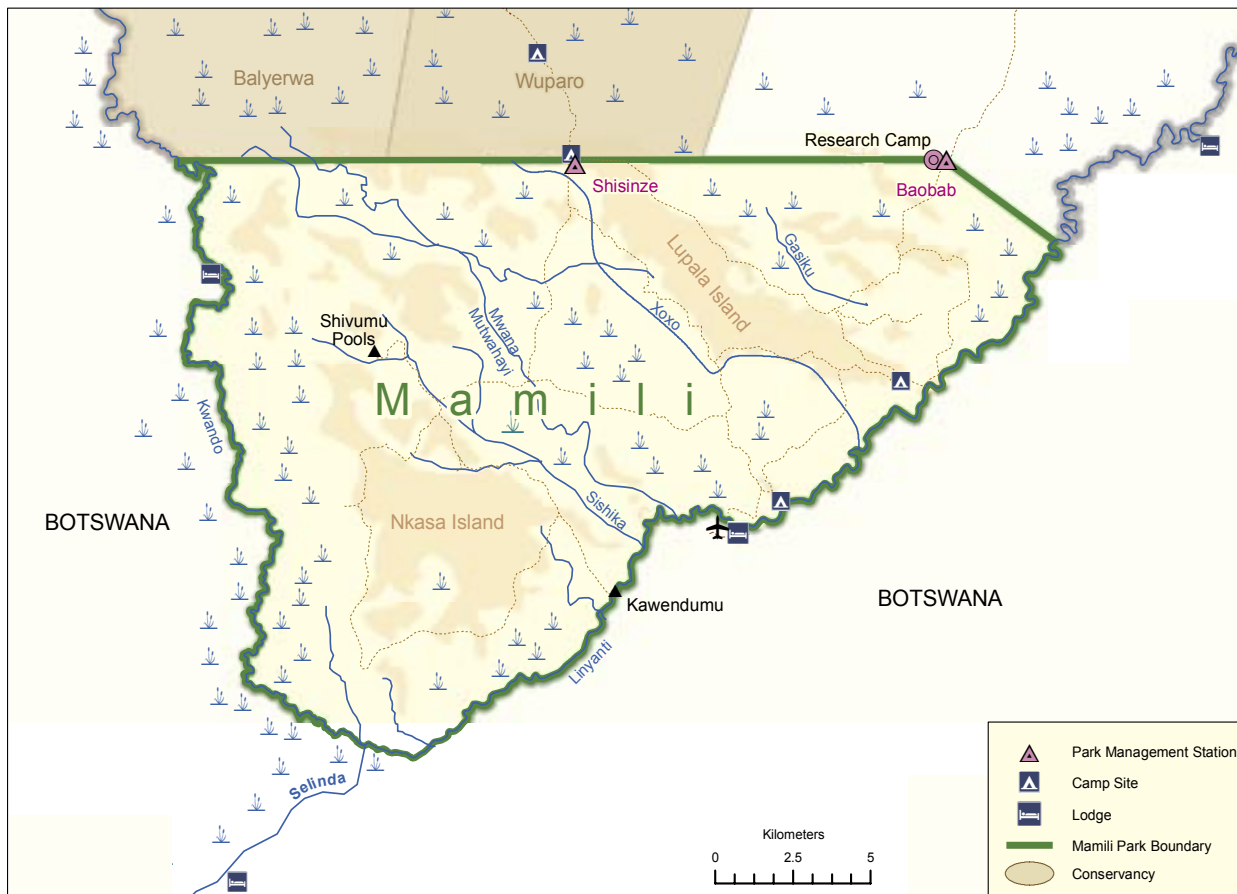
Mudumu National Park is centred on the Mudumu Mulapo fossil river course, and has dense mopane woodlands at its core and the Kwando River running along its western border. Mudumu is situated approximately 35 kilometres south of Kongola. The park is bordered by Botswana to the west, Mashi Conservancy to the north, Sobbe to the east, and the Balyerwa, Wuparo, and the emerging Dzoti Conservancy to the south. One of Mudumu's main purposes is to serve as a core wildlife area, supplying individual animals to neighbouring conservancies that can then sell trophy hunting rights to professional hunting outfits and develop tourism on their own land.



Mudumu National Park covers 715 square kilometres and borders the kwando river.

Mamili

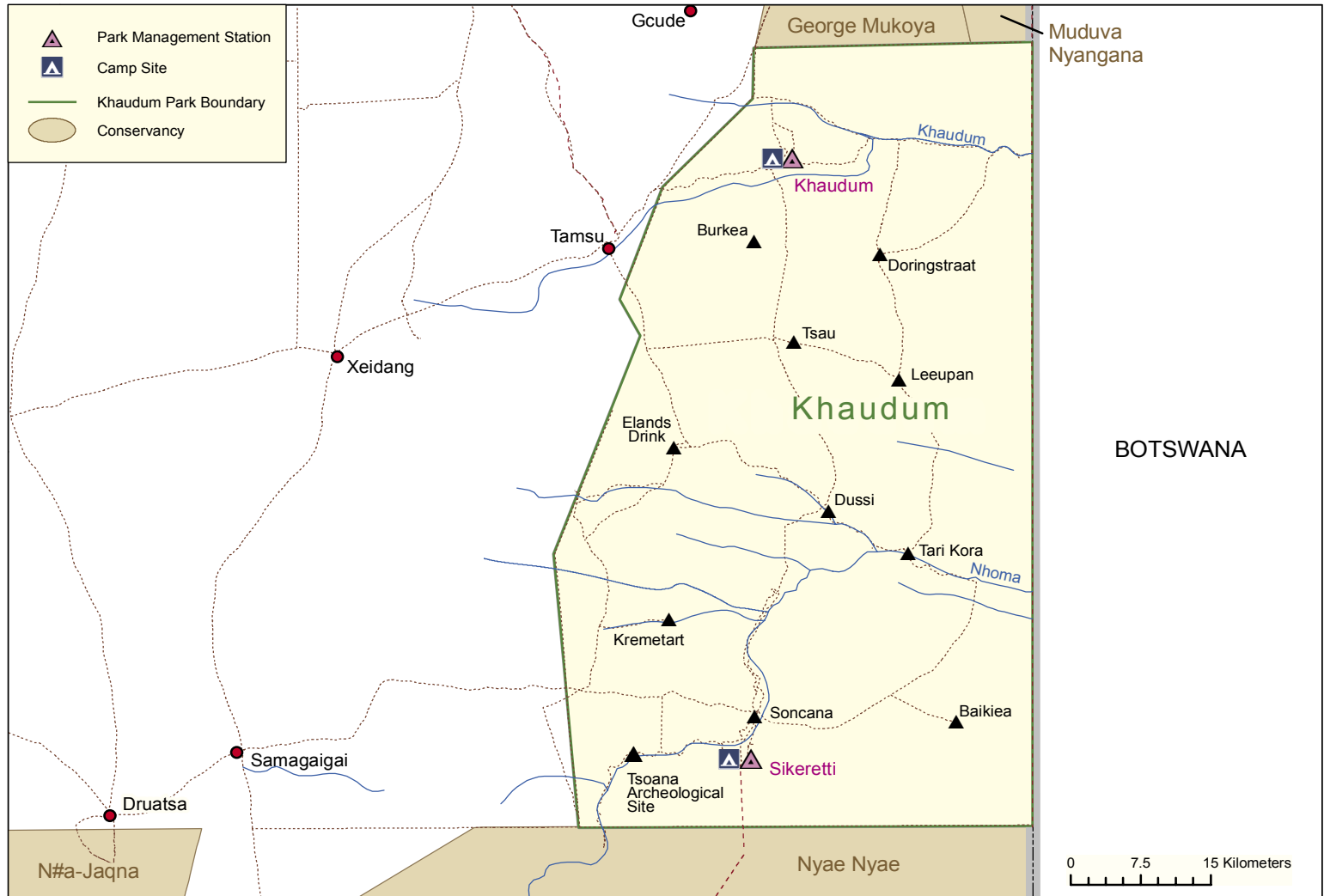
Mamili National Park is about 35 kilometres south of Mudumu. Most of the park consists of channels of reed beds, lagoons and islands, Mamili is the largest wetland area with conservation status in Namibia. It is very like the famous Okavango Delta in its hydrological functioning and biological value. The Kwando River forms the park's western boundary, and the Linyanti River its south-eastern border. To the south lies Botswana, while two registered conservancies, Balyerwa and Wuparo, lie to the north. Cut lines were used to demarcate Mamili and Mudumu after their proclamation as national parks in 1989. However, the cut lines did not follow the original gazetted positions because a number of villages would have been incorporated into the parks. While most people accepted the misplaced cut lines as the park boundaries, the borders of some neighbouring conservancies and community forests have been gazetted in relation to official, *de jure* limits of the parks and not their *de facto* cut line borders.



Mamili National Park covers 337 square kilometres. The Kwando River runs along its western border and then changes course to become

Khaidum

Khaidum National Park is bordered by Botswana to the east while communal land and conservancies surround it within Namibia. Only the border with Botswana and a 55-kilometre section along the western border of the park are fenced, ensuring that wildlife can pursue ancient migratory routes in and out of Khaidum, and to the Okavango Delta, 150 kilometres to the east of the park boundary. Khaidum is one of the few refuges in which rare and endangered species such as roan antelope and African wild dog can roam freely. This emphasises the park's important conservation status. In addition, Khaidum is the only park in Namibia that protects large expanses of the Northern Kalahari sandveld forest and woodland biome.



Khaidum National Park in Kavango region extends over 3,842 square kilometres.

The Parks' History

The history of these protected areas is complex, with various proclamations and policies affecting the parks and neighbouring communities. The Caprivi Strip between the Kavango and Kwando rivers was first proclaimed as a Nature Park in 1963. 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 & 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.

Prior to their proclamation, Mamili and Mudumu were settled and used by the Mafwe and Mayeyi people. In 1945, following a tsetse fly invasion, local residents were moved out of these areas; the land was then designated as traditional hunting grounds. In 1989, the Administrator General of South West Africa approved the declaration of Mudumu and Mamili as National Parks.

An agreement between the Administration for Kavango and the Department of Agriculture & Nature Conservation to proclaim Mahango, Khaudum and Popa Falls as state protected areas was signed in December 1982. Mahango and Khaudum were eventually proclaimed as game parks in 1988 and 1989, respectively.

Following independence, the Ministry of Environment & Tourism (MET) immediately started a socio-ecological survey that included the North-East Parks 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. To date, there are fourteen conservancies and/or communal forests registered in areas bordering the North-East Parks.

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, and also decided to merge the Mahango, Caprivi and Bwabwata Game Parks to form Bwabwata National Park, thus creating its three core conservation areas and a multiple use zone. Its eastern boundary was also extended to the middle of the Kwando River, thus incorporating the “Kwando Triangle” into Bwabwata.

It was further decided to grant conditional tourism rights in these parks to neighbouring communities (those living in Bwabwata, Mamili, Mudumu and Khaudum); and the Khaudum Game Park was renamed the Khaudum National Park. Recommendations were made regarding the management of cattle in Bwabwata and the proposal that a lodge site in the Buffalo core area be put out to tender was accepted. Following Cabinet’s decision and a lengthy consultation process, Bwabwata National Park was finally proclaimed in November 2007.

The legal protection that comes with recognized conservation status is critical if the conservation of the unique biodiversity and ecological processes found in Namibia’s North-East Parks is to be ensured. This biodiversity, especially in the Bwabwata, Mamili and Mudumu complex, is unique within Namibia, primarily because of the Kavango, Kwando and Linyanti rivers and their associated habitats.

High numbers of large mammals, game, other animals, birds and plants are supported by the riparian forests and wetlands of these rivers, which include rapids, open water, swamps and pans. A number of special features away from the rivers also deserve special management, particularly the drier woodlands and grasslands.

KAZA

Supporting large herds of elephant and buffalo, plus rare and endangered species such as roan and sable antelope, the North-East Parks constitute important corridors for animal movement within the greater region in Namibia and surrounding countries. It is in this context that the North-East Parks are the geographical heart of the Kavango Zambezi Trans-frontier Conservation Area (KAZA TFA). This massive area includes numerous proclaimed national parks, game reserves, community conservation areas, forest reserves, and iconic tourism destinations such as the Victoria Falls and Okavango Delta. KAZA 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 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. 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

Tourism is a major socio-economic asset of the North-East Parks. 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. Three examples of communities benefiting from the North-East Parks are: campsite concessions granted to communities bordering Kwando core area in 2003; the

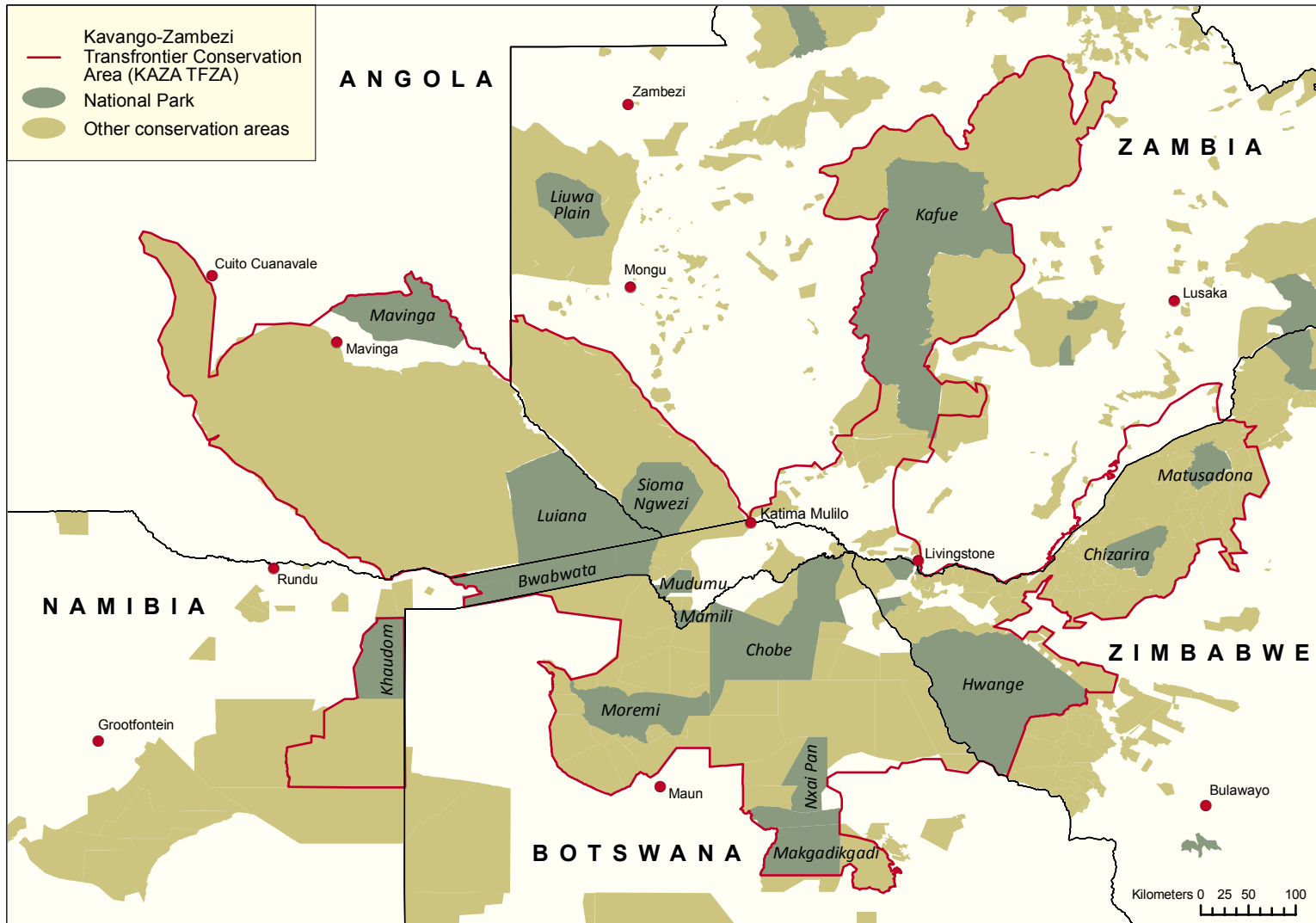
establishment of two tourism camps in Khaudum that will benefit the Geiriku Traditional Authority and the Muduva Nyangana and George Mukoya conservancies; and the awarding and subsequent renewal of a trophy hunting concession to the residents in Bwabwata.

With these economic opportunities, local residents have greater incentives to protect wildlife and wild places. As a result, support from residents and neighbours made the incorporation and proclamation of the Kwando Triangle in Bwabwata possible. The Triangle is now one of the most important ecological resources in Bwabwata, and is a critical component of KAZA.

The formally protected North-East Parks 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 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."*



The Kavango Zambezi Trans-frontier Conservation Area (KAZA), a five-country initiative, involving Angola, Botswana, Namibia, Zambia and Zimbabwe, encompasses an area of about 300,000 square kilometres.

2 PURPOSE OF THE PLAN

There are several reasons for the compilation and publication of this Strategic Management Plan. First, the Plan describes the policies, principles and strategies for the management of these conservation areas so that all interventions can be planned, focused and co-ordinated according to agreed principles.

As an official document issued by the Ministry of Environment & Tourism, the Strategic Management Plan is secondly a statement of commitment that binds its staff to manage the North-East Parks according to provisions of the Plan. While senior public servants of the Ministry are ultimately accountable for implementation of the Plan, the document also makes clear the responsibilities of other staff, in particular those appointed to manage each of the parks.

Thirdly, the Plan obliges the wide variety of people and organisations (private sector contractors, public service agencies, neighbours, tourists, etc) associated with 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 Strategic Management Plan should provide guidance over the next 10 to 20 years, and may only be changed with the approval of senior management in the Ministry.

The Strategic Management Plan for the North-East Parks was derived from several workshops involving the management of the Ministry of Environment & Tourism (MET), local communities and other stakeholders. The workshops were held in 2007 and 2008.

While the Plan applies specifically to the North-East Parks, it takes particular account of the Parks' position within a wide, regional network of conservation areas: conservancies, community forests and conservation zones in neighbouring countries. Elements of the Plan therefore have implications that go beyond the borders of the Parks.

Likewise, the Plan attempts to accommodate the plans and aspirations of people associated with these other conservation areas.

Each section of the Plan has a *Vision*, which is the condition to be aimed for in the future. This is followed by *Policy* to set direction for *Strategies and Principles* which will guide the implementation of key *Activities*. It is the execution of these activities that will bring the parks towards the condition declared in the original vision. The Strategic Management Plan therefore focuses on key issues, while more detailed activities will be described in separate plans for the operation of each park. All other Business and Tourism plans for the parks are subservient to the Strategic Management Plan.



3 VISIONS AND OBJECTIVES

A briefing paper presented to the Namibian cabinet in 1999 and entitled *A Conservation and Tourism Development Vision for Caprivi* originally set a vision for the North-East Parks as:

The North East Parks will be top conservation priority due to wetland and woodland habitat and rich wildlife with high tourism potential.

This has been modified to place the parks more firmly within the regional composite of conservation areas, as well as the planned Kavango Zambezi Trans-frontier Conservation Area (KAZA TFCA). The wider vision adopted by this Strategic Management Plan is now:

The North-East Parks and the neighbouring conservancies will be top conservation priorities in Namibia because they contain rare wetlands, key woodland habitats and a rich variety of wildlife with high tourism potential. In addition these areas will function as critical links for the KAZA TFCA involving five neighbouring countries.

A number of strategic objectives emanate from this vision:

- a) To conserve important habitats and habitat diversity, which includes the varied structure, function and composition of habitats;
- b) To rehabilitate habitats degraded by recent human activity;
- c) To protect the parks by encouraging compatible land-uses along their boundaries;
- d) To ensure that wildlife can move freely within areas and habitats that they use naturally;
- e) To contribute to the social and economic health of residents of the Parks and neighbouring rural communities by supporting the sustainable use of certain natural resources;
- f) To provide access to wildlife viewing, natural areas and other resources for high-quality tourism, aesthetic enrichment and trophy hunting for local, regional and international visitors.
- g) To support appropriate and sustainable land use practises outside of the parks.

These strategic objectives must guide the management of the parks and the setting of priorities for interventions. Within this context there is the overarching Mission¹ of the Ministry of Environment & Tourism which is as follows:

To promote biodiversity conservation in the Namibian environment through the sustainable utilisation of natural resources and tourism development for the maximum social and economic benefit of its citizens.



¹ Ministry of Environment & Tourism Strategic Plan 2007/8 – 2011/2

4 MANAGEMENT OF NATURAL RESOURCES

The biodiversity of the North-East Parks, especially in the Bwabwata, Mamili and Mudumu complex, is unique within Namibia. This is primarily due to the Kavango, Kwando and Linyanti rivers and their associated habitats. 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 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. Negative impacts from human uses must be avoided for these economic benefits to be sustainable.

VISION An open, ecologically sustainable and diverse system that is managed to optimise economic benefits.

POLICY To manage the ecosystems, essential ecological processes, and biological diversity of the parks sustainably for the benefit of the people of the region.

STRATEGIES AND PRINCIPLES

- a) Management will encourage an open system where wildlife roams as freely between parks, countries and other conservations areas.
- b) Management of the ecosystem will only be undertaken to:
 - protect life and property of residents and neighbouring communities;

- conserve vulnerable, threatened or rare species;¹
 - remedy degradation caused by people over the last 30 years;
 - optimise economic benefits and the sustainable use of natural resources inside and outside the parks.
- c) Priorities will be given to activities that
 - protect those habitats or species that are the most threatened, sensitive or scarce within the Namibian context;
 - require relatively small interventions to prevent significant negative consequences in the future;
 - support tourism and other economic goals.
 - d) Monitoring of essential elements of the system or specific research is required to improve and review the effectiveness of management.
 - e) Any infrastructure within the parks must significantly improve management efficiency and/or economic benefits. The benefits of infrastructure must outweigh the costs.

Two broad components of natural resources are considered below: vegetation and fauna.

4.1 Habitats and special sites

Vegetation within the parks 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 parks 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 infra-

¹ As defined in any Red Data list approved by the IUCN (International Union for the Conservation of Nature) or Ministry of Environment & Tourism.

structure or economic activities (see also Zonation, page 00, and Appendix 1).

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

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

STRATEGIES AND PRINCIPLES

Three categories of, high, medium and lesser significance, importance, are recognised for Park habitats. A habitat's significance may be adjusted as conditions change, and additional habitats may be added. The habitats (also see Zonation, page 00) and their status are:

VERY IMPORTANT: All rivers, floodplain and swamp areas, and riparian forests;

IMPORTANT: Omuramba grasslands and pans and fringe woodland, mopane woodlands in Mudumu; and

LESS IMPORTANT: 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 for each.
- 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.

4.1.1 Fire

Fire has, and will continue to play an important role within the parks. For example, frequent intense fires over large areas of the parks has 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 season burning and the control of run-away wildfires.

POLICY Fire should be used as a management tool to actively maintain and rehabilitate all habitats in the parks.

STRATEGIES AND PRINCIPLES

- a) A 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. Appropriate pro-active fire management strategies must be developed to reduce these 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 near park boundaries and to protect property;
 - ensure the reduction of fuel loads to minimise the severity of fires;
 - 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 neighbours (communities, other departments and institutions, other countries) to manage burning with specific reference to the parks' position in the proposed 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 for each of the parks that addresses the specific requirements of each habitat or sub-habitat;
- b) Develop a three-year burning plan which will be revised at the end of each summer growing season;
- c) Establish a burning 'team' to evaluate past burns and future possible burning areas;
- d) Continually improve the knowledge and understanding of fire in these ecosystems;
- e) Maintain a burning register to monitor the extent and nature of all fires;
- f) Establish fire emergency procedures;
- g) Establish forums with local communities and other agencies to manage burning.



2 Only animals of the same genetic origin as those already present in and around the North-East Parks.

4.1.2 Rehabilitation

Human activities have led to the degradation of many areas in and around the North-East Parks. The activities include clearing of land for cultivation, military operations, and the construction of trophy hunting camps, road borrow pits, and ad hoc infrastructure.

POLICY 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;
- 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;
- 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.

4.2 Fauna

Appropriate and strategic management of wildlife is required for a number of reasons. First, several animal species in the North-East Parks have been identified as priorities for management within Namibia. Second, some species of large mammals have become locally extinct, uncommon or rare in the North-East Parks. Third, the 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. These include the provision of artificial water sources; creation of wildlife corridors and grazing areas around parks that can act as buffer zones; reintroduction of species; monitoring of populations; patrolling; fencing; park zonation; and control of livestock and wildlife/livestock diseases.

POLICY 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 1).

STRATEGIES AND PRINCIPLES

- a) 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 riparian woodland and forest;
 - 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 parks;
 - reduce or eliminate the impacts of alien species, with an emphasis on species that pose an immediate and high threat, such as domestic cats and pigs that may cross-breed with wild species;
- c) Manage key species which have been prioritised by the MET to achieve conservation targets for those species;
- d) Ensure that only appropriate species, and no genetically exotic species² are introduced and that re-introductions are cost-effective;
- e) Promote the parks as breeding areas from which animals can move into surrounding conservancies;

- f) Permit the migration and movement of game where possible, and investigate anthropogenic factors that limit movements, with a view to eliminating them.

ACTIVITIES

- Develop simple but effective techniques to monitor populations of key species (listed in Appendix 2);
- Investigate, and if necessary develop strategies to meet population performance targets for important species which are threatened or rare;
- Develop effective anti-poaching programmes to eliminate or reduce the impact of poaching, as a major potential threat to the economic value of the parks and areas that surround them;
- Where feasible and desirable, actively relocate animals from high to low density areas;
- 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 feasibility studies to understand why populations are low or locally extinct, and to determine whether causal factors can be eliminated;
 - develop re-introduction plans to ensure that pre-release and post-release management strategies and resources are in place.



4.2.1 Artificial water points

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.

POLICY Artificial water points for wildlife within the parks are discouraged. However, subject to risk analysis, water may be strategically located (a) to increase the numbers of vulnerable, rare or threatened species, (b) to attract wildlife away from riparian fringes that suffer the impacts of dense populations, and (c) for economic reasons, such as tourism or trophy hunting, 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 policy. The goal(s) must always be clearly stated.
- The effects of water points must be reviewed regularly in the light of policy objectives.
- Total benefits (environmental and economic) must outweigh the likely management and environmental costs.
- For the placement of artificial water points, 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

- a) Conduct risk analyses for all artificial water points;
- b) Map all artificial water holes and 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;
- c) Maintain a register of all artificial water points; this must include the purpose of each point and its associated monitoring data;
- d) If possible, develop a water-point rotation strategy to encourage wildlife movement;
- e) Liaise with other Ministries to ensure any water provision in the area does not conflict with objectives of the Strategic Management Plan.

4.2.2 Domestic animal management

While domestic animals are important resources for some local residents, 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 this section is only applicable in the Multiple Use Area of Bwabwata National Park.

POLICY All domestic animals authorised to be within proclaimed protected areas 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 practises such as planned grazing and herding will be promoted to avoid habitat degradation and minimise livestock-predator conflicts. The principles of sound rangeland management included in the national Rangeland Policy and Strategy must be applied in parks.

- b) In collaboration with Veterinary Services, clarify and confirm the status of all existing domestic animals within the Multiple Use Area of Bwabwata National Park;
- c) Management of domestic animals will be done collaboratively between MET, local residents/neighbours and other line 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 Bwabwata National Park;
- 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;
- c) Implement the Human-Wildlife Conflict Policy of MET and ensure that resident and neighbouring communities are aware of the requirements of this Policy;
- d) In collaboration with affected stakeholders, develop and enforce a cattle³ removal/relocation or containment strategy for the Multiple Use Area of Bwabwata National Park;
- e) Where essential, erect elephant-proof fences to contain cattle in appropriate locations.



³ Note that the Cabinet Decision does not permit cattle to be kept in any of the North-East Parks due to the threat of diseases such as foot and mouth.

4.2.3 Fencing

The North-East Parks are important links between Namibia and northern Botswana, southern Angola and Zambia. They safeguard and foster the movement of wildlife across this broad area of southern Africa. However, this region is also prone to outbreaks of several livestock and wildlife diseases, which the livestock industry prefers to control with fences.

While fences can disrupt wildlife movements, they may play a role in contributing 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 movements.

POLICY Fencing is to be discouraged but may be strategically used to (a) significantly reduce livestock and/or wildlife diseases, and (b) reduce human-wildlife conflict; demarcate settlement and or grazing areas.

STRATEGIES AND PRINCIPLES

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

ACTIVITIES

- a) Continue to remove sections of the Botswana border veterinary fence to re-establish wildlife movements as a matter of priority⁴;
- b) In co-ordination with Veterinary Services, contribute to disease control and other livestock/wildlife interactions; Map and maintain a register of all fences within and around the North-East Parks; the register should include the type of fence, reason for establishment, condition and any impacts.

4.2.4 Human-wildlife conflict management

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

POLICY 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, 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.

4.2.5 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.

POLICY To work 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.



4 Except for the southern boundary of Mahango Core Area and about 40 kilometres of the southern boundary of Buffalo Core Area.

4.3 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 the parks' resources is done sustainably.

POLICY 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 a 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 parks as well as with any legal requirements.

ACTIVITIES

Ensure that zonation plans and guidelines are followed in the planning and implementation of all activities and developments.

4.4 Consumptive resource utilization

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 the North-East Parks will therefore occur within the guidelines directly and indirectly stated in this Strategic Management Plan.

POLICY Sustainable use of natural resources will be allowed in the North-East Parks to (a) to support livelihoods (especially for residents in Bwabwata National Park), (b) as a 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 the MET.
- c) Harvesting of natural resources that are essential to the livelihoods of park residents will be permitted within the Multiple Use Area of Bwabwata National Park.
- d) Harvesting by park residents may be permitted within the Core Areas of Bwabwata National Park under exceptional circumstances and only if essential natural resources are not available in the Multiple Use Area.
- e) All harvesting by residents of Bwabwata National 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 parks under exceptional circumstances, and in terms of written agreements with conservancies or community forests.

- g) Determination of harvesting yields 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) MET will permit trophy hunting in the North-East Parks, but subject only to careful zoning (see section 5) and quota setting.
- j) MET will only harvest wildlife in specially identified zones for annual festivals of traditional authorities and for other important functions.
- k) The parks will be used as a source of wildlife for introduction to other areas.
- l) 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 each park
 - economic returns from trophy hunting compared to other uses;
 - the practicalities of implementing and controlling trophy hunting;
 - the implications of trophy hunting on other tourism operations or visitors; and
 - the human impacts of trophy hunting activities, such as the increase in aggressiveness of elephants.

ACTIVITIES

- a) Before any harvesting is undertaken, assess the resource to determine annual yield and any subsequent monitoring which may be required.
- b) Before any harvesting is undertaken inside parks or core areas, determine the feasibility of replenishing natural resources for consumption on community land or in the Multiple Use Area of Bwabwata National Park.
- c) Develop detailed park zoning 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.

5. REGIONAL CONSERVATION AND DEVELOPMENT PARTNERSHIPS

The formally protected North-East Parks are too small to conserve all 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. 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 Parks. 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 trans-frontier initiative, locally through liaison and collaborative management with communities and public service agencies, and finally with the private sector.

5.1 Trans-frontier conservation

The North-East Parks form a critical component of the KAZA Trans-Frontier Conservation Area (TFCA) shared by Namibia, Zimbabwe, Botswana, Zambia and Angola.

POLICY The North-East Parks will contribute to and be managed within the context of a regionally integrated conservation

area that encompasses neighbouring Namibian communities and conservation areas in Zambia, Botswana, Zimbabwe and Angola.

STRATEGIES AND PRINCIPLES

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

ACTIVITIES

- a) Collaborate at the highest level possible with and through TFCA structures to ensure that the objectives of this plan are aligned with the plans and objectives of neighbouring countries.
- b) Encourage and support knowledge and information exchange programmes between conservation managers in Namibia and neighbouring countries.



5.2 Regional land-use planning

A number of ministries are responsible for various planning programmes within and around the North-East Parks. It is important that key provisions of this Strategic Management Plan and other MET plans be accommodated within these planning initiatives.

POLICY Requirements for the management of the North-East Parks should be 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 parks should be aligned and fully integrated with zoning plans for the parks 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 Strategic Management Plan are accommodated in all regional planning.
- b) Ensure that regional authorities are fully aware of the economic impacts of the North-East Parks on the region, and of the negative impacts that inappropriate planning will have on conservation and its ability to contribute to the regional economy.
- c) Pre-actively embark on planning at the local and regional level to mitigate conflicts and maximise synergies between land uses.

5.3 Park-neighbour and resident communities

The North-East Parks can contribute to the prosperity of local communities through the establishment of viable businesses based on natural resources. Communities in and around the parks therefore have much to gain, especially if the parks are managed as core areas from which economic benefits extend to beyond the park borders. 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 parks and community areas can be managed and developed for mutual benefit.

The need to establish co-management structures is critical for engagement between the parks and their neighbours, and these structures should ideally be drawn from existing community institutions. Simplicity, operational efficiency and the achievement of goals are critical factors when determining the form of the structures. Following this, the obligations of park managers and community members should also guide the process.

POLICY Co-operative relationships between the managers of the North-East Parks and neighbouring communities will be maintained for the mutual benefit of communities and the objectives of the Parks.

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 co-management;
 - agree on arrangements to achieve shared visions and goals;
 - leverage benefits from the parks, and optimise economic benefits from natural resources;
 - achieve regional conservation priorities.
- b) Use existing co-management structures and community institutions where possible;

- c) As specified, supply wildlife to, and use it in neighbouring areas, subject to agreed co-management plans (see Fauna management, page oo);
- d) The rights and obligations of the various parties should be defined and secured in co-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 managers and communities;
- f) The MET will be guided by the National Policy on Tourism and Wildlife Concessions on State Land (2007) when awarding any rights to communities. In addition, the MET will do its very best to /strive to
- g) give priority to concessions that add security to parks, promote corridors between conservation areas and those that improve conservation in areas that surround the North-East Parks.
- h) continue to acknowledge the rights of residents of parks (such as people living in Bwabwata National Park) in terms of settlement, movement, social services, and livelihood needs in its management of the parks;
- i) reach agreement on the management of the broader landscape and the benefits that may be achieved through wider planning, often beyond the park boundaries;
- j) devolve the responsibility to achieve national and international development and conservation goals to all participants;
- k) Support the development and long term economic and environmental sustainability of conservancies and community forests.

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 co-management forums with communities.

5.4 Private partnerships

The private sector, either through small local enterprises or large businesses can contribute in various ways to the achievement of the vision and objectives of the North-East Parks.

STRATEGIES AND PRINCIPLES

- a) Partnerships with the private sector 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 parks.
- 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 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.



5.5 Environmental Education

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

STRATEGIES AND PRINCIPLES

a) Ensure that the parks are open and accessible to 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

Develop and implement an access strategy for environmental education in the parks.



6 ZONATION

As an important tool for planning and managing parks, zoning 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 Parks¹, the scarcity and sensitivity of natural resources, as detailed in the chapter on the management of natural resources (see page oo), 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 parks, 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.

POLICY Zonation will be based on formally agreed and/or legislated uses and ecological criteria, and then on economic and management factors to achieve the purposes of the North-east parks.

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 parks;
 - achieve specific management requirements.
- b) The following will be used in applying this hierarchy:
 - Habitats will be classified into Biophysical 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 must be identified in pursuance of the broader economic objectives of this Strategic 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 if significant environmental costs are anticipated.
 - All developments inside the parks 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 planning;
- 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 Biophysical zones as new information is obtained.

¹ Note that the cut lines that now mark the boundaries of Mudumu and Mamili National Parks differ significantly from the gazetted, de jure borders of these parks (see page oo).

ZONATION CATEGORIES

The following categories have been identified within and around the North-East Parks.

LEGISLATED ZONES

- a) North-east parks:
 - Khaudum National Park;
 - Bwabwata National Park; which consists of the Multiple Use Area (where agreed activities are to be set out in a formal agreement and co-management plan) and the Buffalo, Mahango and Kwando Core Areas
 - Mamili National Park
 - Mudumu National Park
- b) Community conservation areas: Balyerwa, George Mukoya, Kwando, Mashi, Nyae Nyae, Sobbe, Wuparo, Mayuni and Muduva Nyangana Conservancies, and Kwandu, Lubuta and Masida Community Forests

BIOPHYSICAL ZONES are based on the relative conservation importance of specific habitats in terms of their *sensitivity* and *scarcity*, as well as *important or highly sensitive sites in the parks*. These criteria are relative within the context of the North-east parks, and categorised as:

- a) Very important: all rivers, floodplain and swamp areas, and riparian forests
- b) Important: omuramba grasslands and pans and fringe woodland, mopane woodlands in Mudumu, and the Nhoma shrubland in Khaudum
- c) Less important: deciduous woodlands

SPECIAL MANAGEMENT ZONES are sites that contain features of particular significance, such as exceptional plant communities, important animal habitats, special landscape features, cultural, historical or archaeological sites, highly erodible soils etc. Further information on the Biophysical and Special Management Zones is provided in Appendix 1.

INFRASTRUCTURE DEVELOPMENT ZONES are sites where lodges, picnic and camp sites, offices, housing, workshops and related infrastructure

for tourism and park management are located. Those allocated for management purposes have been determined in the park planning process, an EIA process was conducted and an EMP drafted. However, sites for the development of tourism infrastructure have not yet undergone an EIA process. Most of these sites form part of packaged concessions that will have to undergo an EIA process before their exact locations are determined.

The following categories of infrastructure will be applied:

- a) Parks management infrastructure:
 - Bomas for game capture/release;
 - Rehabilitation areas (military ruins, borrow pits, mine fields etc.);
 - Park management stations, including housing, offices, and workshops and related infrastructure;
 - Park entrance facilities;
 - At Susuwe this includes infrastructure of the Ministry of Defence for which the boundaries were determined in the park planning process, an EIA process was conducted and an EMP drafted.
- b) Settlement sites/areas to support resident communities, including:
 - Towns or settlements inside the park (applicable only to Bwabwata National Park);
 - Border posts.

Management zonation must take the following into account:

- a) *Environmental impact*: sites must be selected to minimize environmental impact, and impacts must be commensurate with the benefits to be secured from any development;
- b) *Sense of place*: management infrastructure should not be permitted in sensitive areas or in those with special appeal,
- c) *Visual impacts*: sites should not spoil or obscure attractive landscapes or settings;
- d) *Proximity to boundaries and infrastructure*: management infrastructure should rather be positioned close to park boundaries and existing infrastructure (major access roads, power lines etc) where impacts may be lower than elsewhere.

TOURISM ZONES

The following criteria apply for tourism zoning (see BMM Tourism Development Plan² for more detail):

- a) The degree of access:
 - Multiple access: areas which may be used by several user groups at any one time, including day visitors, campers, trophy hunters, residents of lodges etc
 - Limited access: areas limited to concession holders that have specific use or development rights as defined in written agreements
 - Exclusive access: areas limited to single concession holders that have exclusive use or development rights as defined in a written agreement
- b) The level of use:
 - Low use: areas limited to offering exclusivity and non-congestion to tourists, with the density of users/km² or users/km of road or any other appropriate unit less than 15% of that in the High use areas
 - Medium use: areas where tourist densities are higher than in Low use, but significantly lower than in High use areas. Density of tourists is 35% less than in High use areas
 - High use: Areas where upper limits of use will be set. These may have absolute ceilings that vary from time to time. The ceilings will be set by management after considering the type of tourism experience offered, the capacity of facilities and resources to support this level of use, and ability of management to control the use.
- c) The nature of tourism activity:
 - Trophy hunting: Areas specifically zoned for trophy hunting purposes
 - Boating: Sections of rivers zoned for different types of guided or unguided boating including canoeing, mekoros or motor boat access
 - Walking: Areas designated for guided or unguided walking
 - Fishing: Sections of rivers where angling is permitted
 - Game drives: Areas for guided or unguided game drives

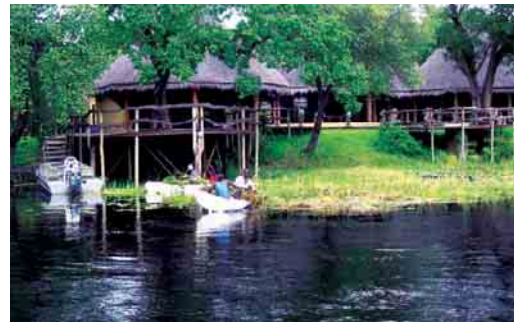
d) The need for tourism infrastructure:

- Lodge sites: Specific lodge sites as per concession agreements
- Picnic sites: Public or private picnic areas
- Launch sites: Access points where concession-holders are permitted to enter via the river, including a boat launch and car port
- View points: Designated public view points

CONSUMPTIVE USE ZONES

These zones apply to areas where the consumptive use of resources may be permitted from time to time. Any consumptive use must comply with all requirements of the relevant Environmental Zone category. The type of use may change over time and be limited to specific conditions. Uses could include the following:

- a) *Own-use hunting areas, including wildlife harvesting by MET staff*: may be designated by agreement with existing stakeholders and with due consideration of environmental and tourism zones;
- b) *Sustainable use areas*: collecting of natural resources may be permitted from time to time, these would be designated by management according to policies and procedures within MET, including co-management agreements;
- c) *Grazing areas*: where livestock will be permitted to graze (currently this is only applicable within the Multiple Use Area);
- d) *Fishing areas*: specific areas designated for certain types of fishing from time to time. This will be via formal agreement either through a permit, licence or some other written agreement.



2 Bwabwata, Mudumu and Mamili Parks Project, BMM Project: Tourism Development Plan. 2009. Ministry of Environment and Tourism, Republic of Namibia.

7 TOURISM

Tourism brings major socio-economic benefits to the North-East Parks, offering income to the MET, jobs and business opportunities to communities and entrepreneurs, and economic benefits to the region and Namibia. Visitors derive information, and aesthetic and recreational enjoyment from their visits.

VISION As a tourist destination, the North-East Parks are viewed as a world-class natural resource-based destination that is economically and environmentally sustainable, and that optimizes benefits to local communities and the nation.

POLICY Tourism will be actively promoted so that the socio-economic objectives of the North-East Parks are achieved without compromising the conservation and integrity of natural resources.

Against this background, tourism planning in the North-East Parks must seek to balance:

- a) the conservation of biodiversity and critical habitats, including the maintenance of trans-boundary corridors;
- b) optimal economic growth at local, national and regional scales;
- c) benefit sharing with neighbouring communities;
- d) access for Namibian, regional and overseas visitors.

Even though it may not be possible to achieve an optimal trade-off between these four elements at each location, it is vital that a balance is obtained across the North-East Parks as a whole. For example, if low-cost access for the Namibian public is not permitted in certain parks, it must be provided in other locations or parks.

STRATEGIES AND PRINCIPLES

- a) Tourism developments or activities may be undertaken by MET, or by external partners such as communities or the private sector, but only in accordance with the concessions policy and only if regulated through written agreements.
- b) Tourism rights within a park may be granted to adjacent communities in exchange for agreed conservation management

activities on significant parcels of neighbouring community land. The activities must contribute to alleviating management problems or achieving conservation and/or socio-economic objectives.

- c) All proposed tourism developments should first be subject to a cost/benefit analysis, whereby all 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 private sector.
- d) Exclusive tourism products¹ must (a) cover the full² costs to the MET of managing and developing the products and related infrastructure, and/or (b) meet defined goals such as achieving a stipulated amount of concession revenue, number of jobs and generation of local business ventures etc.
- e) Parks should have a tourism development plan prepared and approved before major developments are undertaken or long-term concession rights awarded.
- f) MET will plan tourism in the parks to take account of different source markets, product types and affordability, and the exclusivity required.
- g) Tourism zonation may be periodically reviewed in line with changing demands and environmental considerations, while being mindful of the possible impacts on any existing products.
- h) High levels of exclusivity should only be provided where the economic returns are also high, or where potential environmental impact is high if there are too many different users.
- i) 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.

¹ Exclusive refers to areas restricted to certain groups, which may be achieved by charging high prices or through concessions that restrict the use of areas to particular people.

² Includes administration, infrastructure, staff time, equipment, marketing and supplies, as well as any opportunity costs which may be relevant.

- j) The density of visitors can affect enjoyment or experience of an area. If densities increase, 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) Develop and periodically review tourism development plans for the North-East Parks;
- b) Zone all parks for tourism use (see Zonation, page oo), 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 conditional tourism rights to resident and neighbouring communities from tourism plans and start implementation in accordance with the concessions policy.
- d) Identify priorities for visitor management such as maps, interpretative material, visitor facilities etc. from the tourism development plans and start implementation.
- e) Ensure that appropriate interpretive material and maps are available to park users.
- f) Clearly state and monitor the objectives of each tourism product or concession to ensure that they achieved, and to implement corrective action where objectives are not being met.



8 INFRASTRUCTURE

Infrastructure within the parks can play a critical role in realising the economic potential of the North-East Parks, 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.

While little infrastructure is now available for conservation and tourism in the North-East Parks, some old structures built for other purposes litter the landscape. Most of these are undesirable for reasons of aesthetics, ecological impacts and, in some cases, safety. Efforts to remove or rehabilitate these should be made in strategically important areas 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, and constructed by skilled contractors using materials of good quality.

POLICY Infrastructure should be kept to a minimum, be properly built and maintained, and contribute to the overall vision of the North-East Parks.

STRATEGIES AND PRINCIPLES

- a) Decisions about building park management infrastructure will be based on strategic planning and feasibility studies.
- b) Infrastructure dedicated to park management and to visitors 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) All infrastructure must be planned in appropriate zones (see Zonation, page 00 and Appendix 1), and be approved as per departmental procedures and in terms of MET development policies.
- e) Before any fixed assets are developed annual maintenance costs must be estimated and provided for in annual budgets.

- f) All developments in the parks must comply with the Environmental Management Act (2007), and be provided with environmental clearances by the appropriate authority.
 - g) Developments should have close access to support services, such as reliable sources of water, telecommunications, electricity (unless solar is used), road access etc.
 - h) Water, electricity and communication lines should be visually unobtrusive, for example by being buried and/or aligned along roads.
- i) 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 and annually review an infrastructure master plan for all park management infrastructure.
- b) Given the current poor condition of park management infrastructure, MET will actively raise funds and undertake infrastructure upgrade projects as a high priority. MET will compile annual maintenance plans for all new and existing infrastructure, detailing planned works, cost estimates and the need for any specialised skills.

8.1 Access and roads

There are many access points to the North-East Parks, some of which have controlled entry gates. Public roads also traverse through all the parks, including two main roads on which traffic can not be obstructed.

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 located on rivers opposite parks provided the benefits outweigh the costs of management.
 - e) MET should engage with relevant authorities to reduce the impacts of public roads, including additional 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) An MET approval, environmental clearance and an Environmental Management Plan (EMP) must be in place 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 will 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 unsurfaced park roads must be discouraged.

8.2 Buildings

STRATEGIES AND PRINCIPLES

- 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 manner,¹ including local and recycled materials, provided they are cost effective.
- c) Use water and energy efficient fittings in all facilities.
- d) Use cross ventilation, high ceilings, cavity walls and other passive cooling methods as far as is practical.
- e) Position buildings to maximise cooling in summer and heating in winter.
- f) Design compact development sites to minimize disturbance footprints.
- g) Ensure that structures containing fuels meet national requirements, and erect containment structures to minimise the effects of leakage and spillages.



¹ This implies materials which are energy efficient in their manufacture and transport to site.

8.3 Tourism infrastructure

STRATEGIES AND PRINCIPLES

- a) Buildings should be located in accordance with the cost-benefit analysis to maximise tourism appeal and value, while complying with zonation parameters and other conditions which may be applicable.
- b) They should be located as close to existing services and major access routes as the product will allow.
- c) Environmental guidelines for tourism infrastructure must be developed during park level planning and enforced through concessions.

8.4 Staff infrastructure

STRATEGIES AND PRINCIPLES

The location of staff accommodation should be determined to optimise:

- a) management efficiency;
- b) proximity to entrance gates;
- c) proximity to visitor areas;
- d) proximity to services such as schools, clinics, shops etc;
- e) the desirability of being accommodated in nearby formal settlements or towns.

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.

8.5 Airstrips and aircraft

STRATEGIES AND PRINCIPLES

- a) While airstrips provide important access to the parks for tourists and management, new airstrips will be kept to a minimum and developers will require environmental clearance certificates for new strips or for major upgrades.
- b) Where possible, existing airstrips are to be used and new strips located outside the parks.

- c) As a last resort, and only after thorough investigation with operators and tour companies, may new airstrips within the parks be considered.
- d) Helicopters should use airstrips, and helipads will only be permitted only 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.
- f) Noise pollution and disturbance of other park users avoided as far as possible.

8.6 Waste management

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

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 parks 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 dump sites 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 managers 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 managers 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.



9 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 parks. 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.

POLICY To ensure compliance with public service polices and procedures within which an efficient operating system is implemented for the conservation and economic development of the North-East Parks.

STRATEGIES AND PRINCIPLES

- a) **MANAGEMENT PLANS:** Each of the North-East Parks will have a 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; annual work calendar; development plan; operating and development budgets; zoning plan; and background information and reference material. Management plans must be in standardised, useable, practical formats that are easy to implement and adapt.
- 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 parks and their natural resources, mechanisms must be found that improve management efficiency by employing or outsourcing work to local people, and through collaborative implementation of key activities such as law enforcement, fire management etc.
- d) **RESEARCH AND MONITORING:** An active monitoring system of all critical components of this Plan is essential if management

effectiveness is to be improved and adapted as conditions change. Monitoring systems must therefore provide key information, especially regarding threats or opportunities. 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 parks.
- e) **HUMAN RESOURCES** play a critical role in the management of the parks, 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 parks.
 - 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

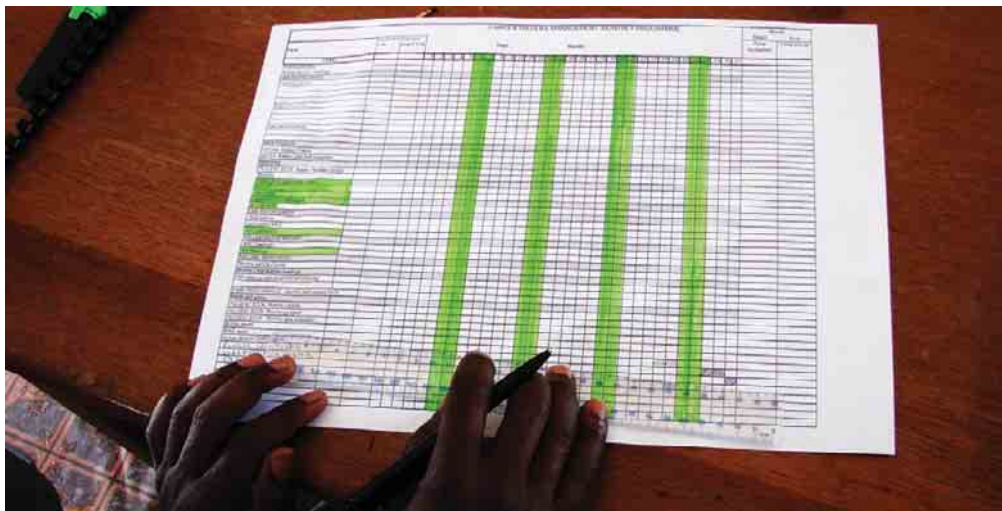
- a) Prepare and implement management plans for each of the North-East Parks;
- b) Formulate annual work plans with outputs and budget

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 levels need to 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 North-East Parks 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 North-East Parks;
- g) Establish a system of monitoring and recording all aspects of the North-East Parks so that control can be exercised and management improved, especially with respect to:
- the socio-economic benefits which result from the Parks;
 - 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.



BIOPHYSICAL ZONING OF THE NORTH-EAST PARKS

Introduction

The Strategic Management Plan prescribes the two core purposes of the North-East Parks: to protect biodiversity and to maximise the potential for regional economic development. The Plan further explicitly recognizes the North-East Parks' central position in KAZA and their importance as corridors for movement of elephant and other wildlife species.

The Strategic Management Plan also prescribes the zonation system to be used in the North-East Parks (see page oo). This system 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.

A key feature of the Plan is to maximise the parks for economic gain without compromising the integrity of the species, habitats and ecosystems. However, the most economically attractive and environmentally valuable features are often in the same places, mostly in the scarce and sensitive riverine habitats. As a result, zoning requires a slightly different approach from that normally used in protected areas (where 'wilderness areas' and zones for economic uses are separated geographically).

The approach taken in the North-East Parks therefore allows economic uses in most areas, but only after assessment of environmental impacts and with significant regulation. As a result, only special small areas have been designated as being off-limits for development. Crucially, and in line with the prescriptions of the MET Concessions Policy, utilisation is to be regulated through the process of Environmental Impact Assessment (EIA). In the zoning of the North-East Parks significant emphasis is thus placed on guiding the level and intensity of the EIA process. A more detailed description of the rationale and application of these principles can be found in the full report.¹

Types of zones

Biophysical Zones

- **VERY IMPORTANT:** all rivers, floodplain and swamp areas, and riparian forests.
- **IMPORTANT:** omuramba grasslands, pans and fringe woodland; mopane woodlands in Mudumu; the Nhoma shrubland in Khaudum.
- **LESS IMPORTANT:** deciduous woodlands.

The classification of the zones is based largely on the degree to which habitats support plants and animals that may be threatened, sensitive or scarce in a Namibian, regional or global context. The conservation value of the Very important habitats is thus highest. While the values for the other zones are lower, they may contain features in localised sites that have high conservation value. In addition and to a greater or lesser degree, all the zones support ecological processes (such as water flows, fire and local nutrient accumulations) that are critical for the maintenance of ecological integrity.

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 sites are where offices, housing, workshops and related infrastructure are located. This includes infrastructure of the Ministry of Defence at Susuwe. The boundaries of the management-related infrastructure development sites have been determined in the Park planning process, an Environmental Impact Assessment (EIA) process was conducted and an Environmental Management Plan (EMP drafted. Tourism-

¹ *Bwabwata, Mudumu and Mamili Parks Project, Park-level Biophysical Zoning 2009. Addendum to Project Report of the Park Operational Planning Component, Ministry of Environment & Tourism.*

related infrastructure development sites include actual and potential sites of lodges, camp 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 the parks were identified using maps of vegetation types.² Each vegetation type was assigned a diversity and conservation value. 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. For similar reasons the *Terminalia sericea* – *Acacia fleckii* shrubland associated with the Nhoma Omuramba in Khaudum was classified as *Important*; while the vegetation type is not unique, it is relatively intact. 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.³

Because the zones were based on vegetation types, they often had convoluted boundaries. Thus, where relevant and for practical management purposes, boundaries were moved to the closest roads. In Mudumu and Mahango the national road now separates the *Very Important* zone from the other zones. In Khaudum the main north-south track forms the eastern boundary of the *Important* zone. In the spirit of the precautionary principle, this means that the *Very Important* and *Important* zones in Khaudum are somewhat larger than the actual habitats.

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 this means that there are 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 applied 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 Strategic Management Plan and the Tourism Development Plansrks.
- c) Development will not be permitted in areas that have a special appeal (such as at Horseshoe Lagoon in Bwabwata National Park), or have other unique properties (such as particularly good quality habitat for mammal or bird species). These areas are zoned as *Special Management Areas*.
- d) While developments in core wildlife breeding areas will be allowed, the number and type of developments should be compatible with primary purpose of the areas for the recruitment of wildlife.
- e) EIA processes must consider the potential occurrence of sites of archaeological significance in proposed development areas since the whole region has a long history of settlement and contains some prehistoric sites that have not been adequately mapped.
- f) Developments should preferentially be located close to park boundaries and existing services and infrastructure such as major access roads, power lines.
- g) Where possible so-called *brownfield* sites (sites that have previously been impacted, such as old military bases) should be targeted for new developments.
- h) In keeping with the general aim of sustainable utilisation,

2 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; and InterConsult. 2001. *Natural resource mapping of the Kavango*. Report for the Directorate of Environmental Affairs, Windhoek.

3 *Bwabwata, Mudumu and Mamili Parks Project, BMM Project: Park-level Biophysical Zoning*, 2009. Addendum to Project Report of the Park Operational Planning Component, Ministry of Environment and Tourism, Republic of Namibia

preference will be given for developments with small environmental footprints. This necessitates the use of low-impact building materials⁴ and techniques that use little energy.

- i) 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.
- j) The emphasis is on managing total environmental impact, from construction or implementation to operational environmental impacts.
- k) In general, road construction should be minimised to conform to the agreed road network as per the Tourism Development Plan. Emphasis must be placed on the re-alignment and upgrading of existing roads, rather than construction of new roads. New road construction will only be allowed subject to exceptional/excellent justification. Where roads are realigned, redundant roads should be ecologically restored.
- l) At the very least, EIA processes for all road construction activities should include scoping and an environmental management plan (EMP).
- m) 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).
- n) 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.
- o) No activities that potentially pollute (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 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.

- p) Where relevant, handling, storage and disposal of all fuels 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.
- q) 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 rules of use 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.
- r) No off-road driving is permitted in any zone, except under special and occasional circumstances, for example during game capture operations.



⁴ 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.

Guidelines and rules for each zone

Very Important habitat zone

Environmental impact assessment (EIA) process

- a) There is a 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 the number and periodicity of game drives and boat trips, as well as the environmental impact of existing and other planned lodges.

Construction guidelines

- c) The chances that a full EIA will be required are less if a development is located on a *brownfield* site, although some level of EIA will still be required. The use of *greenfield* sites is allowed, but must be fully justified, and the EIA must show that the impacts will be positive or minor and 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 if there is appropriate justification.

Management approach and particular activities

- f) Park management must prioritise their resources to reduce or eliminate threats to these areas.
- g) Management 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 dump sites are allowed here.
- j) Roads that have become redundant must be restored. Trenches dug for services (water, sewer or power lines) must be restored, regardless of whether 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 the number of boats and their density in specific areas 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 frequently be reviewed in terms of individual and cumulative impacts on ecological processes, biodiversity and/or physical geography. Limits on game viewing and recreational uses may 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 stored at least 50 metres from water; fuel kept in floatable watertight containers; the volume of all fuel and oil stored on site determined in the EIA process as part of each concession. Boats may not have motors that are larger than 50 horse power.

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 the 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. The use of *greenfield* sites must be fully 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 Strategic Management Plan, artificial water may be provided. 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 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 dumps of waste storage, other than temporary storage for sorting activities, are allowed in this zone.
- h) Road that have become redundant 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 frequently be reviewed in terms of their individual cumulative impacts on ecological processes, biodiversity and/or physical geography. Limits of use may consequently be changed as part of the overall adaptive management approach.

Less important habitat zone

Environmental impact assessment (EIA) process

- a) The likelihood that a full EIA will be required is small, but at least an environmental scoping and a full EMP may be necessary for new structures and activities. Development on previously impacted sites may require only an EMP.
- b) Areas in these zones should be considered as alternatives for

developments assessed by EIAs in the *Very Important or Important zones*.

Construction guidelines

- c) There are few restrictions on permanent structures used in this area, but low environmental impact materials are to be preferred.
- d) Developments should ideally be located on sites that are already impacted. The use of *greenfield* sites must be justified.

Management approach and particular activities

- e) This zone has lowest priority in the allocation of management resources. Management must still include the monitoring and regulation of tourism activities, but the frequency and intensity of such monitoring may be less than in the more important zones.
- f) Subject to the conditions defined in the Strategic Management Plan, artificial water may be provided. 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 wildlife, habitat structure and ecological processes. The management strategy must consider all options from seasonal or even longer-term closing of the water hole through to continuous operation.
- g) Permanent disposal and storage of domestic waste produced by the MET during the course of its normal park management activities is allowed in this zone, subject to national standards on the management of domestic waste. Wild animals should not have access to waste disposal sites.

General tourism rules and guidelines

- h) 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 in these areas. For instance, some areas with Baobab trees in Mahango Core Area are *Special Management Zones* 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 significance may also be off-limits.
- c) Where necessary, *Special Management Zones* may be fenced using appropriate material to secure them from elephants or other agents that may cause damage.
- d) Except for very unusual situations, no hunting or culling 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 the Strategic Management Plan and this appendix. Additional development sites may be added following the conclusion of concession agreements or further planning of management infrastructure. However, the total number and extent of these sites 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 Strategic Management Plan, the Business & Development Plan for the North-East Parks, the 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 site, 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, reuse and recycle.
- e) Energy use must be minimised by adopting appropriate technologies and policies to use energy sensibly.

Zone descriptions and guidelines for each park

Detailed descriptions of the zones in each park are provided 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 prevents more detailed mapping of these areas; moreover, the exact locations of some tourism developments still need to be determined as part of concession agreements and their associated EIA process. Refer to the BMM Tourism Development Plan for more details on the proposed concessions and likely extent of these developments.



Bwabwata West: Mahango and Buffalo Core Areas

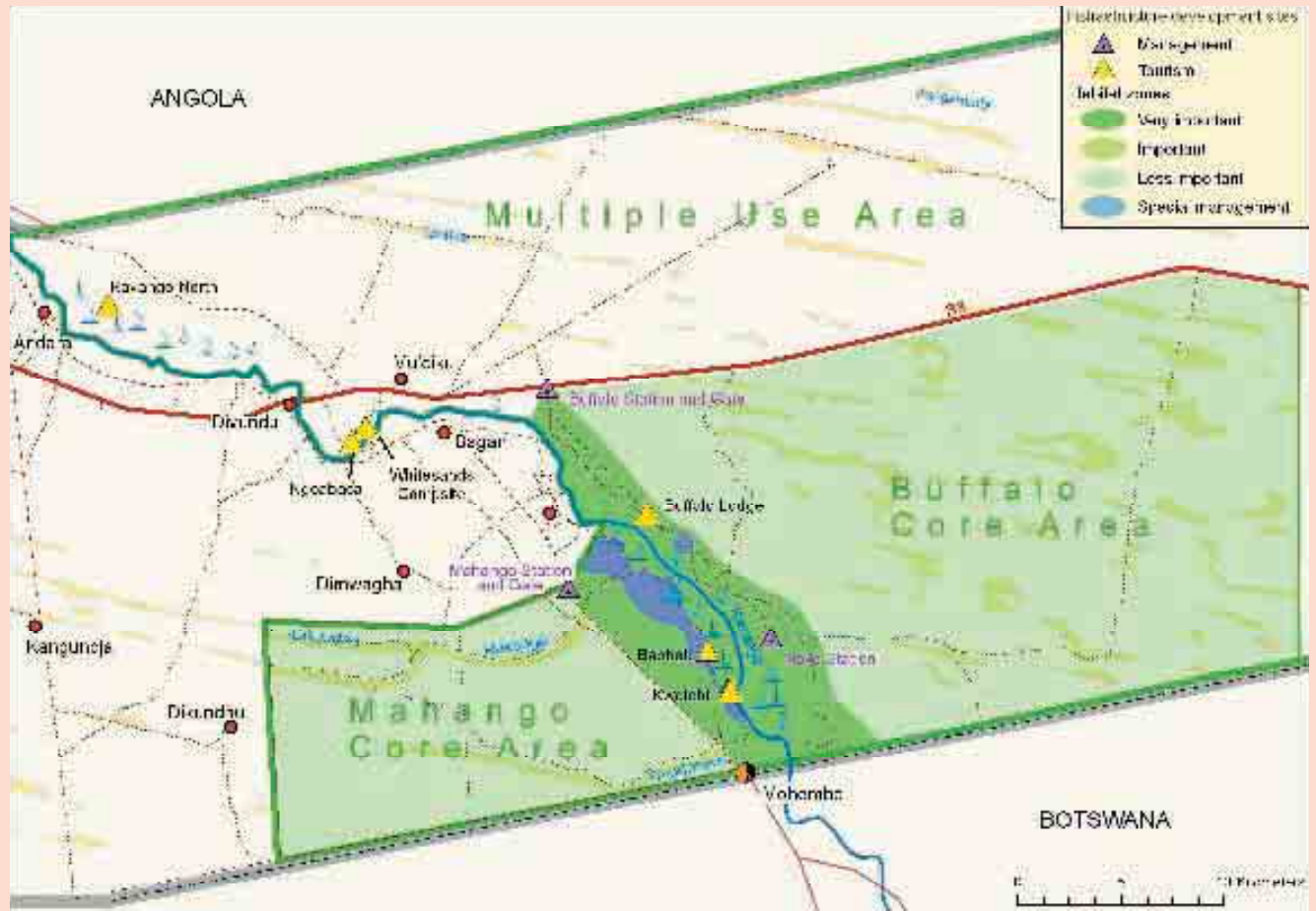


Figure 1. Habitat zones and infrastructure development sites in Mahango Core Area, Bwabwata National Park. The Kwetchi and Giant Baobab areas are Special Management areas (both contain remarkable baobab trees) with adjacent picnic sites. The exact location of the Buffalo lodge site is subject to a concession agreement to be negotiated.

Bwabwata West: Mahango and Buffalo Core Areas

ZONE DESCRIPTIONS

KEY PROPERTIES

SPECIFIC RULES AND GUIDELINES

VERY IMPORTANT ZONE

MAHANGO CORE AREA

- This zone encompasses the whole area between the national road running between Divundu and Mhembo, 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 probably suffers 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 knob-thorn woodland.

BUFFALO CORE AREA

- The area between a line drawn approximately 1km east of the road running more or less parallel with the Kavango River and the centre line of the river. 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.

- Vulnerable to elephant impact.
- A few small fragments of riparian woodland, characterised by tall jackal berry trees remain in Mahango. Buffalo contains some excellent examples of closed riparian woodland, with knob-thorn, leadwood, sausage tree and jackal berry.
- Highly erodible soils (which may include sodic soils) may cover larger areas than the area zoned for Special Management.
- This zone is the habitat for wetland grazer species such as red lechwe, reedbuck and hippo, as well as for high value species such as buffalo, roan and sable.
- Floodplains and grasslands are also breeding habitats for rare Wattled Cranes, as well as for numerous other bird species.
- The River itself is breeding habitat for African Skimmers, while certain sections of the river banks form Carmine bee-eater breeding sites.
- 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 in the Caprivi-Kavango region.
- It contains all the old military infrastructure.
- Soils are loamy clays, loams and loamy sands.

- Boats to be launched at designated launch site/s only.
- Use only non-permanent patrol camps (using tents that are removed after patrol periods).
- Where the 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 are permitted. 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 is allowed, except on floodplain boundary at designated game viewing and lookout points. Foot access to floodplains is only allowed under tightly controlled conditions.
- Where possible, current roads are to be re-routed (e.g. road leading to Nova) to avoid current environmental pitfalls and to optimise tourist experience, and old sections are to be rehabilitated.
- EIA process for all re-routed road construction must include at least, a scoping and an EMP.

RED FLAGS

- 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 soil stability on any development or activity should be considered and appropriate measures taken to avoid erosion.

Bwabwata West: Mahango and Buffalo Core Areas

ZONE DESCRIPTIONS

KEY PROPERTIES

SPECIFIC RULES AND GUIDELINES

IMPORTANT ZONE

MAHANGO CORE AREA

- Only the Dikundhu and Thinderevu omurambas are included here. This zone contains the Thingwerengwere borehole.

BUFFALO CORE AREA

- Several omurambas in the hinterland of the core area.

- This zone contains particularly good examples of camel thorn and typical omuramba grasslands and fringe woodlands.
- The omurambas contain pans fill seasonally and, in some cases, last throughout the dry season, 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.

- Less suitable for roads than the *Less Important Zone*
- Where re-routing of roads are required (e.g. around Thingwerengwere waterhole in Mahango), old sections parts should be rehabilitated.
- No new roads may be constructed in this area.

RED FLAGS - None

LESS IMPORTANT ZONE

MAHANGO AND BUFFALO CORE AREAS

- All woodlands outside the *Very Important* and *Important* Zones, comprised mainly of *Baikiaea* and *Burkea* woodland types on deep sands.

- A fire-prone vegetation type.
- Contains some good examples of *Baikiaea* woodlands.
- Soils are mainly deep finely textured sands.

MAHANGO CORE AREA

- This is the preferred area for locating tourist and management roads, service infrastructure and artificial water points.

BUFFALO CORE AREA

- Depending on the BMM Tourism Development Plan, new roads may be constructed in this area if they contribute to optimising the tourist experience.

RED FLAGS - None

Bwabwata West: Mahango and Buffalo Core Areas

ZONE DESCRIPTIONS

KEY PROPERTIES

SPECIFIC RULES AND GUIDELINES

SPECIAL MANAGEMENT ZONE

MAHANGO CORE AREA

- 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 the lala palm 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, in 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 knob-thorn woodland and is thus zoned as Special Management Area.

BUFFALO CORE AREA

- An area of approximately 12 hectares surrounding a group of graves associated with the old military base.

- 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.

BUFFALO CORE AREA

- The military graves in Buffalo are of social and historical significance.

- 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 are to be subjected to proper EIA process including hydrological, soil and geo-and civil engineering assessments.
- Game viewing infrastructure to be subjected to EIA processes that include at least a scoping and EMP.
- Tourist activities at baobab trees to be limited to picnicking and here parking areas should be located 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.

RED FLAGS

Any activity that may disrupt the soil surface.

Bwabwata East: Kwando Core Area

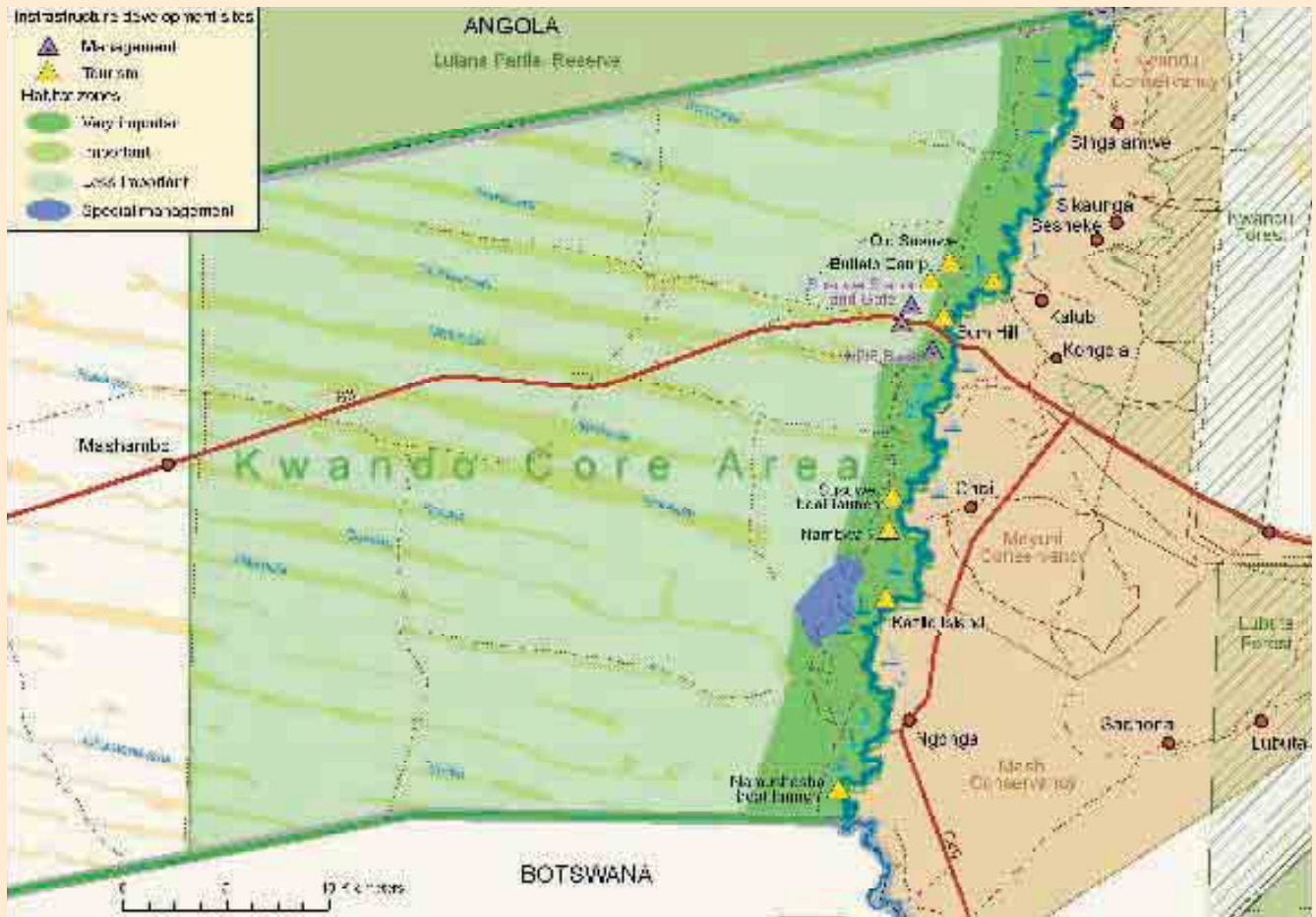


Figure 2. Habitat zones and infrastructure development sites in Kwando Core Area, Bwabwata National Park. The exact locations of the Nzuna and Kazile Island, and old Susuwe and Buffalo sites are subject to concession agreements, still to be negotiated.

ZONE DESCRIPTIONS

KEY PROPERTIES

SPECIFIC RULES AND GUIDELINES

VERY IMPORTANT ZONE:

- The area between a line drawn approximately 1km west of the road running more or less parallel to the Kwando River and centre line of the river. 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*.
 - 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 for buffalo, roan and sable.
 - Floodplains and grasslands also form a breeding habitat for numerous other bird species.
 - Important access to water for elephant breeding herds.
 - 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 realigned (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).
- RED FLAGS**
- Disturbance of floodplain and grassland species, particularly those that breed in this area.
 - Disruption of seasonal movement and dispersal of mammal species to and from the River

Bwabwata East: Kwando Core Area

ZONE DESCRIPTIONS

KEY PROPERTIES

SPECIFIC RULES AND GUIDELINES

IMPORTANT ZONE:

- Several omurambas in the hinterland of the core area, with some particularly good examples in the central area.
- 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 omurambas contain pans that fill seasonally and, in some cases, last through the dry season, 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.
- 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.

RED FLAGS

- Disruption of wildlife use of seasonal pans.
- Disruption of seasonal movement and dispersal of wildlife.

LESS IMPORTANT ZONE:

- All woodlands of the Kwando Core Area outside the *Very Important* and *Important Zones*, and excluding the Horseshoe Lagoon *Special Management Zone*
- Fire-prone vegetation type.
- Some good examples of *Baikiaea*, with many fine examples of *Guibourtia coleosperma* woodlands.
- Diverse ranges of woodland structure.
- Important seasonal elephant habitat.
- Soils mainly deep finely textured sands.
- This is the preferred area for locating tourist and management roads, service infrastructure and artificial water points.
- New roads may be constructed in this area, where this can contribute to optimising the tourist experience and dependent on the BMM Tourism Development Plan.

RED FLAGS – None

ZONE DESCRIPTIONS

KEY PROPERTIES

SPECIFIC RULES AND GUIDELINES

SPECIAL MANAGEMENT ZONE:

- An area of approximately 10 ha surrounding the Horseshoe oxbow lagoon in the southern section of the Core Area, bounded by the edge of the floodplain and some vehicle tracks.
- Contains a feature of special significance that is a valuable resource, especially for elephant.
- Provides a unique tourist experience.
- 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.

RED FLAGS

- Disturbance of wildlife that use the lagoon for drinking.
- Disruption of the unique “sense of place”.

ZONE DESCRIPTIONS

KEY PROPERTIES

SPECIFIC RULES AND GUIDELINES

VERY IMPORTANT ZONE:

- An area bounded in the east by the main Kongola-Sangwali road, in the west by the Kwando River, and in the north and south by the northern and southern Park boundaries. It includes the riparian woodlands (which also include some Mopane woodland), floodplains and grasslands associated with the Kwando River.
- Contains some excellent examples of closed riparian woodland, including knob-thorn and various mixed types (with leadwood prominent), as well as tall Mopane clumps. These clayey areas are closely interspersed with sandy areas dominated by *Terminalia sericea*. Some of these are being impacted by elephant that remain close to the river during the dry season.
- Includes numerous small islands, some of which contain good examples of mangosteen (*Garcinia livingstonii*) bush clumps.
- Floodplains and associated grasslands are habitat for wetland grazers (lechwe and reedbeek) and buffalo, as well as potentially for oribi and puku.
- Important corridor for elephants moving from Botswana to Angola and Zambia.
- Also includes roan and sable habitat.
- Important access to water for elephant breeding herds.
- Soils are loamy clays and clays.
- Only concession and Park management motorised boats are allowed on open water, no public boats of any type are permitted.
- Boats to be launched at designated launch site/s only.
- No motorised access to floodplains allowed, except at designated game viewing and lookout points.
- Where possible, current roads to be re-routed (e.g. road between Lianshulu and Nakatwa) to optimise tourist experience, and old sections rehabilitated.
- Tourist access to the floodplain and/or river bank should be via frequent link roads from main tourist route to game viewing areas located at optimal positions along the edge of the main channel, back channels or floodplains (dependent on BMM Tourism Development Plan).
- Only non-permanent patrol camps (using tents that are removed after the patrol period).

RED FLAGS

- Disturbance of floodplain and grassland species, particularly those that breed there.
- Interference with elephant migration routes.

Mudumu

ZONE DESCRIPTIONS

KEY PROPERTIES

SPECIFIC RULES AND GUIDELINES

IMPORTANT ZONE:

- All mopane woodlands including those that are mixed with *Burkea* woodlands and that surround the Mudumu Mulapo are included here, by virtue of their intact state.
 - This zone contains particularly good examples of mopane woodlands.
 - May contain camel thorn where soils are better drained, and species typically found in sandy soil, such as *Burkea africana* and *Terminalia sericea*.
 - This zone is habitat for roan, sable and tsessebe, which are all rare and highly valuable.
 - Considered a core breeding area for wildlife, so animals dispersing from here may contribute to populations in neighbouring conservancies.
 - Contains a few pans, some of which may remain wet throughout the year and thus represent a valuable wildlife resource.
 - Soils are mostly heavy clays interspersed with loamy clays and pockets of reworked sand.
- Less suitable for roads than the *Less Important Zone*.
- Where necessary, current roads are to be rerouted to avoid clayey areas, and old sections rehabilitated.

RED FLAGS - None

LESS IMPORTANT ZONE:

- The *Terminalia sericea*-dominated woodlands of the Mudumu Mulapo.
 - Vegetation is dominated by *Terminalia sericea*, interspersed with mopane.
 - Soils are highly leached Kalahari sands reworked by water, with isolated pockets of clay loam soils.
 - Together with the *Important Zone*, this is important habitat for woodland herbivores such as impala, blue wildebeest, zebra and giraffe.
- This zone, and any other sandy areas, is the preferred area for locating tourist and management roads, service infrastructure and artificial water points.

RED FLAGS - None

NOTE: there are no *Special Management zones* in Mudumu.





Figure 5. Habitat zones and infrastructure development sites in Mamili National Park. The exact location of Nkasa Island site is subject to a concession agreement to be negotiated.

ZONE DESCRIPTIONS

KEY PROPERTIES

SPECIFIC RULES AND GUIDELINES

- The whole of Mamili National Park is designated as a *Very Important Zone*, by virtue of its wetland nature.

NOTE: there are no *Important, Less Important or Special Management zones* in Mamili.

- Contains the most extensive wetlands, marshes and seasonally inundated areas in Namibia.
- Floodplains are habitat for wetland grazers (lechwe and reedbuck) and several large buffalo herds, and potentially for oribi.
- Important corridor for elephants moving from Botswana to Angola and Zambia.
- Considered a core breeding area for wildlife, so animals dispersing from here may contribute to populations in neighbouring conservancies.
- The permanently raised islands (Nkasa and Rupara) are important refuges for species such as buffalo during flood periods.
- Soils are loams, loamy clays and clays

- Only concession and Park management motorised boats are allowed on open water, guest-driven non-motorised boats may be allowed, depending on concession 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.
- Where necessary, current roads to be re-routed to optimise tourist experience, and old sections to be rehabilitated.
- EIA process for all road construction (re-routing) to include at least a scoping and an EMP.
- The EIA process should take the islands' refuge value into consideration in assessing impacts of activities or developments.
- Only non-permanent patrol camps (using tents that are removed after the patrol period).

RED FLAGS

- Disturbance of floodplain and grassland species, particularly those that breed there.
- Disturbance of species using the islands as refuges during flood periods.

Khaudum



Figure 6. Habitat zones and infrastructure development in Khaudum National Park.

ZONE DESCRIPTIONS

KEY PROPERTIES

SPECIFIC RULES AND GUIDELINES

IMPORTANT ZONE:

- The south-eastern corner of Khaudum, between the western boundary and the main north-south track through Sikeretti, to a line more or less 15 km north of the southern boundary. It encompasses but also extends beyond the *Terminalia sericea – Acacia fleckii*-shrubland and includes a portion of the Nhoma Omuramba.
- All seasonal and other pans.
- The total extent and all branches of the Khaudum Omuramba and the Nhoma Omuramba.
- This zone contains particularly good examples of *Terminalia sericea – Acacia fleckii*-shrubland and typical perennial omuramba grasslands and fringe woodlands.
- The omurambas contain depressions that fill seasonally and may last throughout the dry season in some cases, providing a valuable resource for wildlife.
- Other pans, unrelated to the two main omurambas, are also critical seasonal resources for a number of important species such as roan.
- Soils are loamy clays to clays, but may be sandier, especially in the south-eastern corner.
- Less suitable for roads than the *Less Important Zone*
- Where re-routing of roads is required, old sections should be rehabilitated.

RED FLAGS - None

LESS IMPORTANT ZONE:

- The rest of Khaudum, comprised mainly of *Burkea africana* (the central portion between the two main omurimba); *Guibourtia coleosperma* woodlands on deep sands (north of Khaudum Omuramba); and *Terminalia sericea* shrubland on shallow soils overlying rock (south and southeast of Nhoma Omuramba).
- Fire-prone vegetation type.
- Soils are mainly deep finely textured sands.
- This is the preferred area for locating tourist and management roads, service infrastructure and artificial water points.

RED FLAGS - None

SPECIAL MANAGEMENT ZONE:

- Archaeological site at Tsoana water hole in the south-western section of the park
- This is a sacred site of social and historical significance.
- No vehicle access permitted. Tourist vehicles to be left at a designated parking area and visitors are to walk to the site. No development permitted, unless required to directly protect the site from damage

RED FLAGS - None

SPECIES OF SPECIAL CONCERN IN THE NORTH-EAST PARKS

COMMON NAME	SCIENTIFIC NAME	COMMENTS ON STATUS
Baobab	<i>Adansonia digitata</i>	Protected, special fruit tree
Leopard Orchid	<i>Ansellia africana</i>	Protected orchid
Bird Plum	<i>Berberia discolor</i>	Protected, special fruit tree
	<i>Bergia spathulata</i>	Near endemic
	<i>Bolusia amboensis</i>	Endemic
	<i>Bonatea stenderi</i>	Protected orchid
	<i>Commicarpus decipiens</i>	Endemic
	<i>Corallocarpus welwitschia</i>	Endemic
	<i>Crinum carolo-schmidtii</i>	Near endemic
Woolly Fingergrass	<i>Digitaria eriantha</i>	Near endemic
	<i>Diplazne cuspidate subsp. cuspidata</i>	Possibly near-endemic
	<i>Eulophia bereroensis</i>	Protected orchid
	<i>Eulophia leachii</i>	Protected orchid
	<i>Eulophia livingstoneana</i>	Rare & protected orchid
	<i>Eulophia speciosa</i>	Protected orchid
	<i>Eulophia walleri</i>	Protected orchid
	<i>Fissidens capriiviensis</i>	Endemic
	<i>Habenaria armatissima</i>	Protected orchid
	<i>Habenaria epipactidea</i>	Protected orchid
Devil's Claw	<i>Harpagophytum procumbens subsp. procumbens</i>	Protected, last recorded in 1994
	<i>Hygrophila gracillima</i>	Endemic
	<i>Indigofera rautanenii</i>	Endemic
	<i>Lapeirousia otaviensis</i>	Near endemic
	<i>Orbea valida subsp. valida</i>	Protected, sought by plant collectors
	<i>Ornithogalum stapffii</i>	Endemic
	<i>Oxalis purpurascens</i>	Near endemic
	<i>Ogoroa schinzii</i>	Near endemic
African White Protea	<i>Protea gagei</i>	Perhaps extinct due to over-harvesting
Kiaat	<i>Pterocarpus angolensis</i>	Protected, over harvested and killed by fire
	<i>Rennera limnophila</i>	Near endemic
Mangetti	<i>Schinziophyton rautanenii</i>	Protected, special fruit tree
Marula	<i>Sclerocarya birrea subsp. caffra</i>	Protected, special fruit tree

	<i>Sesamum schinzianum</i>	Near endemic
	<i>Sesbania pachycarpa</i> subsp. <i>dinterana</i>	Endemic
Corky Monkey Orange	<i>Strychnos cocculoides</i>	Protected, special fruit tree
Spine-Leaved Monkey Orange	<i>Strychnos pungens</i>	Protected, special fruit tree
Spiny Monkey-Orange	<i>Strychnos spinosa</i>	Protected, special fruit tree
	<i>Suaeda articulata</i> <i>articulata</i>	Endemic
	<i>Trogus pedunculatus</i>	Near endemic
	<i>Vahlia capensis</i> subsp. <i>capensis</i>	Near endemic
	<i>Willkommia sarmentosa</i>	Near endemic



Birds

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 flavirostris</i>	Vulnerable
Bateleur	<i>Terathopius ecaudatus</i>	Endangered
Bittern	<i>Botaurus stellaris</i>	Critically endangered
Black Stork	<i>Ciconia nigra</i>	Endangered
Black-checked Lovebird	<i>Agapornis nigrigenis</i>	Critically endangered
Black-winged Pratincole	<i>Glareola nordmanni</i>	Near threatened
Booted Eagle	<i>Hieraetus 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

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>Amblydipsas 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

Mammals

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>Lycan 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
African Elephant	<i>Loxodonta africana</i>	Specially protected

