NAMIBIA
Ministry of Environment and Tourism

NORTH-EAST PARKS PROJECT

VOLUME 2

KHAUDUM NATIONAL PARK

MANAGEMENT PLAN

Dated: 15th March, 1999
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INTRODUCTION

This management plan for Khaudum National Park has been prepared under Phase Two of the Planning Phase: North East Parks Programme. This document forms Volume 2 of this planning process and summarises the management actions, staffing requirements and recurrent budgets required to manage the park. This document is supported by Volume 1: Background and Inventory, which contains information as regards the biophysical, ecological, legal, socio-economic and infrastructural characteristics of the North East Parks. Volume 3: Integrated Development Plan for Khaudum National Park summaries the investment programme needed to develop the park, and its potential revenue earnings.

Khaudum National Park is located on the border with Botswana in the Kavango District south of the Okavango river and north of Tsumkwe. To the south of the park is the Nyae Nyae Conservancy while to the west are forest reserves and the Mangetti Game Camp (Figure 1).

Figure 1: Location of Khaudum National Park relative to other protected areas and Conservancies in the Kalahari Conservation Area
1.1 Structure of the Management Plan

For ease of understanding, this management plan consists of six main components. These are as follows:

**Vision statement:** The vision statement for Khaudum National Park captures the overall goals of the Ministry of Environment and Tourism (MET) with respect to the management and development of the Park.

**Situation analysis and needs assessment:** Using eight pre-defined management programmes, the situation analysis and needs assessment provides a summary of the issues and problems facing the park that need to be addressed by the management plan. The management programmes are prioritised, and the activities to be conducted are evaluated and ranked to illustrate their level of importance.

**Goals and Objectives:** The goals and objectives of Khaudum National Park are provided. These, together with the situation analysis and needs assessment, define the various activities to be undertaken under each management programme.

**Zonation:** This section describes the different management zones of the park that will facilitate its management and tourist use.

**Staffing Requirements:** The staffing requirements for Khaudum National Park are determined based on the activities to be undertaken under each management programme.

**Management Programmes:** Eight management programmes are identified as being the core of the management plan. Using the information gathered during the situation analysis and needs assessment, various activities are identified that need to be undertaken under each management programme in order to deal with the various issues. Each management programme is prioritised and the activities ranked in order of importance. Each activity is dealt with under the following headings:

- Current problems and issues
- Proposed solutions
- Implementation
- Resources required

The management plan is also supported by a number of appendices that provide specific background data and information relevant to the planning process.
2 VISION STATEMENT FOR KHAUDUM NATIONAL PARK

The Vision Statement for Khaudum National Park is tempered by the overall mission statement, policies and conservation goals of the Ministry of Environment and Tourism that clearly define the criteria and goals for protected area management in Namibia (Appendix I).

In terms of these overall statements, the government has established that the primary purpose of the North East Parks is to act as conservation areas. Secondary is the recognition that these parks can also serve to enhance local economies and increase the quality of life in neighbouring communities. In addition, they are a tourism product, playing a role in the national economy and serving as a window through which the world views Namibia’s conservation ethic.

Within the context of these parameters, the vision statement for the Khaudum National Park is defined as follows:

*Khaudum National Park shall protect the northern Kalahari savannah woodland habitat and biodiversity particularly wild dog, roan, lion and elephant. Tourism shall be non-consumptive low-volume, low-impact with an emphasis on high quality nature experience. Accommodation facilities shall be a combination of small lodges and campsites. Management shall include the establishment of mutually-beneficial partnerships with communities. The park shall serve as a core area for the conservancies on its boundaries.*

2.1 Situation Analysis and Needs Assessment

The North East Parks Project was launched in 1995 with the objective of compiling management and development plans for the parks in the Caprivi and Kavango regions. On acceptance of the management plans, MET will establish a Joint Management Committee with stakeholders to implement these plans, as well as resolve any local problems, conflicts etc. Funding for implementation will be provided by the Government of Namibia and international donors.

Khaudum Game Reserve has been in existence since 1989, and its status, in legal terms, is secure. Politically the park is accepted by local communities and by the Ju’hoan community to the south. Population pressures on the park boundaries are virtually non-existent, and there is practically no domestic livestock in the immediate vicinity that could pose a threat to the park. This situation could change in the foreseeable future as more people are settled to the north and west of the park.

More recently, the Botswana veterinary authorities have constructed a double electrified stock and game proof fence along the eastern boundary of the park. These fences are in addition to “game proof” fences erected along the border by the Namibian veterinary authorities several years before. The purpose of these fences is to control the movement of cattle and people, and thus curtail the spread of diseases such as Foot-and-Mouth Disease and Contagious Bovine Pleuropneumonia (CBPP or “lung sickness”).

The net effect of these fences has been to stifle the movement of wildlife between the two countries. Species such as elephant, buffalo, eland, gemsbok and giraffe are no longer able to move back and forth towards the Okavango Swamps in Botswana.\(^1\)

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\(^1\) The small herd of buffalo held in captivity in the Nyae Nyae Conservancy are believed to have been “trapped” in the area following the construction of the “game proof” fences by the Namibian authorities.
With regards to the physical characteristics of this park, there are a number of factors that must be taken into consideration when considering the management plan. Khaudum Game Reserve is a remote area and cannot be approached by tar road. The developments are minimal and access is difficult. The area is ideal for those seeking solitude and a true wilderness experience.

However, these factors make the administration and management of the park that much more difficult. The hot, dry and sandy environment makes it extremely difficult to move easily about the park. No one can travel to remote areas of the park quickly. The nearest major centre (Grootfontein) is over 400km away and involves a journey of several hours. Accessing supplies is therefore not a simple matter. Managers based in this park are therefore required to be independent and able to work under very trying conditions.

Ministry of Environment and Tourism’s Management Strategy

The MET have defined eight management programmes that will form the basis of the management and development plans (Table 1).

Table 1: Definition of the Eight Management Programmes for the North-East Parks Project

<table>
<thead>
<tr>
<th>Management Programme</th>
<th>Brief Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Administration</td>
<td>The actions and activities taken by MET leadership to facilitate the attainment of the objectives of all management programmes.</td>
</tr>
<tr>
<td>2. Protection</td>
<td>The actions and activities aimed at preserving the physical and biological integrity of the parks.</td>
</tr>
<tr>
<td>3. Research and Monitoring</td>
<td>The actions and activities to determine the status and dynamics of park natural resources as well as the effects of management actions upon these resources.</td>
</tr>
<tr>
<td>4. Tourism and Visitor</td>
<td>The actions and activities to enhance visitor experiences in the parks as well as to minimise the impact of tourism on park natural resources.</td>
</tr>
<tr>
<td>5. Support Zone</td>
<td>The actions and activities aimed at encouraging compatible land uses in areas bordering the parks. In particular, the establishment and development of conservancies is to be encouraged, with MET providing technical advice on all aspects of wildlife management. The flow of benefits from the park to neighbouring communities will be facilitated.</td>
</tr>
<tr>
<td>6. Education, Communication and Public Relations</td>
<td>The actions and activities designed to increase knowledge and awareness of the parks and their role in the conservation of the nation’s natural resources.</td>
</tr>
<tr>
<td>7. Infrastructure Development</td>
<td>The actions and activities relating to infrastructure development (roads, buildings, water development, fire breaks, disposal of liquid and solid waste.</td>
</tr>
<tr>
<td>8. Maintenance</td>
<td>The actions and activities designed to maintain, rehabilitate and/or enhance the parks bio-physical resources as well as infrastructure and equipment.</td>
</tr>
</tbody>
</table>

On the basis of these management programmes and taking into consideration the issues raised above, a situation analysis and needs assessment was conducted in Khaudum National Park in late 1997 and early 1998. This exercise identified a wide range of issues that needed to be addressed. These management programmes have been analysed and listed in order of priority, including a ranking of the various management activities to be addressed in order to implement the management and development plans under each programme (Table 2).

Given the legal status and current development of the Park, the priority management programmes are:

1 Administration programme
2 Infrastructure Programme
3 Maintenance Programme
4 Support Zone Programme
5 Protection Programme
6 Tourism and Visitor Programme
7 Education, Communication and PRO Programme
8 Research and Monitoring Programme

Table 2 provides a summary of the prioritised management programmes and ranks the specific activities under each programme. The crucial issue here is that the park does not face a potential poaching threat from the neighbouring communities. It does, however, suffer from devastating wild fires that have visibly altered the vegetation profile on the Kalahari sands.

In view of this situation, the Protection Programme is not regarded as being as important as the Maintenance Programme or Support Zone Programme and has thus been demoted.
Table 2: Priority of Management Programmes and Ranking of Situation Analysis and Needs Assessment for Khaudum National Park. The indicative time scale illustrates the time frame to resolve the various issues.

<table>
<thead>
<tr>
<th>Priority of Management Programmes</th>
<th>Ranking of Situation Analysis and Needs Assessment for Khaudum National Park</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Priority</strong> (1st to 3rd years)</td>
</tr>
<tr>
<td>1. Administration</td>
<td>1. Khaudum should be upgraded to National Park status to afford it greater protection.</td>
</tr>
<tr>
<td></td>
<td>2. The Warden and staff responsible for Park Management are to be appointed as soon as possible.</td>
</tr>
<tr>
<td></td>
<td>3. A park entry and fee structure that incorporates the Nyae Nyae Conservancy initiatives should be investigated.</td>
</tr>
<tr>
<td></td>
<td>4. Staff training programmes is to be identified and implemented.</td>
</tr>
<tr>
<td>2. Infrastructure development</td>
<td>1. Staff accommodation at Khaudum and Sikeretti Stations needs to be upgraded and provided with equipment.</td>
</tr>
<tr>
<td></td>
<td>2. Sikeretti should be developed as the Park headquarters.</td>
</tr>
<tr>
<td></td>
<td>3. Small workshops and fuel depots should be established at both stations.</td>
</tr>
<tr>
<td></td>
<td>4. Information boards should be erected at park access points, and signs within the park renovated and replaced.</td>
</tr>
<tr>
<td></td>
<td>5. Road maintenance is non-existent and a plan to improve the situation should be devised</td>
</tr>
<tr>
<td>Priority of Management Programmes</td>
<td>Ranking of Situation Analysis and Needs Assessment for Khaudum National Park</td>
</tr>
<tr>
<td>-----------------------------------</td>
<td>--------------------------------------------------------------------------</td>
</tr>
<tr>
<td>3. Maintenance</td>
<td>Priority (1st to 3rd years): 1. There is no road maintenance in the park. 2. There are no firebreaks in the Park. 3. Boreholes and pumps are not regularly maintained. 4. The waste disposal sites need attention.</td>
</tr>
<tr>
<td>4. Support Zone</td>
<td>Priority (1st to 3rd years): 1. Communication with the Nyae Nyae Conservancy is poor. 2. Synergies that will enhance tourism development in both the Conservancy and park should be explored.</td>
</tr>
<tr>
<td>5. Protection</td>
<td>Priority (1st to 3rd years): 1. Wild fires that enter the Park should be controlled where possible. 2. A comprehensive law enforcement programme should be organised and implemented.</td>
</tr>
<tr>
<td>6. Tourism and Visitor</td>
<td>Priority (1st to 3rd years): 1. The park does not have a tourism management plan. 2. Additional tourist camping sites need to be identified. 3. There are few rules and regulations governing the use of the Park. These need to be reviewed and made available to visitors.</td>
</tr>
<tr>
<td>Priority of Management Programmes</td>
<td>Ranking of Situation Analysis and Needs Assessment for Khaudum National Park</td>
</tr>
<tr>
<td>----------------------------------</td>
<td>-------------------------------------------------------------------------</td>
</tr>
<tr>
<td></td>
<td>Priority (1st to 3rd years)</td>
</tr>
<tr>
<td>7. Education, Communication &amp; PRO</td>
<td>1. There is no communication, public relations or interpretative programme for the Park.</td>
</tr>
<tr>
<td>8. Research and Monitoring</td>
<td>1. A structured research and monitoring programme for the Park needs to be developed. 2. Protocols that allow local communities to harvest natural resources from traditional Nhore’s within the park need to be investigated and developed. 3. Population trends of selected species in Khaudum and Nyae Nyae are not regularly monitored.</td>
</tr>
</tbody>
</table>
2.2 Overall Goal and Objective for Khaudum National Park

Given that MET regards Khaudum National Park as an important conservation area that can make a positive contribution to the local economies of surrounding communities, the overall goal of Khaudum National Park is defined as:

*Khaudum National Park to maintain its unique wilderness characters through the protection of the Kalahari savanna woodlands.*

The overall objectives of the park are to:

*To offer Namibian citizens the opportunity to experience and understand the biological diversity of the northern Kalahari savannah woodland habitats.*

*To provide opportunities that increase awareness, appreciation, positive relations, economic benefits and compatible land uses with neighbouring communities.*
2.3 Zonation of Khaudum National Park

At 3,841 km², Khaudum National Park is the largest protected area in the North East of Namibia. The two main vegetation types - northern Kalahari savannah woodlands on Kalahari sand and shrubland on quartzite derived soils, coupled with its remoteness and extensive fossil drainage systems (or omiramba) make this an area of unique wilderness quality in Namibia (see Appendix II for further details).

The omiramba are important tourist destinations since it is along these drainage lines that natural pans occur and hence where most wildlife congregates. However, although these areas are interesting geomorphological features, they cannot be regarded as “Special Protection Zones” that deserve special attention (see Appendix III for definitions of zone categories). It is therefore recommended that the Park be subdivided into two Natural Zones centred on the existing administrative stations. The stations themselves will be enclosed in a Development Zone not exceeding 10 ha (Figure 2).

Should future research or inventories reveal that features such as the omiramba warrant Special Protection Zonation, then this category should be applied.

Figure 2: Zonation for Khaudum National Park
2.3.1 Description of Khaudum National Park Management Zones

<table>
<thead>
<tr>
<th>Zone</th>
<th>Description</th>
<th>Purpose</th>
<th>Permitted Activities</th>
</tr>
</thead>
</table>
| Sikeretti Development Zone  | 10 hectares immediately surrounding the current Sikeretti station            | To allow the establishment of infrastructure needed to effectively manage the park, and to establish the park headquarters. | • Infrastructure development (staff housing, tourist campsites, waste disposable site etc.).  
                                                                                      |                                                                                             | • Establishment of tourist lodges.                                                      |                                                                                       |
|                             |                                                                             |                                                                                             | • Establishment of waste disposal sites.                                               |                                                                                       |
| Khaudum Development Zone    | 10 hectares immediately surrounding the current Khaudum station              | To allow the establishment of infrastructure needed to effectively manage the park.         | • Infrastructure development (staff housing, tourist campsites, waste disposable site etc.).  
                                                                                      |                                                                                             | • Establishment of tourist lodges.                                                      |                                                                                       |
|                             |                                                                             |                                                                                             | • Establishment of waste disposal sites.                                               |                                                                                       |
| Khaudum Natural Zone        | The northern section of Park. Boundary to follow the Elandsvlakte North road from its junction with the Leeupan East road down to the Nhoma West Road, then along the Nhoma West and East Roads to the Western Cutline (Botswana border). | To generate funds from non-consumptive, low-volume, low-impact tourism. Administered from Khaudum station, but under the direction of the Warden. | • All forms of non-consumptive tourism activities conducted either from vehicles or on foot.  
                                                                                      |                                                                                             | • Camping at designated sites.                                                           |                                                                                       |
|                             |                                                                             |                                                                                             | • Construction of artificial game water supplies where appropriate.                    |                                                                                       |
| Sikeretti Natural Zone      | The remaining southern section of the Park.                                 | To generate funds from non-consumptive, low-volume, low-impact tourism. Administered from Sikeretti station. | • All forms of tourism activities conducted either from vehicles or on foot.            |                                                                                       |
|                             |                                                                             |                                                                                             | • Camping at designated sites.                                                          |                                                                                       |
|                             |                                                                             |                                                                                             | • Construction of artificial game water supplies.                                     |                                                                                       |
3 STAFFING REQUIREMENTS FOR KHAUDUM NATIONAL PARK

The staffing requirements for Khaudum National Park have been determined based on the activities to be undertaken under each management programme, and the need to operate from two base stations – Sikeretti and Khaudum. Consideration has also been given to the difficult operating conditions in the park. It is also assumed that the staff will fill several roles (e.g. a Scout will also be trained as a driver as well as carrying out patrol duties).

The critical path determining the number of staff will depend on the number of Scouts employed to patrol the park. However, although the Park covers an area of 3 841 km² it does not require a large Scout patrol force given the low poaching threat. Instead, the park is affected by extensive wild fires. The incidence and extent of these fires needs to be reduced and controlled if the Kalahari Sand woodlands are to be protected. The staff compliment for the Park has therefore been determined using the following parameters:

- The minimum Patrol Area/Scout shall not be less than 120 km² and not greater than 150 km².
- Scouts will be expected to patrol up to 25 days per month.
- Each patrol shall consist of a maximum of 5 men. Each patrol unit will therefore complete up to 125 patrol-days/month.
- It is assumed that 50% of the Scout force will not be available for a variety of reasons (sick, leave, assigned to other duties etc.).
- The number of labourers is not to exceed 50% of the number of Scouts.
- At least two Gate Guards will be assigned to man entrance gates on a rotational basis.
- The number of Rangers is set at 1 for every 10 Scouts.
- The number of Senior Rangers is set at 1 for every 20 Scouts or part thereof.
- The number of Principle Rangers is set at 1 for every 3 Senior Rangers.
- One Warden is appointed to be in charge of the park.
- One ecologist is employed for every 4 000 km².
- One Support Zone Co-ordinator is employed for every 5 000 km².
- One technician is employed to assist each ecologist with data collection.
- One technician is employed to assist each Support Zone Co-ordinator.
- One clerk is employed for every 50 Scouts.
- One typist is employed for every 50 Scouts.

On the basis of the above assumptions, the staffing requirements for Khaudum National Park are provided in Table 3.
Staffing Requirements

Table 3: Staff compliment for Khaudum National Park as determined by the eight management programmes

<table>
<thead>
<tr>
<th>STAFF COMPLIMENT</th>
<th>Management Programmes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Administration</td>
</tr>
<tr>
<td>Warden</td>
<td>1</td>
</tr>
<tr>
<td>Principle Ranger</td>
<td>1</td>
</tr>
<tr>
<td>Senior Ranger</td>
<td>-</td>
</tr>
<tr>
<td>Ranger</td>
<td>-</td>
</tr>
<tr>
<td>Scout</td>
<td>-</td>
</tr>
<tr>
<td>Gate Guard</td>
<td>-</td>
</tr>
<tr>
<td>Labourer</td>
<td>-</td>
</tr>
<tr>
<td>Ecologist</td>
<td>-</td>
</tr>
<tr>
<td>Support Zone Co-ordinator</td>
<td>-</td>
</tr>
<tr>
<td>Technicians</td>
<td>-</td>
</tr>
<tr>
<td>Clark</td>
<td>-</td>
</tr>
<tr>
<td>Typist</td>
<td>-</td>
</tr>
<tr>
<td><strong>Total Staff Compliment</strong></td>
<td><strong>2</strong></td>
</tr>
</tbody>
</table>

A problem facing Khaudum National Park is that it is difficult to access contract labour from surrounding communities simply because there are no large communities adjacent to the park. It will therefore be necessary to retain a pool of labourers and Scouts in order to undertake the Protection and Maintenance Programmes, particularly with regard to controlling wild fires. No staff is allocated to the Infrastructure, Support Zone and Education Programmes. These programmes are to be dealt with by staff appointed at the central headquarters at Rundu. Although the Support Zone Co-ordinator will be based at Susuwe (for details see Volume 2: Kwando Core Area Management Plan), he/she will be responsible for working with the Park Management and Nyae Nyae Conservancy.

3.1 Organisational Structure

The organisational structure of the North East Parks is illustrated below (Figure 3). This structure conforms to that applied elsewhere in MET with the Regional Warden answering to the Directorate of Resource Management in Windhoek.

Three “Conservation Area” Warden’s will be appointed to administer, manage and develop the Kwando-Linyanti Conservation Area, Okavango Conservation Area and Kalahari Conservation Area respectively.

The Support Zone Co-ordinator will be attached to the Regional Office but carry a rank similar to that of a Warden and Senior Conservation Officer. The Support Zone Co-ordinator will be responsible for the entire North East Parks. However, since the greatest emphasis is required in the Kwando-Linyanti Core Conservation Area, this officer will be based at Susuwe, but expected to work in the other two Conservation Areas as well.

The three Wardens will be answerable to the Regional Warden who will be based at Rundu. A conventional staffing structure will apply at station level with the most senior officer being in overall command and answerable to the Warden. Rangers, Scouts, Gate
Guards and labourers will be answerable to the Warden through their respective Senior Rangers and Principle Rangers.

The Warden for Khaudum National Park will be based at Sikeretti and will be in overall charge of the park. A Principle Ranger will be based at Khaudum Camp and will be answerable to the Warden.

Professional staff attached to the Division of Specialist Services will be based at Susuwe, Buffalo and Sikeretti respectively. These staff will be responsible for the respective Core Conservation Areas and will work closely with the Wardens and Regional Warden. They will, however, be answerable to the Division of Specialist Services based in Windhoek.

3.1.1 Staff Functions and Responsibilities

At the Conservation Area level, the Warden will be responsible for the overall administration and management of the Parks under his control. He/she will also be responsible for all disciplinary actions and will fulfil the role of co-ordinator between his junior staff and the Regional Warden. As a general rule all staff members will familiarise themselves with the Public Service Act, 1995, the Regulations under the Public Service Act, 1995 and the rules, regulations and policies of the Ministry of Environment and Tourism. Procedure guidelines on personnel administration and law enforcement are given in Appendix IV.

Responsibilities of the Warden

The Warden is the ultimate level of authority in the Park and thus assumes overall responsibility for the development and management of all management programmes with the exception of the Support Zone Programme and Research Programme. He/she will however represent the Kalahari Conservation Area on all park/support zone related matters. His/her responsibilities shall include:

- Assuming overall responsibility for the administration and management of the Park, including all assets.
- Fulfilling the role of co-ordinator between the Directorate, Regional Warden and all staff in the Park.
- Liaise with other government agencies, non-government organisations, adjacent communities and the private sector.
- Co-ordinate the preparation of comprehensive staffing plans.
- Determine and recommend to the Regional Warden the in-service and other training requirements of staff.
- Prepare and implement Annual Work Plans, schedules and budgets following the approval of the Regional Warden.
- Prepare Staff Establishment list in accordance with the Management Plans for approval of the Regional Warden and Directorate.
- With permission of the Regional Warden recruits and dismisses Junior Staff in his/her Park.
- Allocates duties to all Junior Officers (patrol duty, gate duty, routine maintenance etc.).
- Ensures that all infrastructure development within the park is in accordance with Namibian’s laws, policies, regulations and health and safety standards.
- Visits all Parks under his/her control at least once a month, including visits to the field.
- Submits periodic progress reports and liaises regularly with the Regional Warden to ensure that this office is informed regarding progress and problems in the development and management of the parks.
• Periodically communicates and co-ordinates with government organisations, non-government organisations, neighbouring communities and the private sector regarding the development and management of the parks.

• Overall in charge of co-ordinating and combating illegal activities.

• Responsible for financial accountability through:
  a. Recording all monies receipted in the park
  b. Monthly cash returns to Regional Office
  c. Government recurrent and operational budgets under his/her control

• Carrying out stock takes at the end of each financial year and reporting on the findings to the Regional Warden.

• Ensuring that all tourist facilities are clean and operational.

• Attends to Scout force, parades and kit inspection.

• Actively involving local Support Group in Park Management wherever possible.

• ATTends local authority meetings.

• Responds to all problem animal reports and deals with the issues expeditiously.

• Preparing contracts, terms of reference, reports and briefings as required by the exigencies of the position.

• Procuring all necessary materials required to develop and manage the park (fuel, building material, hire or equipment etc.).

• Carrying out regular spot-checks on how work plans are being implemented.

• Providing the Regional Warden with confidential reports on all his/her staff.

• Calling regular staff meetings.

• Recording any ecological or other data related to biophysical characteristics of the Park (climate, river flow, animal trends, deaths, fire etc.).

• Ensures proper maintenance of equipment and facilities.

• Maintains discipline in the Park

• Carries out any other duties assigned to him/her from time to time by the Regional Warden and Directorate.

Responsibilities of the Senior Conservation Officer

The Senior Conservation Officer will hold the same rank as the Warden and will be responsible for the staff under his control. He/she will work closely with the Warden to ensure the smooth running of the administration, development and management of the park. He/she will assume overall responsibility for the Research and Monitoring Programme for the Kalahari Conservation Area. His/her responsibilities shall include:

• Develop a comprehensive plan for the management and staffing of the Research and Monitoring Programme for the Kalahari Conservation Area.

• Prepare and implements budget and work plans following approval of the Directorate of Specialist Services.

• Supervise research and monitoring activities.

• Compile, process and interpret baseline data.

• Assist in the production of information materials for the Education, Communication and Public Relations programme.

• Assist the Support Zone Co-ordinator in the development of Conservancies.

• Prepare contracts, terms of reference and agreements with scientists and research institutions.

• Organise and supervise the research and monitoring functions within the individual parks.

• Ensure that clearly defined and appropriate duties are described in individual job descriptions for all research and monitoring staff.

• Determine and recommend to the Regional Warden and Directorate of Specialist Services the in-service training requirements for research and monitoring staff.
Management Plans for the North East Parks
Khaudum National Park Management Plan
Staffing Requirements

• Appraise the level of performance of research and monitoring staff, and make recommendations to the Regional Warden and Directorate of Specialist Services regarding staff transfers, discipline, promotion and general welfare.
• Formulates and proposes to the Directorate of Specialist Services and Regional Warden, through a mechanism of annual submission of a budget and work plan, specific tasks and activities for research and monitoring that are consistent with the 5-year Management Plan.
• Oversees the implementation of research projects and work plans, and provides guidance to all ongoing research and monitoring within the Kalahari Conservation Area.
• Evaluates and recommends to the Division of Specialist Services the relevance of proposed independent research projects as they relate to the Management Plans.
• Determines and directs the appropriate timing and methods employed to assess the abundance and distribution of natural resources in the individual parks and adjacent Support Zones, using such information to determine and recommend to the Regional Warden appropriate ways of managing and utilising these resources.
• Monitors the efficacy of the tourism industry in the area, and compiles a data base of occupancy, rates and economics of the various operations.
• Assists the Regional Warden and Directorate of Specialist Services in vetting applications for recruitment of research and monitoring staff.
• Compiles and submits such reports and briefings as may be required by the Regional Warden and Directorate of Specialist Services.
• Undertakes any other related duties as assigned by the Regional Warden and/or Directorate of Specialist Services.

Responsibilities of the Support Zone Co-ordinator

The principle functions and responsibilities of this position are to assume overall responsibility for all activities related to the Support Zone Programme in the North East Parks. He/she will also provide input into the Education, Communication and Public Relations programme to ensure that information regarding the development and management of Conservancies is accurately reflected. His/her specific responsibilities will include:

• Develop a 5-year comprehensive plan for the management and staffing of the Support Zone Programme that is consistent with the Management Plans for the North East Parks.
• Develop and implement annual work plans and operational budgets in accordance with the Integrated Development Plans.
• Establish protocol and working relationships with governmental organisations, non-government organisations, support zone communities and private sector.
• To be the liaison between the park and support zone communities, NGOs and private sector.
• Closely co-ordinate and co-operate with all park personnel and provide in-service training of all staff in communication and community liaison skills.
• Organise support zone functions for the individual Conservation Areas and supervise the effective discharge of these functions.
• Determine and recommend to the Regional Warden the required number and grade of Support Zone Personnel and their duty station placement.
• Ensure that clearly defined and appropriate duties are described in individual job descriptions.
• Determine and recommend the in-service training requirements for Support Zone staff.
• Appraise the level of performance of Support Zone staff and make recommendations to the Regional Warden regarding staff transfers, discipline, promotion and general welfare.
- Formulate and propose to the Regional Warden, through a mechanism of annual submission of a budget and work plan, specific tasks and activities for Support Zone development that are consistent with the 5-year Management Plans.
- Oversee the implementation of Support Zone projects and work plans, and provide guidance to all Support Zone personnel within the North East Parks.
- Liaise with local non-government organisations in the creation of conservancies within Support Zones.
- Liaise with the individual Wardens to develop methods and schedules for Community Game Guard participation in patrolling of the Conservation Areas.
- Liaise with the Senior Conservation Scientist and Warden to develop protocols and procedures whereby neighbouring communities may be allowed access to the parks for the sustainable utilisation of natural resources consistent with the primary conservation purposes of the parks.
- Co-ordinates the compilation of financial estimates relating to the Support Zone programme and supervises the disbursement and expenditure of allocated funds.
- Assists the Regional Warden in vetting applications for recruitment of Support Zone staff.
- Evaluates and recommends to the Regional Warden and/or MET the relevance of proposed independent research projects as they relate to the Management Plans.
- Compiles and submits such reports and briefings as may be required by the Regional Warden and/or Ministry of Environment and Tourism.
- Undertakes any other related duties as assigned by the Regional Warden.
**Notes**

- Regional Warden will be located at Rundu
- The Support Zone Co-ordinator will be attached to the Regional Office, but based at Susuwe. He/she will be responsible for co-ordinating all Support Zone activities in the North East Parks Project area.
- Three wardens will be in overall control of the three Conservation Areas
- All staff will be based in the respective parks

*Kwando-Linyanti Conservation Area*
4 MANAGEMENT PLAN FOR KHAUDUM NATIONAL PARK

A summary of Khaudum National Park’s background and inventory is provided in Appendix II. The management of the Park will conform to eight pre-defined management programmes described in Table 1 in the previous section. The situation analysis and needs assessment has identified various problems and issues that need to be addressed under each management programme (Table 2). These are transformed into specific activities that are to be undertaken by the park management authorities (see Table 3) in order to achieve the goals and objectives of the park as outlined in the Vision Statement. The resources and operational budgets to undertake these activities are identified here and summarised in Volume 3: Integrated Development Plan for Khaudum National Park.

4.1 Management Framework

This is the first five-year plan for Khaudum National Park starting 1st January 2000. Its purpose is to guide the MET, and particularly the Regional Headquarters and Warden in the allocation of resources to develop and operate the Park. The priorities for action have been identified in the Situation and Needs Analysis. Furthermore, this management plan has been developed within a framework of parameters that have been dictated by the realities on the ground coupled with the mission and goals of the Ministry of Environment and Tourism, and the Vision Statement for Khaudum National Park. In summary, these are:

1. Khaudum National Park is be managed and marketed for its remoteness and wilderness experiences. Tourism infrastructure is to be confined to rustic lodges and campsites.

2. Short duration camping sites are to be identified in areas away from Sikeretti and Khaudum. These sites should operate on a rotational basis i.e. they are not to be occupied for more than one season before being closed, and an alternative site opened.

3. When circumstances warrant it, applications should be invited for small private sector lodges to operate at Sikeretti notwithstanding any initiatives undertaken by the Nyae Nyae Conservancy.

4. Hunting and photographic tourism are not compatible within Khaudum National Park. Therefore no hunting should be allowed within the park.

5. Boreholes are to be developed and maintained to supplement existing natural pans so as to facilitate the spatial distribution of large mammals, particularly roan and wildebeest. No artificial waterholes are to be established. Vegetation damage by elephants is to be assessed regularly, and where necessary appropriate management actions implemented (closure of boreholes, culling etc.).

6. No persons should reside in the parks except within officially established Development Zones and only then if specifically permitted by the Permanent Secretary of the Ministry of Environment and Tourism. This restriction applies to all persons, including MET personnel.

7. All staff assigned to the Kalahari Conservation Area should reside within it (subject to the provisions of #6 above).

8. Access is by 4x4 vehicles only. North of Sikeretti and south of Khaudum visitors must travel in a convoy of two or more 4x4 vehicles. All visitor vehicles are restricted to a single rear axle and standard wheelbase.

9. There is approximately 460 km of prime game viewing roads within Khaudum National Park. It is therefore not necessary to limit the number of vehicles entering the park. However, in order to maintain its “wilderness experience”, visitor density will be regulated...
by limiting the number of remote campsites. The final number of sites will depend on the demand. Initially these should not exceed three sites in each Natural Zone.

10. All interior roads (roads other than boundary roads and cutlines) are to be maintained by mowing and should not be graded.
4.2 Management Programme Activities

The activities identified here are designed to serve the objectives of the park, and allocate the responsibilities for the required actions. Recurrent and operational budgets to carry out these actions are provided here, while Capital Budgets to undertake the necessary infrastructure developments are provided in Volume 3: Integrated Development Plan for Khaudum National Park.

4.2.1 Administration Programme

The administration programme seeks to ensure that enabling legislation is passed to facilitate protection of Khaudum National Park. It also sets in place the appointment of staff and the administrative procedures necessary for the collection of entry fees and visitor control. In order to achieve its objectives the following activities are to be carried out:

**Activity 1:** Appointment of a Warden and support staff specifically for Khaudum National Park.

**Current problem and issues**

Khaudum National Park is currently administered from Rundu. The highest staff ranking in the park is that of Ranger. Two Rangers are currently stationed at Khaudum and three at Sikeretti. Other staff includes four Scouts, one Operator/driver and 11 labourers giving a total of 21 staff in the Park.

Without an officer in overall command and who resides in the Park, it is difficult to implement any co-ordinated management activities.

**Proposed solutions**

A Warden post is to be created for Khaudum National Park and a full staff compliment posted to the area. The Warden is to reside at Sikeretti, with a Principle Ranger based at Khaudum.

**Implementation**

This activity is to be implemented by MET in conjunction with the Regional Warden. The staff is to be based in the Park as soon as possible. The Warden will be responsible for developing the annual work plan.

**Resources required**

No specific resources are required for this activity. Staff is to be recruited from within MET wherever possible. However given the remoteness of this station and the harsh conditions, it may be necessary to advertise these posts to attract the most suitable calibre of person.

**Activity 2:** Develop a permit system and fee structure in conjunction with the Nyae Nyae Conservancy.

**Current problem and issues**

Most visitors to the Khaudum National Park pass through the Nyae Nyae Conservancy via Tsumkwe. This means that tourists have the option of either visiting the tourist attractions in the Conservancy (Nyae Nyae Pan, Dorsland Baobab, cultural tourism), or continuing on
through to the Park. Both the Park and the Conservancy are therefore competing for the tourist trade to the area.

*Proposed solutions*

In keeping with the Vision Statement of “establishing mutually-beneficial partnerships with communities”, the feasibility of developing a permit system and fee structure jointly with the Nyae Nyae Conservancy should be investigated. For example, tourists arriving at Tsumkwe could purchase an entry ticket that would allow them access to the Conservancy and the Park. This would assist the Conservancy to implement their tourism management plan, and become part of the Proposed Joint Management Committee for the Khaudum National Park.

*Implementation*

A fee structure should be developed, taking into consideration comparable fees charged in Botswana and Zimbabwe. In addition, consideration should be given to the added value provided by the tourist attractions of the Nyae Nyae Conservancy and the unique situation of Khaudum National Park. Through the offices of the Support Zone Co-ordinator, the proposed fee structure and its implementation and control is to be discussed with the management committee of the Nyae Nyae Conservancy. Local staff is then to be trained to collect and account for all park entry fees.

*Resources required*

A short-term consultancy is to be commissioned to investigate the feasibility of establishing a joint permit system and fee structure. The results of this consultancy are to be discussed at a workshop with key stakeholders from MET and the Nyae Nyae Conservancy.

**Activity 3:** Design and implement training programme for all levels of staff

*Current problem and issues*

It will be necessary to recruit staff for the park. The experience and level of competency of the staff will vary depending on where the staff originates. Senior staff are likely to have some experience, either gained at other stations as a result of in-house training or following graduation from a wildlife training institute. The junior staff (Rangers, Senior Game Scouts etc.) is not likely to have a broad range of skills.

The net result will be that there will be a wide range of skills and experience amongst all levels of staff, and all will need some form of training in practical wildlife management and ecology. Some of this training can be accomplished in house, however, since there are no local wildlife training institutions, it may be necessary to send recruits to national and regional training programmes in wildlife management.

*Proposed solution*

A simple training needs assessment will be conducted of all the staff on the station to determine their level of skills and what level of training is required. As a guide, the following table illustrates the type of skills that various levels of staff should acquire.
Implementation

Training is the long-term key to attaining the Ministry’s mission. In-service training is essential if management professionals are to perform at peak levels. However, natural resource management is a highly skilled and technical profession, and it is no longer possible to rely on training in ecology, forestry, wildlife conservation etc. Modern professional wildlife managers must also acquire skills in communications and public relations, sociology, economics, leadership, administrative management, new technologies etc. It is beyond the scope of this management plan to design a specific Career Path Training Plan for professional staff. This is the responsibility of MET.

Nonetheless, it will be necessary for staff to acquire the range of skills necessary to manage the park. It will be the responsibility of the Regional Warden to identify appropriate training courses and to ensure that all staff undergo a structured training programme that will improve their management skills.

Resources required

In-house assessment of training needs.
Funds to support staff on training courses
Funds to bring in specialist trainers to undertake in-house training programmes.
4.2.2 Infrastructure Development Programme

Introduction

All capital investment requirements to develop the Park's infrastructure (housing, roads, boreholes, entrance gates etc.) are dealt with under the Infrastructure Development Programme in Volume 3: Integrated Development Plan for Khaudum National Park.

The activities will include:

Activity 1: Upgrade staff accommodation and facilities at Sikeretti and Khaudum Stations, and procure necessary equipment (vehicles, radios, firearms, uniforms etc.).

Activity 2: Manufacture and erect appropriate information signs both inside and outside the Park at access points.

Activity 3: Construct entry gate and office complex at Sikeretti and Khaudum

Activity 4: Upgrade tourism facilities at Sikeretti and Khaudum, and identify camping sites.

Activity 5: Installation and renovation of game water supplies.

Please refer to this document for the details of this programme together with the estimated budgets.

4.2.3 Maintenance Programme

Introduction

The Maintenance Programme is the vehicle that enables the Warden to rehabilitate and/or enhance key infrastructure developments that are necessary to manage the park. This includes the regular maintenance of the park boundaries, fire breaks, buildings and roads. It also includes regular maintenance of all vehicles and associated equipment, including stationary equipment such as water pumps/engines, solar power equipment, radios etc.

The Warden will be responsible for developing annual work programmes under this management programme to carry out the following routine maintenance:

1. Annual border clearance
2. Annual road clearance
3. Installation of annual fire breaks
4. Appropriate waste disposal at the stations
5. Inspection and maintenance of tourist facilities
6. Inspection and maintenance of Khaudum and Sikeretti Stations
7. Vehicle maintenance
8. Inspection and maintenance of all water supply equipment.

Whilst each of the above can be regarded as distinct activities, they all require very similar inputs. To achieve the objectives of this programme, the following activities are to be implemented.

Activity 1: Maintenance of the bio-physical resources and park infrastructure
Current problem and issues

The Vision Statement emphasises that Khaudum National Park will be managed to provide the visiting tourists with a high-quality nature experience. To achieve this goal, Khaudum National Park will need to be managed to the highest standard. This will require that the park is accessible at all times, it is not regularly burnt out, camp sites are kept clean and tidy and staff moral is maintained at a high level through provision of good accommodation. It will also be necessary to ensure that vehicle fleet is well maintained so that staff are able to carry out their duties efficiently.

Proposed solution

The Warden is to be provided with the necessary financial budget and equipment to undertake routine maintenance in the park. In situations where it is necessary to use heavy equipment (motorised grader, tipper lorry etc), the Warden will approach the Regional Warden to access this equipment from within the region or through private contract. Generally, the park management will use local contract labour wherever possible to clear boundary lines, prepare firebreaks, maintain roads etc. Where masonry work is required to maintain buildings, plumbing, carpentry etc, the Warden shall have the flexibility of hiring local contractors or using in-house expertise.

Both stations will have workshops equipped to undertake minor vehicle repairs and services. This will include the establishment of fuel depots capable of storing a maximum of 5 000 litres of fuel. Major repairs to vehicles and plant equipment will be out-sourced.

All waste material recovered from the park will be separated into combustible and hard waste. Hard waste is to be removed to an approved waste site while combustible litter will be incinerated.

The procedure guidelines on waste disposal site will consist of:

- Adequate structures for waste collection will be placed at the entrance gate. Structures should be designed to exclude baboons, monkeys and any other potential problem animal.
- Notices will be posted at appropriate places throughout the park instructing visitors to take their waste out of the park themselves.
- All waste is to be collected at least weekly and more often if necessary.
- If the solid waste disposal site is located in the park, it should be enclosed with a five-metre mesh fencing to contain any windblown loss of refuse and should be electrified if deemed necessary. The top should also be covered if possible (i.e. to form a cage). Heavy soils should be avoided as these may impede drainage and so pose a health risk during the wet season.
- Where possible, all tin cans etc should be crushed to reduce their size and burnt before be disposed. The contents of the site should be set alight regularly to reduce the volume.
- The disposal site should be at least three metres deep and should not be filled beyond 2.5m. Once full, the site is to be filled and the topsoil compacted.
- All hazardous substances (e.g. engine oil, used batteries, poisons, caustic chemicals etc.) will be collected, stored in leak proof containers and taken to collection centres in the nearest municipality.

Implementation

The Warden is responsible for developing the maintenance budget to be included in the annual work programme. Specific tasks will be overseen by junior staff in the field (road maintenance, camp clearance, firebreaks etc). This work programme will identify the sub-tasks that need to be undertaken during the course of the year.
Resources required

Contract labour
Hire of heavy equipment (grader, lorries etc)
Tools
Incinerator
Fuel to run generators
Vehicle repairs and maintenance
Pump/generator repairs and maintenance
Diesel/petrol supply to camp
Operational budgets

Activity 2: Maintenance of existing game viewing roads, access roads and firebreaks

Current problem and issues

The current road network in the Khaudum National Park is adequate for both current tourism levels and management purposes. However, roads that are not used frequently become overgrown and blocked by fallen trees and thus hamper access to remote areas of the park. There is also a tendency for tourists (and staff) to drive off the main roads thus creating roads that are inappropriately sited.

Proposed solutions

The level of maintenance of the current road network is to be maintained according to the management classification. Prime Game Viewing Roads (i.e. Class 1) are to be inspected twice annually (May and October) to assess whether the levels of tourism traffic are causing any environmental damage. Compulsory inspections will be conducted after the rainy season, and all roads will be closed to traffic during heavy or persistent rains. Preference is to be given to mowing the roads. Grading of the roads is to be avoided and only implemented as a last resort.

Class 2 roads (i.e. transit roads and single traffic tracks) used primarily by park staff for management purposes are only to be established outside the prime game viewing areas. These roads are not to be used regularly, and are to be closed if they exhibit signs of deterioration.

Implementation

Implementation of this activity will be the responsibility of the Warden. The road maintenance and rehabilitation programme will be catered for in the Annual Work Programme. During routine patrols, all trees that have fallen across the road are to be removed to pre-empt off road travel. Roads requiring major rehabilitation involving heavy machinery will be evaluated by the Regional Warden in conjunction with the Warden. This evaluation will consider the option of road closure, rehabilitation or construction of an alternative route. Where necessary, professional advice is to be sought regarding the most cost-effective option.

Resources required

Tractor/trailer to transport road surface material
Grass mower
Tools (shovels, picks)
Funds to hire contract labour
Tyre drag for low level road maintenance
4.2.4 Support Zone Programme

Introduction

The Support Zone Programme is effectively a liaison programme between the MET and the Conservancies (existing and proposed) and is the vehicle by which MET will implement its “Parks and Neighbours” Policy (see Appendix VI). This policy involves all levels of staff.

In the case of the Kalahari Conservation Area, the Nyae Nyae Conservancy has been established and is functioning. The responsibility of building the relationships between the Park and the Conservancy will be the responsibility of the Support Zone Co-ordinator appointed at the regional level.

Nonetheless, it will also be the responsibility of the Khaudum National Park management staff to build an enabling environment with the Support Groups and local communities at every opportunity. To achieve this, the following activity will be implemented under this programme.

Activity 1: Facilitate the implementation of the “Parks and Neighbours” Policy developed at the regional level

Current problems and issues

In comparison with the other North East Parks, Khaudum National Park is in a fortunate position given that the Nyae Nyae Conservancy has been established, and that there are relatively few people adjacent to its borders in the north and west. The issue here is that although the Conservancy exists, there is no formulated strategy as to how to further improve and enhance the relationships between the Park and the neighbouring communities. One of the problems is that communication is difficult given the distances, terrain and remoteness of the park headquarters.

Proposed solution

A “Support Zone Co-ordinator” is to be appointed at the regional level to co-ordinate the implementation of the “Parks and Neighbours” policy in the Kalahari Conservation Area. Briefly the post would have the following responsibilities:

- Promote the establishment and development of new conservancies, and assist with the management of existing ones.
- Promote and establish Support Groups
- Assist the Support Groups and Parks administration to define their respective roles in the development and management of the Kalahari Conservation Area
- Develop a comprehensive understanding of the conditions within the support zones
- Facilitate the agreement of park boundaries with the communities concerned
- Identify and promote a range of economic activities that can be associated with parks
- Develop mechanisms to improve and formalise communications between parks and stakeholders regarding policies, objectives and processes
- Establish a protocol for problem animal control in support zones
- Assist local Wardens in dealing with local communities
- Liaise with any NGOs actively involved in community-based natural resource management initiatives
- Work with communities and staff in the Kwando – Linyanti and Okavango Conservation Areas
• Advise the Regional Warden on policy issues related to the “Parks and Neighbours” initiatives.

At the park level, the Warden will facilitate the implementation of the "Parks and Neighbours" policy by:

• Establishing a "Parks and Neighbours" committee that will meet on a regular basis to discuss mutual problems and resolve areas of conflict
• Reacting to problem animal reports

This will require the Warden to establish lines of communication with the Support Zone Co-ordinator and the local Support Group.

Implementation

The overall support zone programme will be co-ordinated by the Support Zone Co-ordinator (SZC) based at Susuwe. The Support Zone Co-ordinator will be responsible for developing an annual work programme and establishing communication links with the various Conservancies. His/her overall responsibility will be to guide the development and formation of the Conservancies in the Kalahari Conservation Area, and to improve relations between the local communities and the park management authorities (see Appendix VI for further details).

The Warden will co-ordinate and arrange regular meetings with the local Support Group at Baraka. The purpose of these meetings will be to discuss mutual problems and attempt to find amicable solutions. These meetings will also establish the lines of communication to deal with problem animals.

Resources required

Operational budget for Support Group Co-ordinator
Funds to convene workshops to discuss formation and operations of Conservancies
Transport for Support Group members to attend meetings
Logistic support to undertake PAC
4.2.5 Protection Programme

Introduction

The objective of the protection programme is to maintain the integrity of the park both in terms of law enforcement and from biophysical effects such as fire. The incidence of illegal activities appears to be low, probably as a result of the low population levels adjacent to the park. Current patrol activities are hampered by lack of vehicles and fuel. There is no fire protection system to prevent wild fires from entering the park. To address these issues, the following activities are to be undertaken.

Activity 1: Develop a law enforcement programme for Khaudum National Park

Current problems and issues

Khaudum National Park is fortunate in that there are no significant concentrations of people along its borders. The level of illegal activity is therefore low. However, this situation could change in the foreseeable future as more people are settled to the west and north of the Park. Patrolling effort is also hampered by the difficult terrain. Nonetheless it is important that a systematic law enforcement programme be established to monitor any escalation in illegal activities.

Proposed solutions

The Park has been zoned into two sections based on the park headquarters at Sikeretti and Khaudum (see Figure 2). The law enforcement programme will be based on the permanent presence of staff assigned to these stations and are equipped to undertake regular patrols. The following activities are to be undertaken:

1. All park borders are to be patrolled at least once a month on a random basis. Follow-up will be conducted on all evidence relating to unauthorised incursions of people and/or livestock into the park. Contravention of any park rules and regulations will be noted, enforced and reported. Reports of each incident will be filed with the Park Warden.

2. All park roads will be patrolled at least once a month on a random basis. Contravention to park rules and regulations will be noted, enforced and reported. Reports of each incident will be filed with the Park Warden.

3. Maintain rapid response capabilities and procedures for following up on reported incidents from other law enforcement officers, concessionaires and/or members of the general public.

4. All incident reports will, at a minimum, contain information on the area(s) affected, animals or products involved, rules/regulations contravened, names of individuals involved (if known), arresting officer, recommendations for further actions, etc. The Warden will ensure that a comprehensive file of this information is kept, analysed and utilised to assess priority areas for patrols, arrest performances of individual officers, trends in illegal activities, etc.

5. Provide a list of park regulations to all visitors as they enter the park and encourage them to report any illegal incidents they may observe.

6. Maintain a reporting structure for incidents. Reports are to be filed, maintained and analysed by the Warden.
7. The Warden will maintain liaison with the Namibian Defence Force and the Namibian Police and utilise their capabilities to deal with cross-border violations and co-operative patrolling of the borders with Botswana.

8. The Warden will maintain liaison with Botswana authorities in matters relating to the prosecution of cross-border violations.

**Implementation**

This activity will be implemented by the Rangers at the stations under direction from the Warden and Principle Ranger for Khaudum National Park using a compliment of Scouts. Using local knowledge of the Park, the senior staff at Sikeretti and Khaudum will plan regular patrols varying from one to five days. Where necessary, the Scout force can be augmented with Scouts from other stations.

**Resources required**

Uniforms, transport, weapons, radios
Patrol equipment (backpacks, water bottles, sleeping bags, tents, mosquito nets etc.)
Logistic support

**Activity 2: Fire Management Programme developed and implemented**

**Current problem and issues**

The vegetation of Khaudum National Park has been visibly modified as a result of frequent late season hot fires that burn out as much as 60% of the Park annually. The most affected areas are the Kalahari Sand Woodlands in the north of the Park where large areas have been reduced to a dense layer of shrubs. Young trees are killed, while the larger trees suffer from repeated burning, often falling over and dying.

It is suspected that most of the fires originate outside the park, yet there are no firebreaks installed to curtail or stop wild fires from entering the park nor are the staff based in the park equipped to deal with wild fires should they occur.

However, controlling the incidence of fire in Khaudum National Park is complicated by a number of factors. These area:

- The size of the park and the distances involved. The fire front can very quickly extend for over 50 km as a result of strong winds. Combating such a fire with a limited labour force is virtually impossible.
- Staff based in the Park does not have access to an aircraft that would assist them to locate and identify the extent of the fire.
- A large labour pool from which to draw contract labour at short notice does not exist.
- The heavy sandy roads hamper the quick deployment of staff, particularly if they are required to deal with a fire across a wide front.
- The fire season extends from as early as May through to late November (depending on the rainy season). This requires that staff have to remain vigilant for a prolonged time.

**Proposed solutions**

Implementing the fire management programme will be the primary activity of staff in the Park. In view of the difficulties associated with combating wild fires, the fire management programme will adopt a policy of preventing fires from entering the park rather than attempting to directly extinguish fires that do occur.
A basic fire management programme is to be established using the following guidelines (see Figure 4 below):

1. The **eastern Park boundary** and border with Botswana is to be cleared to a width of at least 18 metres, and reinforced by burning a narrow strip approximately 100m wide adjacent to the road\(^2\). Any fires that approach the Park from Botswana will be carefully monitored to ensure that they do not cross into the Park. Back burning into Botswana to protect the park will only be used as a last resort. Similarly fires threatening to cross into Botswana from the park will be controlled by back burning.

2. The **northern and western boundary** will be protected by a firebreak not less than 9m wide. These boundaries will be reinforced by burning a narrow strip approximately 100m wide on alternative sides of the road each year to avoid damage to the tree and shrub layer.

3. The feasibility of installing firebreaks up to 50km to the west of the park in the forest area is to be investigated. These firebreaks could act as the first line of defence should fires approach the park from this direction.

4. The response of the Park management authority to any significant fire approaching the park from the north or east after August will be to back burn along the park boundary.

5. The **southern boundary** with the Nyae Nyae Conservancy represents the greatest threat to the Park. In conjunction with the Nyae Nyae Conservancy, this boundary is to be protected by a firebreak not less than 9m wide and reinforced by burning a strip approximately 100m wide on alternative sides of the road each year to avoid damage to the tree and shrub layer.

6. The **internal road network** is to be used to subdivide the Park into a number of sectors. These are:
   - The main access road from Khaudum to Sikeretti dividing the park along a north-south access.
   - The north-south road passing through Dorningstraat, Leeupan, Nhoma and Soncana is to act as the first line of defence against fires that may enter from Botswana.
   - The following east-west roads are to be cleared and maintained as firebreaks (see Figure 4):
     - Baikiea, Soncana and westwards to the park boundary
     - Nhoma, Tari Kora, Dussi and westwards towards Elands Drift
     - Leeupan, Tsau and westwards to the park boundary
     - The northern boundary of the Cwiba Omaramba

7. Both internal and external firebreaks are to be cleared annually as early as possible after the end of the rainy season but not later than July. Heavy machinery (grader or caterpillar bulldozer) may be used to establish the initial firebreaks but should not be used for firebreak maintenance on an annual basis. Preference should be given to using a tractor drawn disc plough, tyre drags and limited back burning.

8. To avoid control fires escaping, all control burns of fire breaks or block burns conducted as part of an early burning programme are to be conducted during the late afternoon and/or at night. No control burns are to be attempted on windy days.

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\(^2\) If experience shows that fires are able to “jump” this fire break, the width of the burnt strip is to be increased accordingly.
9. An early burning programme is to be implemented based on the recommendations of the fire management workshop results. This programme will examine the feasibility and practicality of strategically burning blocks on a rotational basis to mitigate against late season wild fires.

10. A fire officer will be appointed from existing staff and a fire duty roster for co-ordinating operations is to be maintained during the main fire season (March to November) who will be responsible for keeping a fire register.
11. All fires inside or adjacent to the park will be investigated and action taken if necessary (or feasible). Backburning will be the preferred method of controlling wild fires.

12. Local staff will initiate co-operative programmes and actions with other fire control authorities, adjacent communities and neighbouring landowners.

13. Conservation scientists will provide for the recording of fire history in the parks. Where feasible, NOAA satellite data should be accessed to assist in this task.

**Implementation**

The Warden for the Khaudum National Park will be responsible for holding a joint workshop with key staff, including selected members from the local communities, to plan the annual fire management programme. This workshop will review the previous fire season, analyse the lessons learnt, identify problems and propose solutions to reducing the incidence of wild fires in the Park. In addition, a further workshop will be held to investigate the feasibility of implementing an early burning programme for Khaudum.

The Warden and park staff is responsible for the implementation of the programme.

**Resources required**

Annual fire management workshop with key stakeholders and local staff
Heavy machinery to establish initial firebreaks (if necessary).
Tools for firebreak maintenance (shovels, fire beaters)
Staff and casual labour to be used for clearing, maintenance and fire fighting.
Transport to move staff to scene of wild fires
4.2.6 Education, Communication and Public Relations Programme

Introduction

The Education, Communication and Public Relations Programme is responsible for increasing public knowledge and awareness of the Park and its role in conserving the Kalahari savannah woodlands. It is also responsible for ensuring that any published material is accurate and up-to-date, and that it reaches as wide an audience as possible. Outreach activities, such as school visits, are also facilitated under this programme. In addition, this programme is closely linked to activities undertaken by the Support Zone Programme.

This management programme is important at the present stage of the development of the Kalahari Conservation Area for two main reasons. The success of the Nyae Nyae Conservancy is closely linked to the development of the Park, particularly as it is still in its early stages of consolidation. It is important therefore that the park authorities develops strong lines of communication with the local communities. Secondly, there is an urgent need to attract more tourists to the park, and this can be achieved by raising the tourism profile of the park.

The activities to be undertaken to meet these objectives are discussed below.

Activity 1: Develop an education, communication and public relations programme

Current problem and issues

MET do not have a structured programme that can disseminate its goals and objectives concerning the development of Khaudum National Park to the local communities and the general public. Furthermore, there are no educational materials or handouts available for the general public. Added to this, MET are not in a position to promote or support many activities under this programme.

Proposed solution

A comprehensive Education, Communication and Public Relations Programme is to be developed in collaboration with other government agencies, non-governmental organisations, the Nyae Nyae Conservancy and private sector interests. The development of this programme will be done in close co-operation with similar activities in the other North East Parks. The programme will include, but not be limited to, the following:

- The reasons for the creation of the parks and Support Zones and the unique features therein.
- Rationale for park zoning.
- Importance of the area in terms of biodiversity and its relation to other protected areas in the region.
- Waterholes – their importance, limitations and rationale for supplementing the natural pans.
- Tourism opportunities, and how best to enjoy the wilderness characteristics of the park.
- The history of human use of the park and Support Zones.
- The role of the Nyae Nyae (and other future Conservancies) in the management of the Park.
- Soil conservation problems and the ways in which visitors may minimise their impact.
- Native plant and animal species and communities, including historical and present conditions of these resources.
The control of introduced plants and animals within the park and Support Zones and the management strategies adopted to deal with them.

The traditional role of fire in the ecosystems of the area and present fire management policy and practice.

The development of curriculum packages on the above subjects for schools within the Support Zones.

Contracting the development of tourist guidebooks for the area.

Production of materials for tourists, which include rules, regulations, park use protocols and suitable behaviour within conservation areas.

**Implementation**

Implementation of this activity is beyond the capacity of MET field staff. This activity will therefore be developed and implemented using donor funded technical assistance in cooperation with the Support Zone Co-ordinator, NGOs and the private sector. Associated government agencies, such as the Namibia Tourism Board, will also play a significant role in this activity.

**Resources required**

- Donor funded technical assistance
- Logistical support
- Short term consultancy to produce educational and tourism promotional material
- Production of educational and promotional material

**Activity 2: Develop and promote the tourism potential of Khaudum National Park**

**Current problem and issues**

Promotion of the Khaudum National Park is limited at present to a few selected commercial tour operators, brochures produced by MET and indirectly through the initiatives of the promoting the Nyae Nyae Conservancy. To justify the investment in infrastructure development, and to meet the overall objectives of improving the rural economy of the area, it is essential that this National Park be given greater exposure.

**Proposed solution**

With the assistance of the Namibia Tourist Board, relevant tour operators and the Nyae Nyae Support Group, a strategy will be developed to promote the Khaudum National Park, including the Nyae Nyae Conservancy. This strategy will consider the publication of feature articles in travel magazines, production of brochures and marketing at international tourism fairs attended by the Namibian Tourism Board. The National Tourism Development Plan will provide valuable input in this regard.

**Implementation**

Implementation of this activity will be co-ordinated by the Regional Warden in conjunction with the Directorate of Tourism and Resorts using donor funded technical assistance.

**Resources required**

- Donor funded technical assistance
- Production of promotional material
- Logistic support
4.2.7 Tourism and Visitor Programme

Introduction

The purpose of this management programme is to control and manage all tourism and visitor activities in the park. It is also the purpose of this programme to ensure that the park receives the maximum financial benefit from tourism, and that tourists adhere to any rules or regulations regarding the use of the Park. Currently there are no mechanisms in place to ensure the smooth running of tourist activities. Only limited information is available and there is little co-operation with the Nyae Nyae Conservancy. To address these issues, the following activities are to be implemented.

Activity 1: Develop and implement a tourism management programme

Current problem and issues

At present there is a very rudimentary tourism programme in place but it has many weaknesses. The more important of these are:

- There is no information available for visitors at the access roads leading to the park.
- Visitor information at the stations is sporadically available and of poor quality.
- Visitors are not made aware of the Park rules and regulations until inside the Park.
- There are no clear guidelines controlling visitor access (at present this is limited to insisting that parties travel in a convoy of at least two vehicles, but this is seldom enforced).
- Waste management at the stations is poor.
- There are no guidelines for general use of the park (e.g. commercial filming, commercial tour operators, walking safaris etc.).
- There is little co-operation with the Nyae Nyae Conservancy.

Proposed solution

A tourism management programme for Khaudum National Park is to be developed in conjunction with initiatives in the Nyae Nyae Conservancy. This programme will conform to similar tourism management programmes developed for the other North East Parks. Issues to be addressed in the management programme will include (but not be restricted to) the following:

1. Gazettement and collection of fees (to be in line with other North-East Parks). This is to include the feasibility of incorporating the Nyae Nyae Conservancy in this programme.

2. Wilderness campsites to be designated in the Park. The feasibility of establishing tented camps and/or rustic lodges at Khaudum and Sikeretti is to be investigated.

3. Control of access:
   - Only convoys of two or more 4x4 vehicles permitted.
   - No vehicles with double rear wheels and/or exceeding two tons gross mass are to be permitted in the Park
   - Speed limit of 40km per hour, especially in the south
   - No caravans permitted
   - Maximum number of vehicles in the park limited to 30 tourist vehicles at any one time
   - Only four commercial operator licenses granted for the park at any one time

4. Control of use:
   - Firewood to be obtained from stations if necessary.
• Any behaviour that is disturbing to wildlife not permitted (bright lights, noise, approaching by vehicle etc.).
• Commercial filmmakers and photographers need special permits.
• Walking safaris encouraged preferably accompanied by a qualified guide\(^3\).
• Camping only permitted at designated campsites.
• Rules and regulations regarding the wilderness campsites to be drawn up and circulated.

**Implementation**

The overall tourism management programme will be developed at a regional level, and modified to suit the conditions of Khaudum National Park. Draft procedure guidelines on tourism, visitors and concessionaires have been developed (Appendix VII). These should be modified where necessary. The Warden and other park staff will be responsible for enforcing the programme. Development of visitor materials will need to be a collaborative effort between regional and parks staff.

The Support Zone Co-ordinator, in conjunction with the Warden and Support Group, will examine the feasibility of involving individuals from the Nyae Nyae Conservancy in the promotion of tourism activities in the Park.

**Resources required**

- Entrance signs (Rundu-Katima Mulilo Road; Tsumkwe; Grootfontien turn-off)
- Receipt books
- Information materials
- Logistic support to visit local Support Groups

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\(^3\) The feasibility of using local guides from the Ju/Hoan community should not be discarded. Properly trained and organised, these guides could lead parties on walking safaris similar to those conducted in the Nyae Nyae Conservancy.
4.2.8 Research and Monitoring Programme

Introduction

The primary aim of the Research and Monitoring Programme is to provide practical solutions to management problems affecting the park. It also seeks to establish baseline data sets to monitor trends such as population numbers, climate, vegetation, fire, visitor usage, poaching and other illegal activities. In addition, specific research projects will be promoted under this programme where practical. The following activities are to be implemented.

Activity 1: Develop a strategic research and monitoring plan for Khaudum National Park

Current problem and issue

There is no structured research programme for the Khaudum National Park. Specific research projects have been carried out in the past (e.g. on behaviour and movement of lions) and sporadic aerial surveys have been conducted. There are currently no other active ecological baseline monitoring programmes in place.

Proposed solution

A structured plan for research and monitoring is to be developed. This plan will focus on addressing management problems affecting the park, and be regularly updated. Baseline inventories are to be established and designed to address management specific problems (e.g. vegetation damage near artificially supplement pans). Where possible, local staff will be responsible for data collection. The following monitoring programmes identify some of the options to be considered.

a Fire: The park is regularly burnt out by wild fires. Little is known about the source of these fires or who causes them (honey gatherers?, hunters?). Neither do fire-fighting techniques exist nor are there any records of previous fire history. The monitoring programme should examine the source of fires and where best to concentrate the efforts to reduce the incidence of fire. Using the data gathered each year, this monitoring programme should lead to the establishment of a fire break system that could incorporate a controlled early burning programme.

b Climate: Records of rainfall and temperature should be monitored in the park.

c Monitoring population numbers: Although a regional aerial survey is planned, local staff can keep a record of the number and location of key species. These data can be analysed to provide an index of whether the populations are increasing or decreasing.

e Collation of incidents of illegal activity with patrol effort: The success of the protection programme can be measured by keep a record of the number of patrol nights relative to the number of illegal incidences recorded.

f Monitor the impact of tourism activities in the park.

Where possible, local staff will be responsible for data collection. Large mammal surveys will be conducted as part of the regional aerial survey programme that will include the Nyae Nyae Conservancy and the area to the north and west of the Park (see following activity).

Research into problems specific to the Khaudum National Park (i.e. elephant damage to vegetation, fire management) are to be developed as projects that can be carried out using
existing staff. Research personnel from academic institutions will be encouraged to carry out in-depth studies identified under the strategic plan.

**Implementation**

The Senior Conservation Officer based at Sikerette will be responsible for formulating research plans for the Khaudum National Park. In doing so, he/she will liaise with the Warden to identify research and monitoring projects that specifically address management issues. Research proposals developed as a result are to include equipment and manpower needs, and cost estimates.

**Resources required**

Input from Warden and Conservation Scientist
Logistical support

**Activity 3**  Design and undertake aerial surveys of the Khaudum National Park, Nyae Nyae Conservancy and adjacent areas to the north and west of the Park.

**Current problem and issues**

The Kalahari Conservation Area, including the Nyae Nyae Conservancy supports a variety of important wildlife populations in Namibia, including one of the largest elephant populations. Monitoring the growth (or decline) of this population is one important aspect of this management plan, especially as this population is actively hunted by commercial sport hunters in adjacent conservancies.

Furthermore, the thrust of the North East Parks Project is to improve the socio-economic environment of local communities in the area through the development of the North East Parks. This can only be achieved if the status wildlife populations in the area increase leading to increase use of the area by tourists. To achieve this, MET will be investing in the development and management of the North East Parks, particularly in its Protection programme. The effectiveness of this programme cannot be assessed if it is not possible to monitor trends of the key wildlife populations in the area.

**Proposed Solution**

Aerial surveys of the entire Kalahari Conservation Area will be undertaken every alternate year in conjunction with similar surveys in the Kwando - Linyanti Conservation Area. Alternative year. The surveys will be implemented by qualified staff from the Division of Specialist Services in Windhoek. Local parks staff are to be involved wherever possible, particularly the Senior Conservation Officer.

**Implementation**

A stratified systematic transect sampling technique is to be applied for the survey using a 4 or 6 seater aircraft (Cessna 182, 185 or 206 or equivalent) equipped with a radar altimeter and Global Positioning System. The surveys are to be conducted between August and October. Two observers experienced in aerial survey techniques will call out animal sightings to a recorder/navigator who will note their position from the GPS, the species and the number. The recorder will also note the height a.g.l every 30 seconds from the radar altimeter to allow the calculation of the mean height of each transect, and also the time that the transect started and ended.

The area will be stratified based on previous surveys, and the strata are to remain constant as far as possible to allow comparisons between years. Sampling intensity will be determined by
the mean density of elephants (or another species if the this is warranted) determined over 3 years according to the distribution of $a \sqrt{d}$ where:

\[
\begin{align*}
    a & = \text{Stratum Area} \\
    d & = \text{Mean density}
\end{align*}
\]

Transects in each stratum will be spaced according to the required sampling intensity, using a randomly selected starting point. The angle of orientation of transects in each of the stratum will be selected so as to cross ecologically important features at right angles.

The aircraft will be calibrated to provide strip widths of up to 150m either side of the aircraft at a height of 300ft above ground level. The strip width is to be demarcated using streamers or other suitable markers.

Analysis of the data will be the responsibility of the aerial survey co-ordinator, and the data will be disseminated to all interested and affected parties.

**Resources Required**

Funds to undertake aerial survey (hire aircraft, purchase fuel, local transport, subsistence, report production and dissemination)

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### 5  PLANNING MATRIX FOR KHAUDUM NATIONAL PARK

<table>
<thead>
<tr>
<th>OVERALL OBJECTIVE</th>
<th>INDICATOR</th>
<th>MEANS OF VERIFICATION</th>
<th>ASSUMPTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. To offer Namibian citizens the opportunity to experience and understand the biological diversity of the northern Kalahari savannah woodland habitats.</td>
<td>Number of tourists visiting the park in Year 3 have increased compared to Year 1</td>
<td>Annual reports and tourism statistics</td>
<td>No natural catastrophes (droughts, fire).</td>
</tr>
<tr>
<td>2. To provide opportunities that increase awareness, appreciation, positive relations, economic benefits and compatible land uses with neighbouring communities.</td>
<td>Wildlife numbers increase</td>
<td>Ground and aerial survey reports</td>
<td></td>
</tr>
<tr>
<td>2.2. Benefits to the Nyae Nyae Conservancy</td>
<td></td>
<td>Support Zone annual reports</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>RESULTS</th>
<th>INDICATORS</th>
<th>MEANS OF VERIFICATION</th>
<th>ASSUMPTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Staff permanently based in the Park with the necessary infrastructure, equipment and budgets to carry out their mandate.</td>
<td>Staff permanently resident in the park</td>
<td>Competent staff in place</td>
<td>MET able to recruit staff</td>
</tr>
<tr>
<td></td>
<td>Annual budgets</td>
<td>Annual reports</td>
<td>Adequate recurrent budgets provided</td>
</tr>
<tr>
<td></td>
<td>Staff housing in place</td>
<td>Physical inspection of infrastructure</td>
<td></td>
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<tr>
<td></td>
<td>Support infrastructure in place</td>
<td>Vehicles maintained, equipment functional</td>
<td></td>
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<tr>
<td>2. Incidence of wild fires reduced</td>
<td>Firebreaks in place</td>
<td>Annual report indicate extent of areas burnt</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Staff adequately equipped and trained to deal with wild fires</td>
</tr>
<tr>
<td>3. Co-operation with Nyae Nyae Support Group improved</td>
<td>Record of number of meetings held each year remains constant or increases</td>
<td>Annual Reports</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Responding to PAC</td>
<td>Minutes of meetings</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Record of PAC reports</td>
<td></td>
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<tr>
<td>4. Game water supplies improved</td>
<td>Clean water available at natural pans</td>
<td>Physical inspection of boreholes</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Number of working boreholes</td>
<td></td>
<td>Competent and efficient maintenance programme in place.</td>
</tr>
</tbody>
</table>

### 1. ADMINISTRATION PROGRAMME ACTIVITIES

<table>
<thead>
<tr>
<th>ACTIVITIES</th>
<th>MEANS</th>
<th>RESOURCES</th>
<th>ASSUMPTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1 Appointment of a Warden and support staff specifically for Khaudum National Park</td>
<td>Staff recruited by MET</td>
<td>Funding to cover costs of recruitment</td>
<td>Suitable qualified and experienced staff available</td>
</tr>
<tr>
<td></td>
<td>Posts advertised</td>
<td></td>
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<tr>
<td>1.2 Develop a permit system and fee structure in conjunction with the Nyae Nyae Conservancy.</td>
<td>Review of fee structure</td>
<td>Short term consultancy</td>
<td>Nyae Nyae Conservancy and other stakeholders agree to this approach</td>
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<td></td>
<td>Workshop to discuss results</td>
<td>Stationary</td>
<td></td>
</tr>
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<td></td>
<td>Permit systems/ receipts</td>
<td>Training</td>
<td></td>
</tr>
<tr>
<td>1.3 Design and implement training programme for all levels of staff</td>
<td>Training needs assessment</td>
<td>Funds to attend training programmes</td>
<td></td>
</tr>
</tbody>
</table>
# 2. INFRASTRUCTURE DEVELOPMENT PROGRAMME ACTIVITIES

<table>
<thead>
<tr>
<th>ACTIVITIES</th>
<th>MEANS</th>
<th>RESOURCES</th>
<th>ASSUMPTIONS</th>
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SEE VOLUME 3: INTEGRATED DEVELOPMENT PLAN FOR THE KWANDO CORE AREA FOR DETAILS.

Activities to include:
- Upgrade of staff accommodation
- Manufacture and placement of appropriate signs
- Construction of entry gate and office accommodation
- Upgrade of tourism facilities
- Installation and renovation of game water supplies.

# 3. MAINTENANCE PROGRAMME ACTIVITIES

<table>
<thead>
<tr>
<th>ACTIVITIES</th>
<th>MEANS</th>
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<th>ASSUMPTIONS</th>
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# 4. SUPPORT ZONE PROGRAMME ACTIVITIES

<table>
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<tr>
<th>ACTIVITIES</th>
<th>MEANS</th>
<th>RESOURCES</th>
<th>ASSUMPTIONS</th>
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# Management Plan for the North East Parks

Khaudum National Park Management Plan

Planning Matrix
<table>
<thead>
<tr>
<th>ACTIVITIES</th>
<th>MEANS</th>
<th>RESOURCES</th>
<th>ASSUMPTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.1 Develop law enforcement programme for Khaudum National Park</td>
<td>• Boundary patrols</td>
<td>• Game scouts</td>
<td>• Equipment and staff available</td>
</tr>
<tr>
<td></td>
<td>• Road patrols</td>
<td>• Patrol equipment</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Rapid response</td>
<td>• Weapons</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Reporting structures</td>
<td>• Transport</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Liaison</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Training of game scouts</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.2 Fire Management Programme developed and implemented</td>
<td>• Prepare annual fire management programme</td>
<td>• Planning workshop</td>
<td>• Installation of additional firebreaks completed</td>
</tr>
<tr>
<td></td>
<td>• Prepare boundary fireguards</td>
<td>• Grader</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Prepare internal firebreaks</td>
<td>• Contract labour</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Investigate and deal with wild fires</td>
<td>• Transport</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Record fire history</td>
<td>• Tools</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>ACTIVITIES</th>
<th>MEANS</th>
<th>RESOURCES</th>
<th>ASSUMPTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.1 Develop an education, communication and public relations programme</td>
<td>• Technical assistance to develop programme</td>
<td>• Donor funded technical assistance</td>
<td>• Promotion of Khaudum National Park justified</td>
</tr>
<tr>
<td></td>
<td>• Production of educational material</td>
<td>• Logistic support</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• PRO material</td>
<td></td>
</tr>
<tr>
<td>6.2 Develop and promote the tourism potential of Khaudum National Park</td>
<td>• Develop promotional strategy</td>
<td>• Donor funded technical assistance</td>
<td>• Donor support</td>
</tr>
<tr>
<td></td>
<td>• Production of brochures and other materials (maps etc.)</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>ACTIVITIES</th>
<th>MEANS</th>
<th>RESOURCES</th>
<th>ASSUMPTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.1 Develop and implement a tourism development and management programme</td>
<td>• Entry gate manned</td>
<td>• Short term consultancy</td>
<td>• Tourist levels increase</td>
</tr>
<tr>
<td></td>
<td>• Tourist information provided</td>
<td>• Entrance gate</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Fee structure gazetted</td>
<td>• Stationary (permits, receipt books)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Campsites prepared</td>
<td>• Tourism information</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Game viewing hides</td>
<td>• Training for staff</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Radio communications</td>
<td></td>
</tr>
<tr>
<td>8.1 Develop a strategic research and monitoring plan for Khaudum National Park.</td>
<td>• Formulate research and monitoring programme</td>
<td>• Conservation Scientist recruited</td>
<td>• Availability of research staff</td>
</tr>
<tr>
<td></td>
<td>• Develop research proposals</td>
<td>• Logistic support to Conservation Scientist</td>
<td></td>
</tr>
<tr>
<td>8.2 Design and undertake aerial surveys of the Khaudum National Park, Nyae Nyae Conservancy and adjacent areas to the north and west of the Park</td>
<td>• Hire aircraft</td>
<td>• Research staff</td>
<td>• Suitable aircraft available</td>
</tr>
<tr>
<td></td>
<td>• Purchase fuel</td>
<td>• Budgets</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Local transport</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Subsistence allowances</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Survey design</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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6 RECURRENT AND OPERATIONAL BUDGETS

The recurrent and operational budgets for the Khaudum National Park have been derived based on the staffing structure of the park and the individual management programmes. These costs are usually met under the recurrent expenditure of government funding. The assumptions used to derive these costs are provided, together with the costs of the various inputs.

The Basic Recurrent Costs consider:

- Staff salaries
- Field allowance
- Equipment (uniforms, camping, radios etc)
- Mileage
- Training

The Operational Costs required to implement the individual management programmes are identified, including the assumptions used to derive the operational budgets.

These data are presented below and summarised in Volume 3: Integrated Development Plan for the Khaudum National Park to indicate the overall cost of developing and managing the Park.

6.2 Recurrent Costs for the Management of the Khaudum National Park

The assumptions used to develop the recurrent costs for Khaudum National Park are:

- Field scouts are expected to be on patrol for up to 25 days per month. Labourers may accompany them. A field allowance is to be paid as an incentive to ensure proper patrolling.
- Officers are expected to spend up to 10 days per month in the field. Junior officers are to lead patrols. Both are entitled to the field allowance.
- All staff is to be provided with patrol rations. This is calculated at N$360/man month.
- Uniforms are treated as consumables because they are generally worn out after one year.
- Camping equipment is written off after two years.
- One VHF radio is to be provided for every five scouts, and each officer should have a radio. Radio handsets to be replaced every four years.
- A lump sum is provided for base station and repeater links.
- Every scout and every officer should be armed.
- A lump sum is provided to cover costs for implements for labourers (picks, shovels etc.).
- An allowance of 4 000km per month for each 4 x 4 vehicle will provide for all necessary travel within the park and allow one trip to a major centre per month.
- The mileage allowance for the 5-tonne lorry will be limited to 2 500km per month. This includes one trip per month to a major centre to collect materials.
- The provision for the tractor assumes it will be used on average 175 hours per month.
- The mileage provision for reporting to the Regional and Head Office will be shared amongst senior officers, including travelling for training.
- A lump sum is allocated for vehicle repairs/maintenance.
- The cost/kilometre includes depreciation.
- The running cost for diesel-powered borehole pumps and generators assumes that this equipment will operate 6 hours per day.
- Each station will receive a bulk fuel supply (up to 10 000 litres). Frequency and volume of supply will depend on number of vehicles on station.
- A lump sum provision is provided for all routine house maintenance (painting, plumbing, electrical repairs etc.).
- Provision is made for all scouts to undergo 14 days training either in service or elsewhere in Namibia once annually.
- Provision is made for senior officers to undergo 28 days training annually. This could involve travel to outside of Namibia but within the southern African region.
**Maintenance of firebreaks, road construction and rehabilitation**

The total length of road in the Khaudum National Park will not be increased over the next five years. The boundary cutline will double as the major external firebreak for the park, and reinforced with a 100m strip burnt on alternate sides of the boundary each year.

- All tourist roads will be maintained to a standard which most tourists are prepared to endure in a 4 x 4 vehicle, and which allow staff to carry out their daily duties. Major mechanical equipment inputs are not envisaged, nor construction of major earth works, culverts, bridges etc.
- Roads will be maintained by a labour gang using normal implements (pick, shovel, grass cutter) and aided by a tractor/trailer/tow grader/mower.
- Firebreaks will be cleared sufficiently to allow easy travel by 4 x 4 vehicle.
- The cost of road maintenance is based on the assumption that a labour gang of 15 people can clear one kilometre of road in one day. The cost for a year of operation is as follows:

<table>
<thead>
<tr>
<th>Inputs</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wages: 15 labourers @ N$200/month</td>
<td>N$  36 000</td>
</tr>
<tr>
<td>Field allowance: N$6/day x 15 labourers x 365</td>
<td>N$  32 850</td>
</tr>
<tr>
<td>Ration allowance: N$6/day x 15 labourers x 365</td>
<td>N$  32 850</td>
</tr>
<tr>
<td>Implements: 15 labourers @ N$200 each</td>
<td>N$  3 000</td>
</tr>
<tr>
<td>Tentage: 3 x 5-man tents @ N$3 000 each</td>
<td>N$    9 000</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>N$113 700</strong></td>
</tr>
</tbody>
</table>

**COST/KM/YEAR**

**N$311**

**ADJUSTED FOR 15% DOWN TIME**

**N$360**

- The cost of installing firebreaks assumes that a contract labour gang can prepare 10km of roads/firebreaks per day. The cost/km is therefore calculated at N$36/km.
- Mileage is provided to transport labourers, and for use of tractor.
- Provision is made for the hire of a grader or bulldozer for those portions of the road/firebreak which are beyond the capacity of hand labour.

A summary of the basic recurrent costs and operational costs per management programme are provided in Table 4 and 5. The basic recurrent costs are approximately N$2 million per year. A further N$500 000 to N$800 000 will be required to implement the overall management programme.

This translates to an overall cost/km² of approximately N$2 100 to N$2 300/km² (or US$350 – US$390¹). This is similar to the accepted rate of US$300/km² used as a guide by park authorities in southern Africa illustrating the effect of the size of the park on the economies of scale of managing protected areas in southern Africa.

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¹ Assumes an exchange rate of US$1 : N$6.00
Insert Spread sheet Table 4 and 5 here
APPENDIX I

NORTH-EAST PARKS PROJECT

MINISTRY OF ENVIRONMENT AND TOURISM

MISSION STATEMENT AND CONSERVATION GOALS
Ministry of Environment and Tourism - Mission Statement and Conservation Goals

The vision statement for Khaudum National Park is tempered by the mission and conservation goals of the Ministry of Environment and Tourism. These state:

It is the mission of the Ministry of Environment and Tourism...

“To maintain and rehabilitate essential ecological processes and life support systems, to conserve biological diversity and to ensure that the utilisation of natural resources is sustainable for the benefit of all Namibians, both present and future, as well as for the international community.”

— Mission Statement and Mandate of the Ministry of Environment and Tourism, May 1994 —

Further to this mission...

“it is the policy of the Ministry of Environment and Tourism to ensure adequate protection of all species and subspecies, of ecosystems and of natural life support processes, by means of:

1. inventories, monitoring and appropriate research,
2. education and extension,
3. managing, and assisting and advising in the management of land and natural resources in Namibia,
4. legislation,
5. co-operation with local, national, regional and international organisations working for biotic diversity and habitat protection.”

— Conservation of Biotic Diversity and Habitat Protection, May 1994 —

Additionally, the Government of the Republic of Namibia recognises “the key role that protected areas play in the conservation of ecosystems, essential ecological processes and biological diversity. The Government also recognises that these are the primary objectives for the establishment and management of protected areas,” and within this context it is the policy of the Government to:

“Manage protected areas in ways which are sensitive to the needs and aspirations of people whose lives are impacted or affected by these areas, giving particular attention to promoting their socio-economic development, promoting communication and consultation and providing preferential opportunities in order to meet obligations for the establishment of mutually compatible land uses on an equitable basis particularly with regard to people removed from their land or denied access to key resources through the establishment of a protected area.”

— Parks and Neighbours: A policy for linking Namibian protected areas with neighbouring people and sharing protected areas with resident communities, January 1998 —

With the promulgation of this mission and clarifying policies the Government has defined the criteria for protected area management in Namibia and set the stage for the establishment and prioritisation of the goals for the development and management of the North-East Parks...

Through the promulgation of its mission and policies the government has established that the primary purpose of the North-East Parks is to act as conservation areas. Secondary is the recognition that these parks can also serve to enhance local economies and increase the quality of life in neighbouring communities. In addition, they are a tourism product, playing a
role in the national economy and serving as a window through which the world views Namibia’s conservation ethic (Table 1).

**Table 1: Primary and secondary conservation goals for Namibian National Parks.**

<table>
<thead>
<tr>
<th>Primary Goals</th>
<th>1. To maintain and, where necessary, rehabilitate areas or features essential to the functioning of ecological processes.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2. To conserve biological diversity.</td>
</tr>
<tr>
<td></td>
<td>3. To conserve and manage renewable natural resources for sustainable production.</td>
</tr>
<tr>
<td></td>
<td>4. To provide opportunities for expanding understanding of biological diversity, ecological processes and the effects of management actions.</td>
</tr>
<tr>
<td>Secondary Goals</td>
<td>1. To provide opportunities that increase awareness, appreciation, positive relations, economic benefits and compatible land uses in neighbouring communities.</td>
</tr>
<tr>
<td></td>
<td>2. To facilitate, promote, develop, administer, co-ordinate and/or manage a range of opportunities to enhance visitor experiences with Namibia’s natural environments and optimise economic returns from these resources.</td>
</tr>
<tr>
<td></td>
<td>3. To provide Namibian citizens the opportunity for aesthetic, educational and recreational experiences at affordable cost.</td>
</tr>
</tbody>
</table>

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APPENDIX II

NORTH-EAST PARKS PROJECT

BACKGROUND AND INVENTORY

KHAUDUM NATIONAL PARK
Legal Framework

The proposed Khaudum National Park was gazetted as a game reserve in 1989 (Government Gazette No. 5667). The protected status of the area was made possible by an agreement between the Humbukushu Tribal Authority, the administration for the Kavango District and the MET (then Department of Nature Conservation). The park covers an area of 3,841 km² bounded on the east by Botswana and on the south by the Nyae Nyae Conservancy.

Environmental Baseline

Topography and Hydrology

Khaudum National Park is relatively flat and crossed in an east-west direction by two major omiramba – the Cwiba/Khaudum omuramba in the north and the Nhoma omuramba in the south (Figure 1). There are numerous smaller omiramba and many pans scattered throughout the park. None hold water through the dry season unless artificially supplemented. There are 13 boreholes in the park (Figure 1).

Figure 1: Location of pans with boreholes and pumps in Khaudum National Park in relation to major omiramba (left) and roads (right)

Vegetation

Khaudum National Park is broadly divisible into two major vegetation zones based on the underlying geology. The north is largely composed of *Burkea* woodlands of variable density on Kalahari sand while the south is shrubland on soils derived from the Nosib group quartzites (Table 1; Figure 2). The dunes have been degraded in some areas and are only recognisable from the vegetation.

Temporary wetland development over deep Kalahari sands is usually limited to interdune areas where drainage is impeded by clays or calcrites. These wetlands are often localised and...
There are peat fires in the Khaudum/Cwiba omuramba which have apparently been burning for decades.

### Table 1: Broad vegetation units for Khaudum National Park

<table>
<thead>
<tr>
<th>VEGETATION TYPE</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>WOODLANDS</strong></td>
<td></td>
</tr>
<tr>
<td><em>Burkea</em> Woodland</td>
<td>Moderately dense to open woodland, dominated mainly by <em>Burkea africana</em>, with a small tree/shrub/grass layer of variable height and density (depending on fire regime). This vegetation type covers most of the northern half of the park and common trees (apart from <em>Burkea</em>) are <em>Guibortia coleosperma</em>, <em>Pterocarpus angolensis</em>, <em>Dialium englerianum</em> and <em>Schinziophyton rautanenii</em>. The shrub layer is variable but common species include <em>Ozoroa longipes</em>, <em>Bauhinia massaiensis</em> and <em>Grewia falcistipula</em>. Common grasses include <em>Tristachya superba</em> and <em>Schmidtia pappophoroides</em>.</td>
</tr>
<tr>
<td><em>Terminalia</em> Woodland</td>
<td>Dense <em>Terminalia prunoides</em> forest with a lower layer of shrubs which include <em>Croton gratissimus</em>, <em>Dichrostachys cinerea</em>, <em>Acacia luederitzii</em> and <em>A. mellifera</em>.</td>
</tr>
<tr>
<td><em>Baikiaea</em> Woodland</td>
<td>Moderately dense to open woodland dominated by <em>Baikiaea plurijuga</em>. Common in the south on dune crests. Other common trees are <em>Terminalia sericea</em>, <em>Acacia ataxacantha</em>, <em>Commiphora angolensis</em>, <em>Combretum</em> and <em>Combretum</em> species. <em>Sclerocarya birrea</em> occurs in some areas. The shrub layer is comprised of <em>Grewia retinervis</em>, <em>Croton gratissimus</em> and <em>Bauhinia petersiana</em>. Common grasses include <em>Schmidtia pappophoroides</em>, <em>Urochloa</em> and <em>Digitaria</em> species.</td>
</tr>
<tr>
<td>Open Woodland</td>
<td>Moderately dense to open woodland on shallow redistributed sands. Similar to <em>Burkea</em> Woodland.</td>
</tr>
<tr>
<td><strong>SHRUBLANDS</strong></td>
<td></td>
</tr>
<tr>
<td>The shrublands are treated as one type on the map but there are two sub-types based on substrate; hard loams and hard loams overlying quartzite/sandstone. Species common to both include <em>Acacia mellifera</em>, <em>A. luederitzii</em>, <em>Combretum hereroense</em>, <em>Croton gratissimus</em>, <em>Peltophorum africanum</em>, <em>Terminalia sericea</em> and <em>Grewia flava</em>. <em>Combretum apiculatum</em>, <em>Catophractes alexandrii</em> and <em>Mundulea sericea</em> appear to be more common in those areas with loams overlying quartzite/sandstone substrate.</td>
<td></td>
</tr>
<tr>
<td><strong>GRASSLANDS</strong></td>
<td></td>
</tr>
<tr>
<td>Omiramba Grassland/Wetland</td>
<td>Seasonal water courses (omiramba) and pans in hardveld clay/loam. Common grasses are <em>Bothriochloa</em> species, <em>Diplachne fusca</em>, <em>Imperata cylindrica</em>, and <em>Cyperus longus</em>. <em>Phragmites</em> species are common in Cwiba/Khaudum omuramba.</td>
</tr>
<tr>
<td>Interdunal Grasslands</td>
<td>Depressions or interdunal valleys, with shrubs and trees – scattered, moderately dense or clustered at sides – and with tall termitaria, in hardveld clay/loam. Scattered trees include <em>Combretum imberbe</em>, <em>C. hereroense</em>, <em>Acacia</em> species and <em>Ziziphus mucronata</em>. Grasses are <em>Heteropogon contortus</em>, <em>Eragrostis superba</em>, <em>E. trichophora</em>, <em>Hyperthelia dissoluta</em>, <em>Schmidtia pappophoroides</em>, <em>Bracharia nigropedata</em> and <em>Digitaria</em> species. Features of the area are grasslands that are floristically similar to the interdunal grasslands but are on elevated ridges with scattered trees and shrubs.</td>
</tr>
<tr>
<td><strong>MOSAIC WOODLAND</strong></td>
<td>Limited distribution in the catchment area of an omuramba tributary in the west of the park. Wooded islands dominated by <em>Acacia erubescens</em> occur alongside grasslands subject to occasional inundation. Other woody species include <em>Acacia</em> and <em>Combretum</em> species, <em>Ziziphus mucronata</em> and <em>Peltophorum africanum</em>. Common grasses are both wetland species (e.g. <em>Eragrostis rotifer</em>, <em>Panicum coloratum</em>) and species typical of intermittently flooded grasslands (e.g. <em>Hyperthelia dissoluta</em> and <em>Hyperhena filpendula</em>). There is no pronounced shrub layer.</td>
</tr>
</tbody>
</table>
Fire is an important modifier of plant vigour and coverage but does not appear to affect species composition. Elephant browsing has resulted in stunting of species such as *Combretum collinum*, *C. hereroense*, *Terminalia sericea* and *Baphia massaensis*, either by height trimming, branch stripping or root excavation, but there is little evidence of extensive damage.

**Figure 2: Broad vegetation types for the Khaudum National Park**
Fauna

Khaudum National Park contains the typical northern Kalahari fauna, but also supports several water-dependent species (elephant, kudu, wildebeest, roan) on a year round basis because artificial sources of water are supplied.

At times there are an estimated 800 elephants in the park but these numbers fluctuate seasonally. During periods of water scarcity elephants dominate the artificial water sources to the exclusion of other species which are often left with dirty, unpalatable water to drink.

Other important species in the park are giraffe, gemsbok, kudu and roan but none of these are at high densities. Lions also occur at low densities as do wild-dog (see previous section for aerial survey data).

Socio-economic Baseline

The Nyae Nyae Conservancy lies immediately south of the park. There are also a few small villages in omiramba valleys to the north and west but most of these are a considerable distance from the boundary.

Administration and Infrastructure

There are two MET stations within Khaudum National Park: Khaudum Station in the north and Sikeretti Station in the south. Infrastructure at both stations is in a dilapidated state.

Khaudum Station has seven Buffalo huts and three Bavaria huts for staff accommodation. There is an office, storeroom and garage (the latter two being pig-meshed fenced shelters rather than solid buildings). The station has one light four-wheel drive vehicle and one heavy Mercedes truck. A tractor is also on station with a mower attachment. Visitor accommodation is restricted to two chalets in poor condition and a campground. No camping is allowed elsewhere in the park except at Sikeretti Station.

Sikeretti Station has ten Buffalo huts and four Bavaria huts for staff. There is a simple office, storeroom and garage complex. The station has one 4X4 vehicle and a tractor. Visitor facilities are comprised of three chalets in poor condition and a campground. There are separate ablutions for the chalet area and the campground.

All 13 boreholes in Khaudum National Park have solar pumping systems except for a diesel-powered pump at the Khaudum Station borehole. Protection of the pumps and solar panels is limited to a trench and an electric fence. This has prevented elephants from destroying the pumps but it has not prevented theft of solar panels. Maintenance of these installations is inadequate and may be a factor in the low population densities of some water-dependent species.

Staffing

Nine staff are assigned to Khaudum Station while Sikeretti Station has a staff compliment of twelve. Both stations are administered from the Rundu Headquarters.

Monitoring and Enforcement

Faunal lists are not included with the document as comprehensive listings applicable to the entire North East Region were prepared for the proposed Okavango National Park (Management and Development Plans for the Okavango National Park held by the MET).
Monitoring and enforcement are minimal and appear to be limited to road patrols by vehicle. The park is divided into two management zones. The northern zone being managed from Khaudum Station and the southern zone from Sikeretti Station. The main staff responsibilities are to maintain the roads open and boreholes. This is often not accomplished.

Communications

There are currently 720 km of road within the park (Figure 3). Road segments have been named and categorised into two classes for management purposes (Table 2):

Class 1  **Prime Game Viewing Road** – roads located in wildlife concentration areas and suitable for tourist traffic.

Class 2  **Management/Transit Road** – roads located outside wildlife concentration areas and/or unsuitable for tourist traffic.
Figure 3: Roads in the Khaudum National Park
Table 2: Roads in the Khaudum National Park.

<table>
<thead>
<tr>
<th>NAME</th>
<th>DESCRIPTION</th>
<th>KM</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Class 1 (Tourist) Roads</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Entrance Road</td>
<td>Between park boundary and Cwiba omuramba</td>
<td>6.5</td>
</tr>
<tr>
<td>Cwiba Road</td>
<td>Road following Cwiba omuramba to Khaudum omuramba junction</td>
<td>32.5</td>
</tr>
<tr>
<td>Camp Road</td>
<td>Between Cwiba and Khaudum omiramba (2 routes)</td>
<td>14.0</td>
</tr>
<tr>
<td>Khaudum Road</td>
<td>Cwiba/Khaudum omiramba junction to Botswana border</td>
<td>20.0</td>
</tr>
<tr>
<td>Khaudum South Road</td>
<td>Road following Khaudum omiramba to junction with Cwiba</td>
<td>25.5</td>
</tr>
<tr>
<td>Tsau Road</td>
<td>Between the Khaudum omiramba and Leeupan West/East Roads junction</td>
<td>20.5</td>
</tr>
<tr>
<td>Burkea Road</td>
<td>Between Tsau road and Burkea pan</td>
<td>3.5</td>
</tr>
<tr>
<td>Leeupan West Road</td>
<td>Between Tsau Road junction and Elandsvlakte North Road</td>
<td>14.0</td>
</tr>
<tr>
<td>Leeupan East Road</td>
<td>Between Tsau Road junction and Leeupan</td>
<td>14.5</td>
</tr>
<tr>
<td>Doringstraat West Road</td>
<td>Between Cwiba Road and Doringstraat Pan-Western route</td>
<td>19.0</td>
</tr>
<tr>
<td>Doringstraat East Road</td>
<td>Between Cwiba Road and Doringstraat Pan-Eastern route</td>
<td>14.0</td>
</tr>
<tr>
<td>Doringstraat South Road</td>
<td>Between Doringstraat Pan and Leeupan.</td>
<td>14.5</td>
</tr>
<tr>
<td>Tari Kora Road</td>
<td>Between Leeupan and Tari Kora Pan</td>
<td>22.0</td>
</tr>
<tr>
<td>Dussi Road</td>
<td>Between Leeupan (E/W) roads and Nhoma roads (E/W)</td>
<td>21.0</td>
</tr>
<tr>
<td>Nhoma East Road</td>
<td>Between Nhoma Pan and Dussi/Soncana North road junction</td>
<td>22.5</td>
</tr>
<tr>
<td>Nhoma West Road</td>
<td>Between Dussi/Soncana North road junction and Elandsvlakte</td>
<td>18.0</td>
</tr>
<tr>
<td>Elandsvlakte North Road</td>
<td>North of Elandsvlakte to the west cutline</td>
<td>20.0</td>
</tr>
<tr>
<td>Elandsvlakte South Road</td>
<td>South of Elandsvlakte to Kremartart West Road</td>
<td>17.0</td>
</tr>
<tr>
<td>Soncana East Road</td>
<td>Between Soncana Pan and Nhoma Pan</td>
<td>33.0</td>
</tr>
<tr>
<td>Soncana West Road</td>
<td>Between Soncana Pan and the West Cutline</td>
<td>21.5</td>
</tr>
<tr>
<td>Soncana North Road</td>
<td>Between Soncana Pan and the Nhoma Roads</td>
<td>27.5</td>
</tr>
<tr>
<td>Kremartart West Road</td>
<td>Between the Soncana West Road and the West Cutline</td>
<td>24.5</td>
</tr>
<tr>
<td>Kremartart East Road</td>
<td>Between the Kremartart West Roan and Kremartart Pan</td>
<td>8.0</td>
</tr>
<tr>
<td>Airstrip Road</td>
<td>Between Sikeretti airstrip and Tsoana road</td>
<td>3.5</td>
</tr>
<tr>
<td>Tsoana Road</td>
<td>Between Soncana Pan and the South Cutline</td>
<td>29.0</td>
</tr>
<tr>
<td>Sikeretti Road</td>
<td>Between Soncana Pan and the South Cutline</td>
<td>14.0</td>
</tr>
<tr>
<td><strong>Class 2 (Management) Roads</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>North Cutline</td>
<td>Northern boundary of the park</td>
<td>30.0</td>
</tr>
<tr>
<td>East Cutline</td>
<td>Eastern boundary of the park (Botswana border)</td>
<td>95.0</td>
</tr>
<tr>
<td>West Cutline</td>
<td>Western boundary of the park</td>
<td>87.0</td>
</tr>
<tr>
<td>South Cutline</td>
<td>Southern boundary of the park</td>
<td>49.0</td>
</tr>
</tbody>
</table>

There are 459 km of Class 1 (Prime Game Viewing Road) within the Khaudum National Park. Only the 261km of cutline are Class 2 (Management/Transit Road). All roads are sand tracks and suitable for 4X4 vehicles only. If Khaudum National Park is to continue to be managed for wilderness experiences it will require application of the government’s “low density, high quality” tourism policy. In this park, visitor density is best regulated by limiting the number of campsites and applying strict booking procedures.

There is one non-serviceable airstrip in the Khaudum at Sikeretti. The strip would need to mowed and checked before being used. Both Khaudum and Sikeretti Stations are in radio contact with Rundu.
**Tourism**

Estimates of visitor numbers are incomplete. However, at least 1,500 people visited the park during 1997. Eighty percent of this visitation occurred between June and September and higher numbers of visitors were recorded at Khaudum than at Sikeretti.

**Tourism Potential**

The tourism potential for Khaudum National Park lies in the unique wilderness characteristics of the area. The fact that access is difficult merely increases the attraction to the “adventure tourism” segment of the market. It is crucial to maintain the opportunities for wilderness experiences and solitude.

**Hunting**

Khaudum does not have a hunting quota at present. Game densities are low and hunting should not be permitted in this park in the future.
APPENDIX III

NORTH-EAST PARKS PROJECT

CONCEPTS OF PARK ZONATION
GENERAL CONCEPTS OF ZONATION

The purpose of subdividing a protected area into "zones" is to facilitate the management objectives of the park. It also defines the type of activities that can or cannot take place in the "zone". Zonation is therefore a double process:

a. A park is zoned for management purposes. This could apply to factors such as fire management, removal of animals, protection of sensitive habitats etc. These zones would therefore define what management actions are required to achieve the objectives. For example, an objective may be to prevent wild fires from entering a particular zone.

b. A park is zoned for visitor use. This implies that the park management will allow access to different zones of the protected area based on set criteria. For example, a zone may feature a popular tourist attraction, and will be managed to accommodate large numbers of tourists. Alternatively, the park management may not want large numbers of tourists to enter a particular area thus conserving its "wilderness" or "wild" ambience. Access to such areas will therefore be limited to relatively few tourists.

The net result of the above approach is that two "zonation maps" are produced which overlay each other to define the various zones. These zones are then used to develop the management strategies of the park. The number of zones identified will depend on the complexities of the protected area. Ideally, a number of variables are used to determine the characteristics of the zone. These would include:

- Rating of the area as a tourist attraction
- Habitat sensitivity
- Dispersal capacity of the area
- Tourist behaviour
- Location of support staff
- Management capability of staff
- Financial status of management authority
- Visitor satisfaction

The present degree of management capability and data gathering sophistication that exists in the MET in the North East Parks does not warrant a complex zonation process. For this reason, only three "zonation" categories were identified under the Phase I planning process. These appear in the Okavango National Park Management Plan as:

- Special Protection Zone
- Natural Zone
- Development Zone

With time, and as the capacity of the North East Parks management increases, it will be possible to define additional management zones that meet the objectives of the protected areas.

For the purpose of this planning process, the zonation criteria will follow that adopted under Phase I. The description, restrictions, goals and objectives of the three categories are provided in the following table.
## Description of the three zonation categories used in the planning process

<table>
<thead>
<tr>
<th>ZONE</th>
<th>DESCRIPTION</th>
<th>RESTRICTIONS</th>
<th>GOALS AND OBJECTIVES</th>
</tr>
</thead>
</table>
| Special Protection Zone | This zone comprises the unique, valuable and sensitive features that are either of high ecological sensitivity and/or high conservation value. Location is independent of distance from the park boundaries and permanent constructions. No infrastructural development may take place within these zones. Restrictions relating to these areas may be permanent, seasonal, intermittent or incidental. Access to this zone is severely restricted. | • The areas may only be accessed by MET staff for management purposes, for purposes of research and monitoring (registered projects only) and for educational purposes subject to the approval of the Regional Head.  
• Outside research scientists may only access these areas if they are working on approved research and monitoring programmes.  
• No vehicle access may take place. Access to riverine habitats by boat is permissible. Only essential management of these areas is envisaged and the priority for park staff would be the restriction of access and the collection of monitoring data.  
• Management for the sake of tourism is not permissible and controlled tourism access may be permitted but should be minimal. | • Maintain essential ecological processes and life support systems, conserve biodiversity and genetic diversity;  
• Maintain and preserve areas or features essential for ecological processes intrinsic to the functioning of the parks;  
• Protect unique habitats, species, aquatic systems and ecological processes associated with the parks; and  
• Provide opportunities for research and monitoring to further understand processes within the parks. |
| Natural Zone          | This zone is characterised by being essentially unmodified, except through natural processes. No infrastructure development will be allowed, except for limited management and tourism facilities and access roads. Any infrastructural developments in this area will be subject to the EA procedure (at an appropriate level) as laid out in the National Policy on Environmental Assessment. | • No camps/lodges permitted  
• Off-road driving not permitted  
• Walking not permitted unless accompanied by a registered guide | • Conserve a representative sample of the bioclimatic region in a state relatively unaltered by man and to use the area as a benchmark;  
• Provide a tourism environment which is less restrictive and which allows for the broadest possible base of potential users; and  
• Generate economic benefits and opportunities, while not compromising the conservation and ecological objectives of the North East Parks. |
### Description of the three zonation categories used in the planning process

<table>
<thead>
<tr>
<th>ZONE</th>
<th>DESCRIPTION</th>
<th>RESTRICTIONS</th>
<th>GOALS AND OBJECTIVES</th>
</tr>
</thead>
</table>
| Development Zone  | This zone comprises all areas of infrastructure development, roads, staff accommodation, fire-breaks, entrance control facilities, airfields, tourism facilities, private camps and management facilities (e.g. game-capture holding pens). All future developments within this zone are required to be approved by the Planning Committee after submission of a full motivation. An EA (as laid out in the National policy on EA) may have to be done before such a development takes place. Large areas cannot be classified as Development Zones as this would compromise the primary conservation and ecological objectives of the parks. | Permission required to live in this zone | • Generate economic benefits and opportunities, while not compromising the conservation and ecological objectives of the parks;  
• Provide an environment in which innovative tourism opportunities and tourism experiences can be optimised through a combination of activities;  
• Provide the infrastructural framework for research and monitoring to take place in an effective and efficient manner, such that processes within the park are better understood; and  
• Provide an enabling management infrastructure through which the park staff will be able to carry out their duties.                                                                                                                                                                                                                                                                                                                                 |


APPENDIX IV

NORTH-EAST PARKS PROJECT

PROCEDURE GUIDELINES ON PERSONNEL ADMINISTRATION
Procedure Guidelines on Personnel Administration

All staff engaged by MET and stationed in a National Park are expected to maintain the highest standard of conduct, efficiency and personal behaviour. They are also expected to be courteous, helpful and attentive in their dealings with the general public.

The following guidelines are provided on personnel administration

a  **Conduct of staff members:**

No staff member shall perform or engage himself or herself to perform remunerative work at any time outside his or her employment with the government unless granted permission to do so by the permanent secretary.

b  **Dress code:**

It is the responsibility of supervisors to ensure that all staff members who are required to wear a uniform on duty do so, and that they comply with instructions issued in that respect.

c  **Acceptance of gifts or benefits:**

A staff member shall not accept any gift or benefit, pecuniary or otherwise, offered to him or her by any person by reason of him or her occupying a particular office or post in the MET.

d  **Use of government vehicles:**

No staff member shall drive a government vehicle unless he or she is in possession of a valid driver’s license, and has permission from a competent staff member to make the journey concerned. A staff member who has been granted permission to drive a government vehicle shall not:

- Deviate from the authorised route,
- Take the vehicle to his or her place of residence unless he or she has permission in writing from the appropriate authority to do so,
- While undertaking any journey with such vehicle;
- allow any unauthorised person to travel; or
- convey any unauthorised goods.
- Use such vehicle for any purpose other than official purposes,
- Drive such vehicle while under the influence of intoxicating liquor or stupefying drugs;
- Commence a journey until the appropriate entry has been made in the log book of such vehicle.

e  **Official hours of attendance:**

The Warden is responsible for the observance by staff members under his or her supervision of the official hours of attendance as established. A staff member shall at all times during his or her official hours of attendance be present for duty at his or her place of work and give his or her full attention to the duties entrusted to him or her.

A staff member shall not, without the consent of his or her supervisor, be absent from his or her place of work during his or her official hours of attendance.

f  **Duties of a supervisor:**

It is the duty of every supervisor to supervise his or her subordinates and to take appropriate action in every case of breach of any of the provisions of the *Public Service Act, 1995*, the
Regulations under the Public Service Act, 1995 and/or staff rules as adopted by MET. A supervisor who fails to comply with this duty shall be deemed to have been negligent in the performance of his or her duties.

g Misconduct:

Any staff member shall be guilty of misconduct if he or she;

- Disobeys, disregards or makes wilful default in carrying out any lawful order given to him or her by any person authorised to do so, or by word or conduct shows insubordination,
- Is negligent or indolent in the performance of his or her duties,
- Operates or undertakes, without the approval of the Prime Minister, any private agency or private work in regard to any matter directly or indirectly related to the performance of his or her official functions or any matter directly or indirectly related to the field of operations of the office, ministry or agency in which he or she is employed or fails to declare that any member of his or her household operates or undertakes any such private agency or private work,
- Uses his or her position in the Public Service or utilises any property of the State to promote or prejudice the interests of any political party,
- Uses his or her position in the Public Service or utilises any property of the State to promote or prejudice the interests of any private business or private agency, except in the performance of his or her official duties,
- Conducts himself or herself in a disgraceful, improper or unbecoming manner causing embarrassment to the MET or to the Public Service or, while on duty, is grossly discourteous to any person,
- Uses intoxicating liquor excessively or uses stupefying drugs without a prescription of a medical practitioner resulting in his or her incapacity to perform his or her duties efficiently,
- Uses or is under the influence of intoxicating liquor or stupefying drugs during the prescribed official hours of attendance without a prescription of a medical practitioner,
- Accepts or demands in respect of the performance of or the failure to perform his or her duties any commission, fee or reward, pecuniary or otherwise, to which he or she is not entitled by virtue of his or her office, or fails to report forthwith to the permanent secretary the offer of any such commission, fee or reward,
- Misappropriates or improperly uses any property of the State,
- Absents himself or herself from his or her office or official duties without leave or valid cause,
- With a view to obtain any privilege or advantage in relation to his or her official position or his or her duties, or to cause prejudice or injury to the government or any office, ministry or agency or any member of the Public Service, makes a false or incorrect statement, knowing it to be false or incorrect,
- Contravenes or fails to comply with any provision relating to his or her employment or conditions of service, or contravenes of fails to comply with any provision of a prescribed code of conduct.
Procedure Guidelines on Law Enforcement

Parks staff will ensure the provisions of *Nature Conservation Ordinance 4 of 1975* and all subsequent amendments as well as all Ministry of Environment and Tourism rules and regulations are effectively applied. Toward this end:

a  **With regard to control of illegal activities by tourists:**

- Provide a list of all the most applicable (and contravened) park regulations to all visitors as they enter the park. Point these regulations out to visitors on handing them their park entry permit, guidebook and map and encourage them to report illegal incidents they observe.
- Maintain a reporting structure for incidents. Reports are to be filed, maintained and analysed by the Warden.

b  **With regard to contractual contravention’s by concessionaires:**

- Exclusions from any regulations and sections of the *Nature Conservation Ordinance 4 of 1975* and subsequent amendments must clearly and unambiguously be stated in any concessionary agreement or contract.
- Contravention of park rules and regulations will not be tolerated. Three written warnings (together with the appropriate fine) for minor contravention’s, such a driving off designated roads, are to be given before going to review of a concessionaire’s agreement. Major contravention’s, such as illegal hunting in a park, will result in immediate loss of concession.

c  **With regard to poaching and other illegal activities:**

- All park borders are to be patrolled at least once weekly on a random basis. Follow-up will be conducted on all evidence relating to unauthorised incursions of people and/or livestock into the park. Contravention’s of any and all park rules and regulations will be noted, enforced and reported. Reports of each incident will be filed with the Warden.
- All park roads will be patrolled at least twice weekly on a random basis. Contravention’s to park rules and regulations will be noted, enforced and reported. Reports of each incident will be filed with the Warden.
- Maintain rapid response capabilities and procedures for following up on reported incidents from other law enforcement officers, concessionaires and/or members of the general public.
- All incident reports will, at a minimum, contain information on the area(s) affected, animals or products involved, rules/regulations contravened, names and addresses of individuals involved (if known), arresting officer, recommendations for further actions, etc. The Warden will ensure a comprehensive file of this information is kept, analysed and utilised to assess priority areas for patrols, arrest performances of individual officers, trends in illegal activities, etc.

d  **With regard to cross-border contravention’s:**

- The Warden will maintain liaison with the Namibian Defence Force and the Namibian Police and utilise their capabilities to deal with cross-border violations and co-operative patrolling of the borders with Botswana and/or Angola.
- The Warden will maintain liaison with Botswana and/or Angola authorities in matters relating to the prosecution of cross-border violations.
APPENDIX V

NORTH-EAST PARKS PROJECT

PROCEDURE GUIDELINES ON INFRASTRUCTURE DEVELOPMENT
PROCEDURE GUIDELINES FOR INFRASTRUCTURE DEVELOPMENT

Procedure guidelines on design, placement and construction of firebreaks:

Fire-breaks on park boundaries are to be at least eighteen metres in width (this is a double fire-break). Internal fire-breaks are to be at least nine metres in width. Internal fire-breaks should follow natural features or ecotones which may act as natural fire-breaks. Road locations should be considered in the context of roads also serving as fire breaks.

Fire-breaks should be cleared and/or burnt annually as early in the calendar year as possible but no later than July. For the maintenance and monitoring of fire-break condition see policies on roads, tracks, trails and paths.

Heavy machinery may be used to establish fire-breaks, but should not be used in fire-break maintenance.

A fire officer will be appointed from existing staff and a fire duty roster for co-ordinating operations maintained during the main fire season (April to October).

Park staff will initiate co-operative programmes and actions with other fire control authorities, adjacent communities and neighbouring landowners.

Conservation scientists will provide for the recording of fire history in the parks.

Procedure guidelines on buildings, temporary structures, power supplies and equipment:

All buildings will be designed and placed in line with the primary objectives of the park and the level of facility development shall be in accord with park plans.

All structures will be designed and placed as unobtrusively as possible so as to not detract from the natural landscape, scenic beauty or ecological integrity of the parks. Whenever possible, natural barriers will be used to screen facilities from general view.

All buildings will be assigned a registration number and a maintenance record kept by the Warden.

All buildings will be inspected annually by the Warden.

Annual maintenance priorities will be assigned, motivated and budgeted. Buildings will be prioritised as follows:

- Staff housing and accommodation
- Administrative buildings and stores
- Plant buildings and structures (e.g. pump house)
- Workshop and maintenance areas.

Where appropriate the Warden will consider annual service contracts to the private sector for building (and other capital items) maintenance. This will be done on the basis of an analysis of the most cost-effective options for maintenance.

Power supply infrastructure and development will be designed to cause minimal ecological, visual and/or aesthetic impact. Underground lines are to be utilised in preference to overhead lines where feasible.

Domestic power supplies will be separately metered and the costs borne by occupants.
The Warden will ensure that temporary structures are removed on completion of the task for which they were constructed. Additionally, he or she will ensure that the site is fully rehabilitated and cleaned after completion of assigned tasks.

The Warden will designate sites within the park (consistent with the park zonation scheme) to specific tasks which are repeated regularly (e.g. game capture). These sites, activities, or structures will not conflict with park goals and objectives.

Equipment will be issued to individuals who will be held responsible for the items and their maintenance and servicing.

Training in the use of sophisticated equipment is compulsory for all users.

**Procedure guidelines on potable water for parks staff:**

No toilets, ablution facilities or water-based service facilities are to be positioned within 100m of a borehole or other primary water source.

Game capture pens and bomas must not be placed within 100 m of a borehole or other primary water source.

Water quality testing is done by NamWater, Private Bag 13389, Windhoek. A one litre sample of the water to be tested must be delivered in a closed glass container.

**Procedure guidelines on water supply management:**

The Warden will ensure that all water abstraction infrastructure is unobtrusive and blends in with the surroundings as best possible. Every effort should be made to suppress exhaust noise at installations using diesel or petrol engines. Solar installations should be used where possible.

No water abstraction for non-park purposes is permitted.

The provision of artificial water points for wildlife within the parks must be preceded by an Environmental Assessment in which the ecological framework for that supply must be given the fullest consideration.

Artificial water points for wildlife must not be constructed near (<2 km) park boundaries where there is a potential for conflict with surrounding communities or land-uses.

No barriers or obstructions of any type may be built on drainage’s.

A monitoring programme must be developed at each artificial water point for wildlife. Wildlife species and numbers, seasonality of use and the effects on vegetation (at varying radii around the water point) are to be assessed in terms of whether the water point is achieving a stated management objective.

Adequate protection measures against damage and theft must be developed for installations.

Development of water sources for wildlife carries with it the responsibility to ensure that these sources do not fail the wildlife which becomes dependent upon them. All sources of water for wildlife will be inspected, and maintenance performed if necessary, at least weekly throughout the dry season (or year round during droughts).
Procedure guidelines on sewage disposal facilities:

Soak pits for waterborne sewerage should not be built within 100 m of a borehole or water source to avoid contamination. Developments on the river margin must ensure that pits do not cut through the permanent water table.

No chemical toilets will be allowed within the park. Concessionaires should be made aware of this restriction.

No direct discharge of human wastes into any of the parks’ perennial or seasonal rivers are allowed under any circumstances.

No open water, evaporation pan sewerage treatment systems are allowed within the parks.
APPENDIX VI

NORTH-EAST PARKS PROJECT

PROCEDURE GUIDELINES ON NEIGHBOURING COMMUNITY RELATIONS
PROCEDURE GUIDELINES ON NEIGHBOURING COMMUNITY RELATIONS

The Warden in conjunction with the Support Zone Co-ordinator and other park staff will promote the establishment and development of conservancies by providing assistance to communities within Support Zones by:

- Providing information to emerging Conservancy Committees with regard to the process and procedure for formation
- Forwarding applications through the appropriate channels
- Providing information to Conservancy Committees with regard to economic opportunities related to wildlife and the conservation of the park,
- Providing technical support to Conservancy Committees to assist in management issues such as problem animal control, identifying potential lodge sites, etc.
- Providing technical support for the development of long term management plans for Conservancies including land use plans.
- Supporting non-governmental organisations in assisting communities with the establishment and development of Conservancies.
- Training Conservancy members in modern techniques for natural resource management.

The Support Zone Co-ordinator will develop a comprehensive understanding of the conditions within the Support Zones and the environments in which they exist by:

- Documenting available socio-economic information particularly with regard to local livelihood strategies and traditional social structures.
- Documenting existence of non-governmental organisations (if any) and other conservation and development organisations operating within Support Zones to the parks.
- Documenting historical claims to the land on which parks are located.
- In conjunction with the Conservation Scientist, conducting joint research and establishing an information sharing system which combines indigenous knowledge and modern science in order to establish sustainable levels of resource use and harvest within Support Zones.
- Identifying and documenting the different natural resource user groups operating within the conservation area.
- Identifying how other government departments can assist communities with the development of Conservancies and conservation activities.
- Identifying and documenting current and probable conflict points between the management of the parks and neighbours.

The Support Zone Co-ordinator will, in conjunction with appropriate park staff, private interests and non-governmental organisations, identify and promote a range of economic opportunities that can be associated with the parks. This will include:

- Providing technical support to link tourist development between the park and Conservancies to diversify the tourist products available to local communities.
- Identifying sites to establish community operated craft and curio shops at park entrance gates and/or visitor centres.
• Exploring opportunities for Community Game Guard walking safaris within the parks.

_The Support Zone Co-ordinator_ will, in conjunction with the appropriate park staff will develop mechanisms to improve and formalise communications between parks and stakeholders regarding policies, objectives and processes. This will be accomplished by:

• Maintaining close liaison with Support Zones and Conservancies.

• Developing guidelines and procedures to enable Support Zone residents to use selected natural resources, where sustainable use levels have been determined by the Conservation Scientist and the park and neighbouring Conservancy Committees have established and agreed a set of rules governing the use of these resources. These rules will establish;

  • Who can harvest,
  • How much material can be harvested by each person,
  • When it can be harvested,
  • Where it can be harvested,
  • What techniques and instruments can be used,
  • Who will be responsible for checking on use,
  • What will be the procedures for dealing with those who abuse this privilege.

• Promoting labour intensive maintenance programmes (roads, construction, _etc._) so as to maximise local employment opportunities.

• Presenting changes in park plans, policies or management strategies for comment and contributions from Conservancy Committees.

• Establish a protocol for problem animal control in Support Zones by:

  • Providing support to Community Game Guard programmes operating within Support Zones.
  
  • Supporting Conservancies and Support Zones in establishing, where necessary, electrified fencing around vulnerable fields.
  
  • Investigating cattle keeping practices and providing support for improved techniques for kraal building.

Developing a rapid response procedure for dealing with problem animal complaints.
APPENDIX VII

NORTH-EAST PARKS PROJECT

PROCEDURE GUIDELINES ON TOURISM, VISITOR AND CONCESSIONAIRES
PROCEDURE GUIDELINES FOR TOURISM, VISITORS AND CONCESSIONAIRES

**Tourism will be encouraged** in the parks where it is not in conflict with the purposes for which the parks were established and the goals and objectives thereof. Emphasis will be placed on low density and high quality tourism.

**Visitor access will be controlled,** or if necessary restricted, by Special Protection Zone designation of any areas where there are unique, valuable and sensitive features that are either of high ecological sensitivity and/or high conservation value and may be impacted by visitor use.

**Visitor activities and numbers will be monitored** in the parks and carrying capacities assessed. If deemed necessary, the numbers of individuals and/or vehicles will be regulated. At such time as this becomes necessary, it is essential that a centralised booking system be established for all North-East Parks.

**Commercial, promotional or documentary filming** will be allowed in the parks subject to proper permitting and the approval of the Warden.

**The use of private boats will be monitored** and controls introduced where it is established that such use is resulting in accelerated bank erosion, pollution and/or significant conflict with wildlife or other park user groups. A maximum speed of 10 km per hour will apply to all private watercraft used within the parks.

**Any commercial operation** utilising the parks is subject to the provisions of the Nature Conservation Ordinance and its regulations. A limited number of commercial operators that can offer high quality services consistent with the mission, goals and objectives of the parks will be permitted to operate therein. Such operations will be conducted within terms and conditions defined by the Warden.

Once granted, the terms and conditions applicable to the concessionaire will be made available to all staff members within the park as well as affected Conservancies, such that the management of the concession agreement can be carried out with the minimum conflict between parties.

Ministry of Environment and Tourism personnel will consult with outside tourism interests in the areas involved to ensure development of tourism which is appropriate to and in harmony with park goals and objectives.

**Commercial operations** within the parks will be monitored to ensure that permit conditions are be adhered to and to assess the relevance and quality of the services provided. The information collected will be used to evaluate any application for lease and/or permit renewal.

Commercial operators utilising the parks must ensure their customers are aware of possible dangers and the rules of proper behaviour.

**Firewood** for use within any campground or picnic site must be from sources outside the parks.

**Park Entrance.** The Warden will ensure those officials at all park entrance and registration facilities are aware of and charge current park tariff structures and that the current tariff structures are clearly displayed at entrance gates and reception facilities.

The Warden will ensure that all visitors to the park are provided with a list of park regulations as well as pertinent information about the park and its natural resources.
The Warden will ensure that rules and regulations are posted in prominent places at visitor reception facilities.

*Walking safaris* will be encouraged in the North-East Parks if visitors are accompanied by a qualified guide.

Guides undertaking walking safaris in the North-East Parks need to be holders of a “Big Game” Professional Hunters Licence as stipulated in the Nature Conservation Ordinance.

*Visitor densities* will be regulated by the approved management plan for each protected area.
NAMIBIA
Ministry of Environment and Tourism

NORTH-EAST PARKS PROJECT
VOLUME 3
KHAUDUM NATIONAL PARK
INTEGRATED DEVELOPMENT PLAN

Dated: 15th January, 1999
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1 INTRODUCTION

Development of the North-East Parks is a priority of the Ministry of Environment and Tourism. They are important for a number of reasons, including biological diversity protection, maintenance of ecological systems, income generation and rural development. The north-east region is currently underdeveloped, with limited agricultural potential and virtually no mineral or industrial potential, yet strategically located in terms of tourism. Development of these parks is therefore one of the few options for economic expansion.

Under Phase II of the Planning Phase: North-East Parks Programme, management plans have been prepared for Mamili National Park, Mudumu National Park, Kwando Core Area, Khaudum Game Reserve and Mangetti Game Camp.

The background information regarding the biophysical, ecological, legal, socio-economic and infrastructure characteristics of these North-East Parks is provide in Volume 1. The Management Plans detailing the management of the specific parks is given in Volume 2. This document, Volume 3: Integrated Development Plan for the Khaudum National Park, uses Volume 1 and Volume 2 to develop the investment programme for the Khaudum National Park, and access its potential income from tourism.

A Master Integrated Development Plan summarises all the IDPs for the individual parks to indicate the elements required for the planning of a larger scale management and development programme for the North East Parks.

1.1 Structure of this document

The objective of the Integrated Development Plan is to elaborate on:

1. An investment programme for actions that are required to develop the parks' potential in an economically viable and sustainable way.

2. Summarise the capital budgets, including revenue potentials.

3. Present a chronogramme (or schedule) for implementing the development programme.

The development programme itself is summarised in a planning matrix that adopts a log frame format. The Capital Budgets are presented using a spreadsheet format, and consider the costs for infrastructure development over a 5-year period. These are presented in the Appendices together with a summary of capital and recurrent costs, and a schedule of implementation.
2  BUDGET REQUIREMENTS FOR KHAUDUM NATIONAL PARK

In terms of the management plan, a Warden is to be appointed for the Khaudum National Park who will be responsible for the administration and management of the Park. All field staff will reside in the park and be based at either Sikeretti (the Park HQ) or Khaudum, and be answerable to the Warden. At present, the staff compliment consists of five Rangers, four Scouts, one operator/driver and 11 labourers.

The operational budgets needed in protected areas in southern Africa are determined by the number of men required for effective patrolling to deter illegal activities, and undertake routine management. Despite the establishment of effective community wildlife programmes in areas adjacent to national parks, there is still the ever-present threat from illegal hunters who may come from further afield in search of meat and other natural resource products. As a general rule the number of men required is related to the size of the park as follows (after Martin, 1997):

\[
N_s = \sqrt{A}
\]

- where A is expressed in square kilometres.

The number of men also determines the annual running costs (made up of salaries, field allowances, equipment, transport, maintenance costs etc.). Allowing for variations in salaries and other costs from country to country in the region, the operational costs are approximately given by the formula:

\[
C_R = US\$50 \left( 1 + \frac{2}{A} + \frac{3}{\sqrt{A}} \right)
\]

Similarly, capital requirements are also dependent on the total staff complement in the park but vary depending on building costs across the region. The required capital per unit area is approximately given by the formula:

\[
C_C = US\$500 \left( 1 + \frac{1}{A} + \frac{1}{\sqrt{A}} \right)
\]

Where A = thousands of square kilometres (i.e. A = 1 = 1000km\(^2\)).

These formula suggest the recurrent and capital expenditure required to manage and develop a park of 1000km\(^2\) will require US\$300/km\(^2\) and US\$1 500/km\(^2\) respectively.

The table below illustrates these relationships.

<table>
<thead>
<tr>
<th>Park size (km(^2))</th>
<th>50</th>
<th>150</th>
<th>500</th>
<th>1000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of men</td>
<td>7</td>
<td>12</td>
<td>22</td>
<td>32</td>
</tr>
<tr>
<td>Total Recurrent Cost</td>
<td>136 041</td>
<td>165 595</td>
<td>231 066</td>
<td>300 000</td>
</tr>
<tr>
<td>Total Capital Cost</td>
<td>636 803</td>
<td>768 649</td>
<td>1 103 553</td>
<td>1 500 000</td>
</tr>
</tbody>
</table>

These budgets represent a threshold: where the state provides annual operating budgets equal to or greater than the amounts given in the table, there can be some certainty that the protected area will be adequately managed and conserved. Where budgets are lower than the amounts given, it is almost certain that the park management authority will not be able to protect the resources of the park.

Furthermore, these data illustrate the very high cost of developing and managing relatively small-protected areas. The cost of equipping and manning small protected areas cannot

---

1 "Effective" patrolling is defined by the requirement that illegal activities are detected in less than two days.
escape from the economies of scale associated with large protected areas. The general rule of thumb is that recurrent and capital costs should be in the order of magnitude of US$300/km$^2$ and US$1,500/km$^2$ respectively.

However, in reality, protection agencies are very rarely provided with “optimal” budgets, and very often have to compromise. The approach adopted here is to present the “optimal” budgets required to develop and manage the Khaudum National Park. In preparing these budgets, consideration has been given to the fact that this Park does not face a potential threat from large scale poaching given its remote location. The budgets do however, take into consideration the difficulties associated with administering and managing the park in a remote and hostile environment. The budgets thus derived therefore serve as an indication to government (and donors) of the level of funding required to management this area so as to achieve its objectives.
3 INTEGRATED DEVELOPMENT PLAN FOR KHAUDUM NATIONAL PARK

The Integrated Development Plan for the Khaudum National Park is to be implemented over a five-year period. The estimated capital costs take into consideration expenditures such as:

- Staff housing
- Other buildings (workshop, entrance gates etc)
- Expansion of tourist facilities
- Road construction
- Vehicles
- Firearms
- Workshop/office equipment
- Water supplies
- Power/fuel supplies
- Wildlife introductions (or removals)

3.1 Capital Costs for the Development of the Khaudum National Park

The following assumptions are used to derive the capital costs for the infrastructure development programme.

- Two Scouts will share a house with two bedrooms, central mess area and an external kitchen.
- Four labourers will be housed in one "barrack" unit.
- Principle Rangers have a two-bedroomed house with sitting room/dining room, shower and toilet.
- Gate Guards have the same style of house as Senior Scouts.
- Ablution blocks consist of three showers and three toilets and are intended to be shared by up to 25 people.
- The office space provides space for the Warden, Ecologist, Support Zone Co-ordinator and Principle Ranger. Senior Rangers would not necessary enjoy a room to themselves. Clerks and Typists to have separate offices.
- The basic design of the entrance gate will include a lockable office, reception area and toilet facilities. Solar power will be optional.
- Provision is made for nominal office furnishing for each office.
- The number of 4 x 4 vehicles is calculated in the basis of 1 vehicle per 5 scouts. All vehicles will be diesel powered.
- Each park and will be allocated at least one 5-tonne lorry. Parks greater than 500km² will be provided with an additional vehicle for every 500km² (i.e. a 1 000km² park will be allocated two lorries).
- Each park will be allocated one tractor, trailer and tow grader. Mowers and disc ploughs are optional. Parks greater than 500km² will be provided with an additional tractor/trailer combination for every 500km² or part thereof (i.e. a 1 000km² park will be allocated two tractor/trailers).
- The size of the workshop/storeroom complex has been made proportional to number of field staff scouts on station.
- A flat allowance is made to kit the workshop out with tools.
- Provision is made for game water supplies for a number of boreholes plus pumps calculated on the basis of one unit to 500km² (this implies a radius of approximately 10km for each water point)
- Provision is made for one 50kva generator per station.
- A lump sum is provided to translocate wild animals to or from the park.

The capital costs are provided in Appendix I, and summarised together with the Recurrent and Operational Costs in Appendix II. Assuming that the entire programme is implemented, it is

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2 Recurrent and operational costs for the Management Programmes are provided in Volume 2, and summarised in Appendix II
estimated that approximately N$11.84 million will have to be invested in the park over the 5-year period. Most of these investments will occur in the first three years (80%).

When these costs are combined with the estimated recurrent and operational costs (see Appendix II), it is estimated that approximately N$32.7 million will be required to develop and manage Khaudum National Park over the 5-year period. The bulk of the expenditure (approximately N$22 million) will be required in the first 3 years of this plan.

Given the remote location of the park and the need for expensive equipment, the bulk of this expenditure will be made on procuring equipment (N$7 million) and meeting the logistical costs (N$9.4 million). Other major expenses include staff salaries (N$3.4 million) and construction of housing and other buildings (N$2.9 million).

This translates to an overall cost/km of N$1 321 – 2 418/km² (or US$220 – 404).  

3.2 Infrastructure Development Programme

Introduction

All infrastructure development in Khaudum National Park will be co-ordinated under this management programme. This includes construction of any buildings, staff accommodation, entry gates, signs, water (both domestic and game water supplies), power (including fuel supply), sewerage, fire breaks etc. Procedure guidelines on design, placement and construction of infrastructure developments are provided in Appendix V. Where possible, the implementation of any major construction programmes will be outsourced following an analysis of the most cost effect options.

Infrastructure development in Khaudum National Park is poor. Staff accommodation is inadequate and facilities to deal with tourists are poor. The objective of the Infrastructure and Development Programme is therefore to address this problem. This will be accomplished through the implementation of the following activities.

Activity 1: Upgrade staff accommodation and facilities at Sikeretti and Khaudum Stations, and procure necessary equipment (vehicles, radios, firearms, uniforms etc.).

Current problem and issues

The accommodation facilities at Sikeretti and Khaudum are inadequate. Housing consists of dilapidated “Buffalo” and “Bavaria” huts that are not conducive to the harsh living conditions. Facilities to store equipment or undertake minor engineering repairs are either non-existent or inadequate. Similarly equipment such as vehicles, tractors and lorries are in a poor state of repair.

Proposed solution

The present staff accommodation is to be replaced with housing units designed for the hot, dry conditions. Although various options are available, consideration should be given to using pre-fabricated houses. In this way, the logistical difficulties of importing building material (sand, crushed stone, cement, window and doorframes etc.) can be avoided.

The existing “Bavaria” huts could be used for other purposes, as many are still structurally sound.

---

1 Assumes an exchange rate of US$1 : N$6.00
When designing and constructing staff housing, the following points are to be taken into consideration:

- The area’s main climatic characteristics are heat and dryness. The area has a high intensity of direct solar radiation plus an added factor of high levels of reflected radiation from the ground. High diurnal and annual temperature ranges are prevalent.
- Low humidity levels and generally low precipitation are features of the local climate. The area has low average wind speeds contrasting with occasional violent wind storms. A large portion of the area has a sandy environment.
- Uncomfortable living and working conditions are created by the extreme heat and dryness. Flies, sand and dust storms need to be counteracted. All building must therefore be adapted to summer conditions i.e. protected from intense radiation from the sun, ground and surrounding buildings.
- Buildings are to be designed where reduction of heat takes precedence over air circulation during the daytime. Measures are to be taken to reduce glare and to prevent dust and insect penetration.
- Buildings are to be designed to take advantage of the prevailing weather conditions (i.e. have courtyards, wide patios and large roof overhangs). No mechanical ventilation systems will be required.
- The largest dimensions and windows should face south. West faces of buildings should have no openings or windows. Eastern faces may have openings, but must be kept to a minimum. Non-inhabitable rooms (e.g. storerooms) should be located on the western side of the buildings to form a thermal barrier.
- Rooms are to be rectangular, with the narrow width as the external wall. They are to have high ceilings and ideally open on to a patio of indoor courtyard. Heat producing areas, such as kitchens, should be isolated and separately ventilated.
- Outdoor areas should contain plants and be shaded most of the day. Paved surfaces should be avoided wherever possible. Provision is to be made for outdoor sleeping (a patio screened with gauze is ideal).
- Windows are to be relatively small, particularly on outside walls and must be shielded from direct radiation and glare. Ventilation during daytime must be kept to a minimum, but designed for good ventilation at night.
- Direct sunlight on workspaces is to be avoided.
- Walls facing north and west (i.e. exposed to direct sunlight) must be thick and solid. They are to be shielded by large eaves and by vegetation. Generally walls of 600mm thickness is sufficient to provide heat sink capabilities.
- The exterior is to be painted white to make them as reflective as possible
- Roof should be thatched where possible. The ceiling space is to be open to allow for maximum ventilation.

Housing Specifications

The following specifications are provided as a guide for the construction of a purpose build 1-bedroom or 2-bedroom house.

a **Construction**

If it is not possible to use pre-fabricated houses, the following specifications should apply:

- Bricks or blockwork walls
- Floors – Cement screed
- Walls – Woodfloat cement plaster
- Steel frame windows and doors, and plasterboard ceiling.
- Limited electrical installation is to be installed to facilitate solar powered lighting.
- Kitchen installation to include a stainless steel sink, wooden shelving, one steel cabinet unit.
b  Room sizes

- One-bedroom (with built in cupboard)  16m²
- Two-bedroom (with built in cupboard)  13m²
- Bathroom (possibly with shower only)    5m²
- Toilet (with washbasin)        2m²
- Living room (lounge/dining)            30m²
- Kitchen (including pantry/storeroom)  12m²
- Circulation/cupboards             6m²

Total       84m²

Veranda (optional)     18m²
c  Sewerage and water reticulation

- Sewerage disposal is to consist of septic tanks. A reliable water reticulation system is to be installed.

The complex is to be provided with a power generator (staff housing is to be equipped with solar power), and basic workshop facilities incorporating a storeroom and overhead fuel tanks are to be constructed.

The workshop facilities capable of undertaking simple engineering and mechanical works (welding, engine/pump repairs, vehicle repairs, carpentry etc) are to be installed. A storeroom to protect bulk supplies (cement, building material and other hardware) not exceeding 10m x 20m is to be constructed within the vicinity of the workshop. Overhead fuel tanks are to be installed³.

Equipment Specifications

The harsh sandy conditions of the park requires that 4 x 4 vehicles, lorries and tractors are the most practical means of transport to move about the park. This equipment is expensive to purchase and maintain.

The policy regarding equipment in the park shall be that it is multi-purpose in its functions. Tractor and 4-wheel trailer combinations will be the preferred mode of transport to move labour and Scouts about the park on routine maintenance programmes (firebreaks, road maintenance, borehole maintenance etc). A heavy duty 4 x 4 lorry (minimum 5-tonne capacity) is also to be procured to transport bulk materials, particularly fuel, to the park. The types of vehicles to be considered are:

- 4 x 4 pickups (Toyota, Isuzu, Nissan, Mitsubishi)
- 4 x 4 lorries (Mercedes 4500, Volvo, Leyland)
- 4 x 4 Tractors Minimum 100hp (John Deere, Ford, Duetz)

Whatever decision is made, it is important that the transport fleet not be fragmented by purchasing different makes and models of various vehicles.

Implementation

The rehabilitation of Sikeretti and Khaudum Camps is to be co-ordinated by the Regional Warden in conjunction with the Warden and officials from the Ministry of Works. Siting of the various facilities will be the responsibility of the Warden, using the guidelines provided in Appendix V. Construction will be out-sourced wherever possible.

³ The difficulty of supply bulk fuel to Khaudum must be taken into consideration. In this regard, the feasibility of using a purpose build fuel bowser that can be loaded onto a heavy-duty lorry should be considered. The bowser itself can be detachable so that the vehicle can be used for other purposes.
Resources required

Building materials  
Funding to engage contractors  
Solar power and associated equipment  
Electric generator  
Basic workshop tools  
Radio communication system  
Funds to remove unwanted infrastructure  
Funds to procure equipment

Activity 2: Manufacture and erect appropriate information signs both inside and outside the Park at access points.

Current problem and issues

Khaudum National Park lies in a remote, harsh environment. Basic infrastructure and services such as fuel depots, garages or clinics do not exist. Visitors to the Park must therefore be well prepared, and be made aware of the conditions before they venture on their safari.

At present, there is no information to warn potential visitors of the conditions or regulations pertaining to the Park before they reach their destination. Furthermore, the Park has an extensive road network, and travelling around the tourist routes in the heavy sand results in high fuel consumption. Visitors can easily become stranded in the Park as a result. It is important therefore that clear directions are given to ensure visitor safety and satisfaction.

Proposed solution

Information boards are to be erected at the turn-off on the Rundu - Katima Mulilo Highway and at the turn-off to Tsumkwe. These signs should at a minimum contain the following information:

- Simple maps showing distances and key milestones.
- Sign to contain the wording “VISITORS TO KHAUDUM NATIONAL PARK – READ THIS CAREFULLY BEFORE PROCEEDING FURTHER”
  - Do not proceed unless you have a 4-wheel drive vehicle.
  - Carry extra fuel and drinking water
  - Preferably travel in a convoy of at least two vehicles
  - Carry an extra spare wheel and puncture repair kit
  - Collection of firewood within the park is prohibited. If you intend to use firewood, please bring this with you
- Report to the Warden on arrival
- Vehicle entry to the Park limited to single axle 4 x 4 not exceeding two tonnes gross mass
- Etc., etc.

Within the Park, signs are to be designed to be sufficiently robust to withstand elephant damage, yet not be obtrusive. These are to be erected at the intersection of all major roads indicating destination, distances, directional arrows, right of access, nearest shelter/water and approximate travelling time to complete the journey.

Implementation

This activity will be co-ordinated by the Regional Warden in conjunction with the Warden. Installation of the signs will be the responsibility of the Warden.

Resources required

Materials to fabricate signs (Sheet metal, steel poles, iron bars, paint, concrete)  
Funds to contract sign writer.
Logistic support to erect signs

**Activity 3: Construct entry gate and office complex at Sikeretti and Khaudum**

**Current problem and issues**

The office complex and reception area at Sikeretti and Khaudum consists of a simple structure where tourist arrivals are recorded in a guest book. The station radio is also housed in this structure. There are therefore no facilities from which to run the administration functions of the park, nor are there facilities that enable staff to collect entry fees or distribute promotional information.

**Proposed solution**

An office complex incorporating a reception area is to be constructed at Sikeretti and Khaudum. This complex is to consist of at least three lockable weatherproof rooms, one of which will contain a reception counter and an area to display interpretative information (maps, information on fauna and flora *etc.*). The office will be equipped with a radio to communicate with other stations in the Kalahari Conservation Area as well as with the Regional Office. One of the rooms will serve as the Warden’s office and the other used by either the Conservation Scientist or junior staff. Logbooks, tourist receipts and tourist information is to be available at all times.

**Implementation**

The implementation of this activity will be co-ordinated by the Regional Warden in conjunction with the Warden. Construction of the office complex will be out-sourced.

**Resources required**

- Building materials
- Funding to engage building contractor
- Radio equipment, including solar power system
- Office equipment
- Safe

**Activity 4: Upgrade tourism facilities at Sikeretti and Khaudum, and identify camping sites.**

**Current problem and issues**

The tourist accommodation and ablution facilities at Sikeretti and Khaudum are long overdue for refurbishment. However, the management authorities intend to offer the private sector the opportunity to establish small lodges at these camps and therefore it is probably not cost effective to invest a large amount in upgrading these facilities. However, until the volume of tourist traffic through the Park increases, offering concessions to the private sector is not likely to be a viable option in the short term.

A second issue is that visitors to the Park are only able to camp at Sikeretti and Khaudum. This means that there is only a limited capacity to accommodate tourists in the Park, and the game viewing routes are likely to be come overloaded with tourist vehicles continually returning to the base camps.

**Proposed solution**

The tourist facilities at Sikeretti and Khaudum are to be renovated. This will involve the replacement of the ablution facilities to include hot and cold running water, and upgrading of the accommodation (new beds, repairs to buildings, replacement of mosquito gauze *etc.*). Where necessary, entire buildings are to be replaced if this is deemed to be more cost...
effective than undertaking repairs. No new additional accommodation units are to be constructed.

Camping facilities at Sikeretti and Khaudum are to be upgraded to including running water and cooking facilities. Animal proof bins are to be provided for litter and these must be emptied at regular intervals. Importing firewood from outside the park is to be encouraged however the Park management authorities should maintain a stockpile at the base camps as a contingency.

**Private Sector Involvement**

Tour operators who visit the park on a regular basis should be allocated a seasonal site within the Sikeretti and Khaudum campsites to establish a temporary tented camp. These sites are to be limited to two sites each at Sikeretti and Khaudum, and are to be allocated on an annual basis either by tender or public auction. The entire tented camp is to be removed at the end of the season. No permanent infrastructures such as concrete floors or retaining walls are to be permitted.

The park management authorities can use this opportunity to assess the demand for this type of facility, and later progress this to establish more permanent tourist lodges operated by the private sector.

**Remote campsites**

Since the wilderness quality of Khaudum National Park is its most marketable asset, it is recommended that suitable remote campsites be identified and demarcated where visitors would be allowed to camp for periods up to five days. No permanent structures are to be erected at any of these sites, but temporary long-drop toilet facilities are to be constructed to an approved design. No water reticulation system is to be installed (tourists will be expected to be self-contained and carry their own water). Animal proof bins are to be provided for litter and these must be emptied at regular intervals. Firewood is to be sourced either from outside the park (preferred option) or sourced from Sikeretti or Khaudum. Local collection of firewood is prohibited.

These campsites are not to become permanent fixtures, but opened and closed on a rotational basis each year depending on their utilisation levels. The Warden will have the flexibility to open or close these sites during the course of the year at his/her discretion.

**Implementation**

This activity is to be implemented by the Warden. The advice of tour operators utilising the Park will be sort regarding the renovation of the base camps at Sikeretti and Khaudum. The remote campsites are to be inspected regularly to ensure that the sites are kept clean and tidy. Toilet facilities will be inspected regularly to ensure that these do not become a health hazard. A regular schedule will be installed to clear litter bins on a weekly basis (and more frequently during peak usage times).

**Resources required**

- Site identification (by Warden)
- Construction of toilet facilities
- Logistic support (inspection etc.)
- Funds to renovate existing facilities at Sikeretti and Khaudum
Activity 5: Installation and renovation of game water supplies.

Current Problems and Issues

There are 13 boreholes in the Park (see Appendix II). These boreholes are equipped with either diesel-powered engines and/or solar pumps. The water supply is delivered directly into natural pans via a pipe buried below ground. The volume of water supply is not known in every case, but it is not significant. At the height of the dry season, the demand for drinking water by species such as elephant is high, and very often groups of animals will gather at the outlet waiting for the pump to deliver fresh water. As a result, the pan into which the water is pumped is churned into a thick muddy quagmire and the water becomes fouled to the point that it is not suitable for smaller animals such as roan and wildebeest. These animals therefore become stressed, often becoming trapped in the mud where they perish in their attempt to reach drinkable water.

Maintaining the engines, pumps and solar equipment also presents a problem to the park authorities. In particular, solar panels are often stolen thus rendering the pumping units useless. Mechanical repairs to engines and pumping units is also difficult given that there are no facilities to maintain and repair this equipment in the park.

Proposed solutions

The status of all the game water supplies is to be reviewed to determine:

- The condition of the pumping unit, including make, model and design of pump base
- Delivery of water supply
- Status of the water hole (clean, muddy, inaccessible etc.)
- Efficiency of the borehole (i.e. does it need cleaning out? Has it collapsed? Is it pumping regularly? etc.)
- Record of the species utilising the natural pans.
- Its location relative to other sources of open water
- The necessity of the particular water supply

Having established an inventory of the game water supplies in the park, the Warden will prepare a strategy to manage these supplies in conjunction with the Regional Warden and Department of Water Affairs. This strategy will take into consideration:

- The standardisation of all pumping units in the Park so that they are interchangeable
- Maintenance programme (pump servicing, fuel supply etc.)
- Carrying spare stock of pump units, engines, piping etc. to replace breakdowns on short notice.
- Training of a staff in the repair and maintenance of pumping units.
- Establishing a pump maintenance unit equipped with the necessary transport and tools.

With regard to improving the water supply to animals other than elephant, concrete troughs are to be constructed at each natural pan. Water is then to be pumped into the troughs and the overflow led into the natural pan itself.

Trough design

Design of the trough must take into consideration the effects of evaporation. The design of the troughs should therefore minimise the surface area of the water. As a guide oblong troughs measuring (at a minimum) 6m x 1.5m x 1.5m should be constructed using reinforced concrete (up to 20cm thick to withstand elephant damage) and set into the ground so that the top is at ground level. The trough should be “V” shaped and include steps to facilitate the escape of small animals that accidentally fall into the trough. The outlet pipe is to be set in concrete to prevent destruction by animals.
Theft of solar panels

The theft of solar panels is a serious problem in the Park. To mitigate against this, it is recommended that the panels be clearly engraved to indicate that they are the property of the Park. In addition, the panels are to be enclosed in a steel frame that is firmly concreted in the ground. A heavy fine (equal to double the cost of replacing the panel) is to be imposed on offenders caught in possession of stolen panels, and a reward offered for information leading to the recovery of any stolen panels.

Implementation

The Warden, in conjunction with the Conservation Scientist, will visit all the major pans to prepare an inventory of the pumping units, and determine the level of utilisation by wild animals. Modification of the water supply to incorporate drinking troughs is to be staggered over a period of 2 years, with the most heavily utilised (or prolific boreholes) completed first.

The Warden will develop the management and maintenance strategy for the game water supply programme, and procure sufficient stock to replace breakdowns speedily. All equipment will be standardised (engine model, pump model, pump base frame, pulley and fanbelt sizes, solar units, solar pumps etc.) to facilitate maintenance and repairs.

Regular maintenance patrols to ensure a steady supply of water will be the responsibility of a maintenance team equipped with a vehicle (preferably a tractor/trailer combination) that can carry labour and spares. The proposed pumping regime should extend from as early as March until the first rains.

The use of reservoirs and ball valves to control water supply is to be avoided. Instead, a pumping regime is to be established that will maintain water levels in the natural pans at a predetermined level. The pumping regime will be modified according to demand, but may involve pumping continuously for periods of up to 10 days at the height of the dry season. Within reason, natural pans should not be permitted to dry out completely before supplementary pumping is initiated.

Resources required

Maintenance funds (fuel, repairs, transport etc.)
Funds to purchase spare equipment (Pumping units, piping etc.)
Building materials (to construct concrete water troughs).

\[4\] The option of contracting out the maintenance of the boreholes and pumps should not be discarded.
## OVERALL GOAL
Khaudum National Park to maintain its unique wilderness characters through the protection of the Kalahari Savannah Woodlands

## OVERALL OBJECTIVE

<table>
<thead>
<tr>
<th>INDICATOR</th>
<th>MEANS OF VERIFICATION</th>
<th>ASSUMPTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Number of tourists visiting the park in Year 3 have increased compared to Year 1</td>
<td>Annual reports and tourism statistics</td>
<td>No natural catastrophes (droughts, fire).</td>
</tr>
<tr>
<td>2. Wildlife numbers increase</td>
<td>Ground and aerial survey reports</td>
<td></td>
</tr>
<tr>
<td>3. Benefits to the Nyae Nyae Conservancy</td>
<td>Support Zone annual reports</td>
<td></td>
</tr>
</tbody>
</table>

## RESULTS

<table>
<thead>
<tr>
<th>INDICATORS</th>
<th>MEANS OF VERIFICATION</th>
<th>ASSUMPTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Staff permanently resident in the park</td>
<td>Competent staff in place</td>
<td>MET able to recruit staff</td>
</tr>
<tr>
<td>Annual budgets</td>
<td>Annual reports</td>
<td>Adequate recurrent budgets provided</td>
</tr>
<tr>
<td>Staff housing in place</td>
<td>Physical inspection of infrastructure</td>
<td></td>
</tr>
<tr>
<td>Support infrastructure in place</td>
<td>Vehicles maintained, equipment functional</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>INDICATOR</th>
<th>MEANS OF VERIFICATION</th>
<th>ASSUMPTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Firebreaks in place</td>
<td>Annual report indicate extent of areas burnt</td>
<td>Staff adequately equipped and trained to deal with wild fires</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>INDICATORS</th>
<th>MEANS OF VERIFICATION</th>
<th>ASSUMPTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>3. Record of number of meetings held each year remains constant or increases</td>
<td>Annual Reports</td>
<td>MET able to recruit suitable Support Zone Co-ordinator</td>
</tr>
<tr>
<td>Responding to PAC</td>
<td>Minutes of meetings</td>
<td>Support Group established</td>
</tr>
<tr>
<td></td>
<td>Record of PAC reports</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>INDICATOR</th>
<th>MEANS OF VERIFICATION</th>
<th>ASSUMPTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>4. Clean water available at natural pans</td>
<td>Physical inspection of boreholes</td>
<td>Competent and efficient maintenance programme in place</td>
</tr>
<tr>
<td>Number of working boreholes</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## 2. INFRASTRUCTURE DEVELOPMENT PROGRAMME ACTIVITIES

<table>
<thead>
<tr>
<th>ACTIVITIES</th>
<th>MEANS</th>
<th>RESOURCES</th>
<th>ASSUMPTIONS</th>
</tr>
</thead>
</table>
| 1. Upgrade staff accommodation and facilities at Sikeretti and Khaudum stations, and procure necessary equipment (vehicles, radios, firearms, uniforms etc.). | • Removal of building rubble  
• Rehabilitation funds  
• Construction of staff housing  
• Installation of water reticulation system  
• Construction of sewerage system  
• Construction of workshop/storeroom  
• Installation of power generator  
• Installation of solar system  
• Installation of fuel storage | • Design of buildings  
• Building contractor  
• Borehole/pump  
• Electrical equipment (generator, solar)  
• Fuel storage tanks  
• Funds to procure equipment | • Government adopts the management plan |
| 2. Manufacture and erect appropriate signs both inside and outside the Park. | • Building materials  
• Sign writer  
• Logistic support  
• Robust sign posts | • Funds to contract sign writer  
• Logistic support  
• Materials to fabricate signs | |
| 3. Construct entry gate and office complex at Sikeretti and Khaudum. | • Building materials  
• Building contractor  
• Office equipment | • Design of building  
• Building contractor  
• Funds to procure equipment | |
| 4. Upgrade tourism facilities at Sikeretti and Khaudum, and identify camping sites. | • Refurbish existing tourist accommodation  
• Upgrade existing camp site  
• Identify remote campsites  
• Provide animal proof refuse bins  
• Identify and construct waste disposal site | • Building contractor  
• Animal proof bins  
• Logistic support | • MET does not offer the tourist facilities on tender to the private sector within management plan lifespan. |
| 5. Installation and renovation of game water supplies. | • Construct inventory of existing water supplies  
• Procure pumping equipment  
• Develop maintenance programme and unit  
• Construct concrete troughs | • Spares  
• Transport  
• Training in pump maintenance  
• Funds | |

1.ADMINISTRATION PROGRAMME ACTIVITIES
2.PROTECTION PROGRAMME ACTIVITIES
3.MAINTENANCE PROGRAMME ACTIVITIES
4.SUPPORT ZONE PROGRAMME ACTIVITIES
5.EDUCATION, COMMUNICATION AND PUBLIC RELATIONS PROGRAMME ACTIVITIES
6.TOURISM AND VISITOR PROGRAMME ACTIVITIES
7.RESEARCH AND MONITORING PROGRAMME ACTIVITIES

See Volume 2: Khaudum National Park Management Plan for details
5 ESTIMATE OF POTENTIAL REVENUE

Total gross expenditure on tourism generated in the North-East Region is estimated at approximately N$ 25 million (N$1996). This represents the total value of tourism in the region to the country as a whole (see: *Tourism Development Planning Framework for the Caprivi Region, 1996*). Only a portion of this money stays in the region with the bulk, estimated at about 80%, moving out of the region as a result of "leakage's" into other areas of the country.

Expenditures remaining within the region can be viewed at two different levels (see: *The Value of Non-Agricultural Land Use in Some Namibian Communal Areas: A Data Base for Planning, 1995*). One is the net contribution of resource use activities to the regional economy (resulting in additional economic benefit and induced employment through the multiplier effect) and the second is the contribution of these activities to local community income.

Table 1 shows the estimated current and potential aggregate net economic contribution to the regional for the Caprivi and Northern Kalahari Regions.

**Table 1: Comparison of estimates of the current and potential contributions of non-agricultural land use to regional income in the Caprivi and Northern Kalahari Regions (N$ 1994)**

<table>
<thead>
<tr>
<th>Item</th>
<th>Caprivi Region</th>
<th>Northern Kalahari Region</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extent (sq. km.)</td>
<td>18,800</td>
<td>21,718</td>
</tr>
<tr>
<td>Estimated current contribution</td>
<td>4,886,466</td>
<td>260,616$^2$</td>
</tr>
<tr>
<td>Estimated potential contribution</td>
<td>8,274,234</td>
<td>1,541,978$^4$</td>
</tr>
<tr>
<td>Potential magnitude of increase</td>
<td>1.7</td>
<td>5.9</td>
</tr>
</tbody>
</table>

$^1$entire Caprivi District; $^2$former Bushmanland plus Khaudum N.P.; $^3$extrapolation based upon N$12 per km$^2$ for Bushmanland alone (Barnes, 1995); $^4$extrapolation based upon N$ 71 per km$^2$ for Bushmanland alone (Barnes, 1995).

Assuming that in future the economic potential of the Caprivi and Northern Kalahari regions is realised it would total approximately N$ 10 million. Applying the 80% "leakage" figure discussed above to this amount suggests that the overall potential to the national economy is approximately N$ 50 million (N$1996).

The economic values discussed above are measures of the value of tourism to the region and the nation. These are impressive amounts of obvious importance to national and regional economies. They do not, however, reflect direct benefits to neighbouring communities. This is best measured by the contribution of these activities to local community income. Table 2 shows estimated current and potential income to communities (conservancies) from non-agricultural, natural resource land use inside and outside protected areas within the Kwando-Linyanti, Okavango and Kalahari Conservation Areas.
Table 2. Comparison of estimates of current and potential community income from non-agricultural natural resource use in land inside and outside protected areas in the North-East Region (N$ 1994).

<table>
<thead>
<tr>
<th>Item</th>
<th>Kwando-Linyanti C.A.</th>
<th>Okavango C.A.</th>
<th>Kalahari C.A.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Protected(^1) non-protected(^2)</td>
<td>Protected(^3) non-protected(^4)</td>
<td>Protected(^5) non-protected(^6)</td>
</tr>
<tr>
<td>Extent (sq. km.)</td>
<td>2,640 3,665</td>
<td>1,200 1,250</td>
<td>3,841 9,000</td>
</tr>
<tr>
<td>Estimated current Community income</td>
<td>92,400 505,770</td>
<td>42,000 172,500</td>
<td>23,046(^7) 198,000</td>
</tr>
<tr>
<td>Estimated potential Community income</td>
<td>683,760 967,560</td>
<td>310,800 330,000</td>
<td>353,372(^7) 846,000</td>
</tr>
<tr>
<td>Potential magnitude Of increase</td>
<td>74 1.9</td>
<td>7.4 1.9</td>
<td>15.3 4.3</td>
</tr>
</tbody>
</table>

\(^1\)Mamili, Mudumu and proposed Kwando N.P.; \(^2\)proposed/potential adjacent conservancy areas; \(^3\)proposed Okavango N.P.; \(^4\)potential conservancy area north of the Trans-Caprivi Highway; \(^5\)Khaudum N.P.; \(^6\)Nyae Nyae Conservancy; \(^7\)assumes same ratio between inside and outside protected areas as in Caprivi.

Information contained in Table 2 illustrates that these areas generate income to communities which, although moderate at present, has significant growth potential if natural resources are properly managed. Additionally, such things as locating tourist lodges and campgrounds just outside the parks would provide for joint venture partnerships between conservancies and the private sector. Also, issuing trophy hunting quotas to conservancies rather than within parks would enhance conservancy revenue earning potential. Yet another possibility for increasing revenues and improving neighbour relations is the sharing of gate receipts between the Ministry and conservancies.

5.1 Potential Income from Khaudum National Park

Khaudum National Park attracts a specialist tourist who is seeking the wilderness experience of remote areas and is prepared to put up with the hardships of travelling under harsh conditions. May to September is the most popular period when 80% of the estimated 2 565 tourists to Sikeretti and Khaudum visited the Park in 1997 (Table 3).

Table 3: The approximate number of vehicles and tourists visiting Sikeretti and Khaudum Camps in 1996 and 1997. Data Source: MET, Khaudum National Park

<table>
<thead>
<tr>
<th></th>
<th>January</th>
<th>February</th>
<th>March</th>
<th>April</th>
<th>May</th>
<th>June</th>
<th>July</th>
<th>August</th>
<th>September</th>
<th>October</th>
<th>November</th>
<th>December</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1996</td>
<td>Vehciles</td>
<td>4</td>
<td>10</td>
<td>19</td>
<td>22</td>
<td>23</td>
<td>39</td>
<td>26</td>
<td>38</td>
<td>20</td>
<td>25</td>
<td>7</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>Tourists</td>
<td>10</td>
<td>31</td>
<td>41</td>
<td>79</td>
<td>92</td>
<td>151</td>
<td>128</td>
<td>109</td>
<td>43</td>
<td>61</td>
<td>37</td>
<td>49</td>
</tr>
<tr>
<td>1997</td>
<td>Vehciles</td>
<td>2</td>
<td>7</td>
<td>20</td>
<td>15</td>
<td>81</td>
<td>43</td>
<td>51</td>
<td>80</td>
<td>23</td>
<td>18</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Tourists</td>
<td>7</td>
<td>22</td>
<td>73</td>
<td>43</td>
<td>181</td>
<td>125</td>
<td>231</td>
<td>218</td>
<td>104</td>
<td>49</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>1996</td>
<td>Vehciles</td>
<td>13</td>
<td>21</td>
<td>16</td>
<td>33</td>
<td>37</td>
<td>35</td>
<td>74</td>
<td>58</td>
<td>24</td>
<td>36</td>
<td>19</td>
<td>22</td>
</tr>
<tr>
<td></td>
<td>Tourists</td>
<td>30</td>
<td>107</td>
<td>55</td>
<td>133</td>
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<td>104</td>
<td>276</td>
<td>213</td>
<td>116</td>
<td>88</td>
<td>74</td>
<td>82</td>
</tr>
<tr>
<td>1997</td>
<td>Vehciles</td>
<td>8</td>
<td>8</td>
<td>25</td>
<td>32</td>
<td>63</td>
<td>40</td>
<td>81</td>
<td>101</td>
<td>33</td>
<td>29</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Tourists</td>
<td>41</td>
<td>23</td>
<td>72</td>
<td>123</td>
<td>216</td>
<td>151</td>
<td>329</td>
<td>373</td>
<td>114</td>
<td>70</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Please note that these data should be treated with caution as it is not clear from the records whether people visiting Sikeretti and also recorded at Khaudum and visa versa.

Khaudum camp appears to be more popular than Sikeretti, even though the latter has rustic chalets. Most tourists visiting the park are self-drive and are travelling in convoy. Khaudum
National Park is usually included as part of an itinerary that will include the Nyae Nyae Conservancy. There are no reliable statistics to indicate the preferred entry route, although it is suspected that most tourists arrive through the north gate and continue through to Tsumkwe and Grootfontein. In most cases, these tourists originate from Botswana where they have visited the Okavango Swamps.

Visitors arriving in Windhoek are more likely to travel through to the more renowned Etosha National Park and the deserts to the west. It is only those visitors who have a specific interest in the attractions of Bushmanland that are prepared to travel “off the beaten track” to this remote region of Namibia. The fact that Khaudum National Park is at the end of “dead leg” that does not lead to other destinations is therefore probably a deterrent to most tourists.

The following table illustrates the magnitude of potential tourism revenue under a best case and worst case scenario (Table 4). These data suggest that under the best case scenario or 45% occupancy (representing approximately 49,275 visitors/year), the Khaudum National Park is only likely to generate N$1,950,153/year (or N$508/km²). If tourist numbers do not exceed 5,500/year (i.e. 5% of potential occupancy), the estimated total income drops to N$229,257/year (or N$60/km²).

Table 4: The potential income from Khaudum National Park using best case and worst case scenarios.

<table>
<thead>
<tr>
<th>Park Activity</th>
<th>Fee Schedule</th>
<th>Occupancy Best case scenario</th>
<th>Occupancy Worst case scenario</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>45%</td>
<td>25%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(49,275)</td>
<td>(27,375)</td>
</tr>
<tr>
<td>Park entry</td>
<td>N$35/day/person (No people)</td>
<td>N$1,724,625</td>
<td>N$958,125</td>
</tr>
<tr>
<td>Overnight camping</td>
<td>N$1,440/3 days X 4 persons</td>
<td>No 3-day Parties</td>
<td>No 3-day Parties</td>
</tr>
<tr>
<td></td>
<td></td>
<td>105</td>
<td>78</td>
</tr>
<tr>
<td></td>
<td></td>
<td>N$150,528</td>
<td>N$112,896</td>
</tr>
<tr>
<td>Mobile Tour Operators</td>
<td>N$5,000/year</td>
<td>No operators</td>
<td>No operators</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>N$15,000</td>
<td>N$10,000</td>
</tr>
<tr>
<td>Concession</td>
<td>N$20,000/year</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>N$60,000</td>
<td>N$40,000</td>
</tr>
<tr>
<td>Potential Income (N$)</td>
<td></td>
<td>N$1,950,153</td>
<td>N$1,121,021</td>
</tr>
<tr>
<td>Income/km²</td>
<td></td>
<td>N$508</td>
<td>N$292</td>
</tr>
<tr>
<td>Income US$/km²</td>
<td></td>
<td>US$85</td>
<td>US$49</td>
</tr>
</tbody>
</table>

Assumptions used to derive these data are as follows:

- Basic entry set at a minimum of N$35/person/day
- Occupancy: Maximum of 75 vehicles/day with 4 people/vehicle for 365 days = 75 x 4 x 365 = 109,500 visitors to the park. Therefore, 45% occupancy = 49,275 people/year.
- Overnight camping: One camp occupied for a maximum of 3 days by 4 people = 3 days x N$120 x 4 people = N$1,440/camp. Eight camps are occupied between March and September. This represents 28 weeks or a maximum of 196 days/camp = 1,568 camping days. Therefore, the maximum number of parties = 1,568/8 camps = 523. Occupancy set at 20%, 15%, 10% and 5% respectively.
- Tour operators: concessions will be given to mobile commercial tour operators.
- Concession: Annual concession fee paid by resident concessionaires.
5.2 Financing of the Development and Management Programme

The projected potential income for the Khaudum National Park will not be sufficient to meet the running costs of the Park, nor will this money meet any of the capital costs. The gap between potential income and capital and recurrent expenditure will therefore have to be met from Government allocations. It must be accepted that it is unlikely that the Khaudum National Park will ever be financially self sustainable in the short to medium future.
6 SCHEDULE OF IMPLEMENTATION

A schedule of implementation is provided in Appendix III, and assumes a 5-year period. Some of the tasks are "once off" activities while others will occur throughout the implementation phase.

6.1 Notes on the Implementation Programme

The following considerations are to be taken into account regarding the timing of the implementation programme.

• The project year will run from January to December
• The duration of each activity is indicative.
• A project startup period is envisaged. During this time, an Inception Report is to be prepared, together with the first Annual Work Programme that includes the annual budget.
• Appointment of competent staff is on the critical path, and is to be completed before any of the other project tasks are implemented.
• All staff housing and related infrastructure development is to take place within the first three years of the project.
• Law enforcement and fire management programmes recur each year throughout the project.
• Routine maintenance is conducted throughout the period of the project on an "as required basis".
• Specific research and monitoring activities are to begin in the second quarter of the second year.
• Similarly, all activities associated with the Tourism and Visitor programme and the Education, Communication and PRO programme are to commence in the second year once the basic infrastructure is complete.

The overall implementation programme is to be re-appraised annually and adjusted according to the previous years’ progress and changing priorities.

This schedule is designed to facilitate the low input required to manage the Khaudum National Park to achieve four objectives. These are:

• To reduce the incidence of fire in the park
• Facilitate an improved tourist use, particularly the dispersion of tourists into the proposed satellite camps.
• Maintain and improve relations with adjacent communities.
• To improve law enforcement in the park.

Other activities will focus on routine maintenance of infrastructure, particularly the road and firebreak network, and implementation of basic monitoring programmes.

6.2 Project Start-up Phase

The implementation of this Integrated Development Plan will be preceded by a Project Start-up Phase. The purpose of this phase is to appoint a Project Co-ordinator who will be responsible for implementing the IDP. The Project Co-ordinator can be appointed either from within MET or provided by a donor.

He/she will be responsible for:

• Setting up the Project Accounts
• Preparing an Inception Report
• Procuring the necessary equipment (vehicles etc)
• Procuring building contractors
• Preparing the Annual Work Programme for Year 2
• Fulfilling the role of co-ordinator between MET, Regional Office and Field Staff
APPENDIX I

CAPITAL COSTS

KHAUDUM INTEGRATED DEVELOPMENT PLAN
## CAPITAL COSTS FOR THE INFRASTRUCTURE DEVELOPMENT PROGRAMME FOR THE KHAUDUM NATIONAL PAR

### A. Staff Housing

<table>
<thead>
<tr>
<th>Area (km²)</th>
<th>1200</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>No Units</strong></td>
<td><strong>Unit Cost (N$)</strong></td>
</tr>
<tr>
<td>Warden</td>
<td>1</td>
</tr>
<tr>
<td>P/Ranger</td>
<td>1</td>
</tr>
<tr>
<td>S/Ranger</td>
<td>1</td>
</tr>
<tr>
<td>Ranger</td>
<td>2</td>
</tr>
<tr>
<td>Scout</td>
<td>25</td>
</tr>
<tr>
<td>Gate Guard</td>
<td>4</td>
</tr>
<tr>
<td>Labourer</td>
<td>14</td>
</tr>
<tr>
<td>Ecologist</td>
<td>1</td>
</tr>
<tr>
<td>Support</td>
<td>0</td>
</tr>
<tr>
<td>Technician</td>
<td>1</td>
</tr>
<tr>
<td>Clerk</td>
<td>0</td>
</tr>
<tr>
<td>Typist</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total Staff</strong></td>
<td><strong>50</strong></td>
</tr>
</tbody>
</table>

### B. Transport

| **No Units** | **Unit Cost (N$)** | **Total** | **Year 1** | **Year 2** | **Year 3** | **Year 4** | **Year 5** | **Five Year total** |
| 4 x 4 vehicles | | | | | | | | |
| 4 x 4 vehicles | 1/5 scouts/4yrs | 5 | 130,000 | 650,000 | 650,000 | 650,000 |
| 5 tonne 4 x 4 truck | 1/500km²/3yrs | 4 | 450,000 | 1,800,000 | 1,800,000 |
| Tractor (Minimum 100hp) | 1/500km²/5yrs | 4 | 210,000 | 840,000 | 840,000 | 840,000 | 1,680,000 |
| Trailer (four wheel) | 1/500km²/5yrs | 4 | 35,000 | 140,000 | 140,000 | 140,000 | 280,000 |
| Tow grader | 1/500km²/5yrs | 2 | 65,000 | 130,000 | 130,000 |
| **Total Transport** | **50** | **26** | **Subtotal 3,560,000** | **3,560,000** | **-** | **1,800,000** | **650,000** | **1,110,000** | **7,120,000** |

### C. Other Buildings

| **No Units** | **Unit Cost (N$)** | **Total** | **Year 1** | **Year 2** | **Year 3** | **Year 4** | **Year 5** | **Five Year total** |
| Abution blocks | 2 | 30,000 | 60,000 | 30,000 | 30,000 | 30,000 |
| Office block (Unit cost per officer) | 1 | 75,000 | 375,000 | 375,000 | 375,000 |
| Entrance gate | 2 | 120,000 | 240,000 | 120,000 | 120,000 |
| Workshop/storeroom (Unit cost per staff) | 2 | 5,000 | 250,000 | 125,000 | 125,000 | 125,000 |
| Manufacture/erect signs | 1 | 120,000 | 120,000 | 120,000 | 120,000 |
| Upgrade tourist facilities | 5 | 25,000 | 125,000 | 62,500 | 62,500 | 62,500 | 125,000 |
| **Total Other Buildings** | **13** | **Subtotal 1,170,000** | **Subtotal 1,170,000** | **-** | **587,500** | **457,500** | **125,000** | **-** | **1,170,000** |
## Capital Costs for the Infrastructure Development Programme for the Khaudum National Park

### D. Workshop/Office Equipment

<table>
<thead>
<tr>
<th>No Units</th>
<th>Unit Cost (N$)</th>
<th>Total</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
<th>Five Year Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Office equipment</td>
<td>1</td>
<td>60,000</td>
<td>60,000</td>
<td>60,000</td>
<td>60,000</td>
<td>60,000</td>
<td>60,000</td>
<td>60,000</td>
</tr>
<tr>
<td>Computer equipment</td>
<td>2</td>
<td>18,000</td>
<td>36,000</td>
<td>36,000</td>
<td>36,000</td>
<td>36,000</td>
<td>36,000</td>
<td>36,000</td>
</tr>
<tr>
<td>Workshop tools</td>
<td>2</td>
<td>95,000</td>
<td>190,000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>190,000</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td></td>
<td>286,000</td>
<td>-</td>
<td>96,000</td>
<td>95,000</td>
<td>95,000</td>
<td>-</td>
<td>286,000</td>
</tr>
</tbody>
</table>

### E. Water Supplies

<table>
<thead>
<tr>
<th>No Units</th>
<th>Unit Cost (N$)</th>
<th>Total</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
<th>Five Year Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Domestic water (1/40 staff)</td>
<td>2</td>
<td>25,000</td>
<td>50,000</td>
<td>50,000</td>
<td>50,000</td>
<td>50,000</td>
<td>50,000</td>
<td>50,000</td>
</tr>
<tr>
<td>Game water (1/500km²)</td>
<td>13</td>
<td>15,000</td>
<td>195,000</td>
<td>39,000</td>
<td>39,000</td>
<td>39,000</td>
<td>39,000</td>
<td>39,000</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td></td>
<td>245,000</td>
<td>89,000</td>
<td>39,000</td>
<td>39,000</td>
<td>39,000</td>
<td>39,000</td>
<td>245,000</td>
</tr>
</tbody>
</table>

### F. Power/Fuel Supply

<table>
<thead>
<tr>
<th>No Units</th>
<th>Unit Cost (N$)</th>
<th>Total</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
<th>Five Year Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Generator</td>
<td>2</td>
<td>30,000</td>
<td>60,000</td>
<td>60,000</td>
<td>60,000</td>
<td>60,000</td>
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<td>60,000</td>
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<tr>
<td>Solar power</td>
<td>2</td>
<td>60,000</td>
<td>120,000</td>
<td>120,000</td>
<td></td>
<td></td>
<td></td>
<td>120,000</td>
</tr>
<tr>
<td>Overhead fuel tanks</td>
<td>2</td>
<td>15,000</td>
<td>30,000</td>
<td>30,000</td>
<td></td>
<td></td>
<td></td>
<td>30,000</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td></td>
<td>210,000</td>
<td>90,000</td>
<td>120,000</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>210,000</td>
</tr>
</tbody>
</table>

### G. Road Construction

<table>
<thead>
<tr>
<th>No Units</th>
<th>Unit Cost (N$)</th>
<th>Total</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
<th>Five Year Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Budget to construct access roads and firebreaks</td>
<td>0</td>
<td>1,500</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
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<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

### H. Wildlife Introduction

<table>
<thead>
<tr>
<th>No Units</th>
<th>Unit Cost (N$)</th>
<th>Total</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
<th>Five Year Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Budget to move plains game</td>
<td>0</td>
<td>100,000</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
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<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

### Contingency (10% of Total Costs)

<table>
<thead>
<tr>
<th>Total Capital Costs</th>
<th>N$ (km²)</th>
<th>US$ (km²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>7,931,183</td>
<td>6,609</td>
<td>1,102</td>
</tr>
<tr>
<td>5,070,817</td>
<td>4,226</td>
<td>704</td>
</tr>
<tr>
<td>1,584,000</td>
<td>1,320</td>
<td>220</td>
</tr>
<tr>
<td>2,928,567</td>
<td>2,440</td>
<td>407</td>
</tr>
<tr>
<td>999,900</td>
<td>833</td>
<td>139</td>
</tr>
<tr>
<td>1,263,900</td>
<td>1,053</td>
<td>176</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>11,847,183</td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX II

SUMMARY OF CAPITAL AND RECURRENT COSTS

KHAUDUM INTEGRATED DEVELOPMENT PLAN
APPENDIX III

CHRONOGRAMME

KHAUDUM INTEGRATED DEVELOPMENT PLAN
APPENDIX IV

NORTH-EAST PARKS PROJECT

PROCEDURE GUIDELINES ON INFRASTRUCTURE DEVELOPMENT
PROCEDURE GUIDELINES FOR INFRASTRUCTURE DEVELOPMENT

Procedure guidelines on design, placement and construction of firebreaks:

*Fire-breaks on park boundaries* are to be at least eighteen metres in width (this is a double fire-break). Internal fire-breaks are to be at least nine metres in width. Internal fire-breaks should follow natural features or ecotones which may act as natural fire-breaks. Road locations should be considered in the context of roads also serving as fire breaks.

*Fire-breaks* should be cleared and/or burnt annually as early in the calendar year as possible but no later than July. For the maintenance and monitoring of fire-break condition see policies on roads, tracks, trails and paths.

Heavy machinery may be used to establish fire-breaks, but should not be used in fire-break maintenance.

A fire officer will be appointed from existing staff and a fire duty roster for co-ordinating operations maintained during the main fire season (April to October).

Park staff will initiate co-operative programmes and actions with other fire control authorities, adjacent communities and neighbouring landowners.

Conservation scientists will provide for the recording of fire history in the parks.

Procedure guidelines on buildings, temporary structures, power supplies and equipment:

All buildings will be designed and placed in line with the primary objectives of the park and the level of facility development shall be in accord with park plans.

All structures will be designed and placed as unobtrusively as possible so as to not detract from the natural landscape, scenic beauty or ecological integrity of the parks. Whenever possible, natural barriers will be used to screen facilities from general view.

All buildings will be assigned a registration number and a maintenance record kept by the Warden.

All buildings will be inspected annually by the Warden.

Annual maintenance priorities will be assigned, motivated and budgeted. Buildings will be prioritised as follows:

- Staff housing and accommodation
- Administrative buildings and stores
- Plant buildings and structures (*e.g.* pump house)
- Workshop and maintenance areas.

Where appropriate the Warden will consider annual service contracts to the private sector for building (and other capital items) maintenance. This will be done on the basis of an analysis of the most cost-effective options for maintenance.

Power supply infrastructure and development will be designed to cause minimal ecological, visual and/or aesthetic impact. Underground lines are to be utilised in preference to overhead lines where feasible.

Domestic power supplies will be separately metered and the costs borne by occupants.
The Warden will ensure that temporary structures are removed on completion of the task for which they were constructed. Additionally, he or she will ensure that the site is fully rehabilitated and cleaned after completion of assigned tasks.

The Warden will designate sites within the park (consistent with the park zonation scheme) to specific tasks which are repeated regularly (e.g. game capture). These sites, activities, or structures will not conflict with park goals and objectives.

Equipment will be issued to individuals who will be held responsible for the items and their maintenance and servicing.

Training in the use of sophisticated equipment is compulsory for all users.

**Procedure guidelines on potable water for parks staff:**

No toilets, ablution facilities or water-based service facilities are to be positioned within 100m of a borehole or other primary water source.

Game capture pens and bomas must not be placed within 100 m of a borehole or other primary water source.

Water quality testing is done by NamWater, Private Bag 13389, Windhoek. A one litre sample of the water to be tested must be delivered in a closed glass container.

**Procedure guidelines on water supply management:**

The Warden will ensure that all water abstraction infrastructure is unobtrusive and blends in with the surroundings as best possible. Every effort should be made to suppress exhaust noise at installations using diesel or petrol engines. Solar installations should be used where possible.

No water abstraction for non-park purposes is permitted.

The provision of artificial water points for wildlife within the parks must be preceded by an Environmental Assessment in which the ecological framework for that supply must be given the fullest consideration.

Artificial water points for wildlife must not be constructed near (<2 km) park boundaries where there is a potential for conflict with surrounding communities or land-uses.

No barriers or obstructions of any type may be built on drainage’s.

A monitoring programme must be developed at each artificial water point for wildlife. Wildlife species and numbers, seasonality of use and the effects on vegetation (at varying radii around the water point) are to be assessed in terms of whether the water point is achieving a stated management objective.

Adequate protection measures against damage and theft must be developed for installations.

Development of water sources for wildlife carries with it the responsibility to ensure that these sources do not fail the wildlife which becomes dependent upon them. All sources of water for wildlife will be inspected, and maintenance performed if necessary, at least weekly throughout the dry season (or year round during droughts).

**Procedure guidelines on sewage disposal facilities:**
Soak pits for waterborne sewerage should not be built within 100 m of a borehole or water source to avoid contamination. Developments on the river margin must ensure that pits do not cut through the permanent water table.

No chemical toilets will be allowed within the park. Concessionaires should be made aware of this restriction.

No direct discharge of human wastes into any of the parks’ perennial or seasonal rivers are allowed under any circumstances.

No open water, evaporation pan sewerage treatment systems are allowed within the parks.
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APPENDICES

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II BACKGROUND AND INVENTORY – KWANDO CORE AREA
III CONCEPTS OF PARK ZONATION
IV PROCEDURE GUIDELINES ON PERSONNEL MANAGEMENT
V PROCEDURE GUIDELINES ON INFRASTRUCTURE DEVELOPMENT
VI PROCEDURE GUIDELINES ON NEIGHBOURING COMMUNITY RELATIONS
VII PROCEDURE GUIDELINES ON TOURISM, VISITOR AND CONCESSIONAIRES
1 INTRODUCTION

The management plan for the Kwando Core Area has been prepared under *Phase Two of the Planning Phase: North East Parks Programme*. This document forms Volume 2 of this planning process and summarises the management actions, staffing requirements and recurrent budgets required to manage the park. The document is supported by **Volume 1: Background and Inventory**, which contains information as regards the biophysical, ecological, legal, socio-economic and infrastructural characteristics of the North East Parks. **Volume 3: Integrated Development Plan for the Kwando Core Area** summarises the investment programme needed to develop the park, and potential revenue earnings of the park.

The Kwando Core Area comprises the unproclaimed “Kwando Triangle” and part of the Caprivi Game Park. Its location relative to the other North East National Parks, Conservancies and Support Zones that form the Kwando-Linyanti Conservation Area is illustrated in Figure 1.

**Figure 1: Location of the Kwando Core Area relative to other protected areas in the Kwando - Linyanti Conservation Area**.

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1 The boundaries reflect the current situation (January 1999). These may change when the boundaries of the Conservancies are finally gazetted.
NOTES:
1 The Kwando Core Area and the potential Support Zone are currently part of the proclaimed Caprivi Game Park
2 Boundaries are not definitive
3 Lianshulu community not associated with the Wuparo Conservancy
It is anticipated that the Caprivi Game Reserve will be upgraded to form the “Bwabwata National Park” in the future. The Kwando Core Area is expected therefore to form part of this National Park that will include all the land between the Okavango and Kwando rivers (Figure 2). This proposed park will then be divided into three broad use zones: the Kwando and Buffalo Core areas will have preservation of natural processes as their primary goal while the Bwabwata Multiple Use Zone will accommodate historical developments and settlements already in existence (Figure 2).2

Figure 2: The location of the proposed Bwabwata National Park in relation to other North East Parks

Central Headquarters for the Kwando – Linyanti Conservation Area

The strategic location of the Kwando Core Area relative to the other two National Parks and the proposed Conservancies, and the Trans Caprivi Highway confirms its position as the Central Headquarters for the Kwando - Linyanti Conservation Area. In particular, the Kwando Core Area will accommodate the Warden In Charge of the Kwando-Linyanti Conservation Area, the Support Zone Co-ordinator and Senior Conservation Scientist for the Conservation Area. It will also be the focal point for maintenance of equipment requiring major repairs.

1.1 Structure of the Management Plan

For ease of understanding, this management plan consists of six main components. These are as follows:

**Vision statement:** The vision statement for the Kwando Core Area captures the overall goals of the Ministry of Environment and Tourism (MET) with respect to the management and development of the Park.

**Situation analysis and**

---

2 Please note that the area encompassing the “Caprivi Game Reserve” was excluded from the Phase II planning process for the NEPP. Management Plans for this area have therefore not yet been prepared.
needs assessment: Using eight pre-defined management programmes, the situation analysis and needs assessment provides a summary of the issues and problems facing the park that need to be addressed by the management plan. The management programmes are prioritised, and the activities to be conducted are evaluated and ranked to illustrate the level of importance.

Goals and Objectives: The goals and objectives of the Kwando Core Area are provided. These, together with the situation analysis and needs assessment, define the various activities to be undertaken under each management programme.

Zonation: This section describes the different management zones of the park that will facilitate its management and tourist use.

Staffing Requirements: The staffing requirements for the Kwando Core Area are determined based on the activities to be undertaken under each management programme.

Management Programmes: Eight management programmes are identified as being the core of the management plan. Using the information gathered during the situation analysis and needs assessment, various activities are identified that need to be undertaken under each management programme in order to deal with the various issues. Each management programme is prioritised and the activities ranked in order of importance. Each activity is dealt with under the following headings:

- Current problems and issues
- Proposed solutions
- Implementation
- Resources required

The management plan is also supported by a number of appendices that provide specific background data and information relevant to the planning process.
2 VISION STATEMENT FOR THE KWANDO CORE AREA

The Vision Statement for the Kwando Core Area is tempered by the overall mission statement, policies and conservation goals of the Ministry of Environment and Tourism. These clearly define the criteria and goals for protected area management in Namibia (see Appendix I).

In terms of these overall statements, the government has established that the primary purpose of the North East Parks is to act as conservation areas. Secondary is the recognition that these parks can also serve to enhance local economies and increase the quality of life in neighbouring communities. In addition, they are a tourism product, playing a role in the national economy and serving as a window through which the world views Namibia's conservation ethic.

Within the context of these parameters, the vision statement for the Kwando Core area is defined as follows:

The Kwando Core Area shall be proclaimed as part of the Bwabwata National Park as a key habitat for wildlife moving between Botswana, Namibia, Angola and Zambia. The park shall be managed as a core area supporting wildlife, tourism, and rural development. It shall protect the Kwando riverine habitats, Kalahari woodlands, omuramba grasslands and their associated biodiversity, particularly hippo, roan, lechwe and Burchell’s zebra. Tourism shall be non-consumptive, low-volume, low-impact, with emphasis on a high-quality nature experience. All tourism concessions shall be allocated to neighbouring communities that have formed conservancies. Management shall include the establishment of mutually-beneficial partnerships with communities.

2.1 Situation Analysis and Needs Assessment

The North East Parks Project was launched in 1995 with the objective of compiling management and development plans for the parks in the Caprivi and Okavango regions. On acceptance of the management plans, MET will establish a Joint Management Committee with stakeholders to implement these plans, as well as resolve any local problems, conflicts etc. Funding for implementation will be provided by the Government of Namibia and international donors.

However, the NEPP faces three major threats to its success. These are:

1 Political tension: The Caprivi is subject to various levels of political pressure that are beyond the capacity of MET to resolve. This makes it difficult for staff to operate in the field as they are constantly being accused of favouring one community over another. In addition there are marked political and racial divisions in the region that add to the complexity of the situation. It is essential therefore that MET maintains a transparent agenda, and that it secures the full co-operation of the
two governors in the respective regions, traditional leaders and all major stakeholders.

2 **Community support:** The historic establishment of the North East Parks has resulted in poor relations between MET and some of the communities to the point where the park boundaries are not respected, and the local communities want the parks to be reduced in size. Without the full support of the local communities, it will not be possible to implement any of the management and development plans.

3 **Ministry of Environment and Tourism status:** MET’s track record in the Caprivi is poor. On the one hand they announce their desire to consult with communities, while on the other hand they appear to make unilateral decisions (e.g. awarding hunting concessions). An impression is created that MET is in control of the parks, but it does not even have senior staff based in the parks. All and sundry have virtually free access to these areas, and the parks are regularly burnt. Furthermore, MET staff is unable to respond to requests from local communities, particularly where this involves problem animal control.

A fourth issue concerns the erection of an electrified stock and game proof fence by Botswana along their border with the Caprivi. The purpose of this fence is to prevent cattle infected with Contagious Bovine Pleuropneumonia (CBPP or “lung sickness”) from entering Botswana from Caprivi. Initially this fence ran along the entire length of the border westwards from the Kwando river. The net effect of this fence was that it disrupted the natural migration of wildlife back and forth from Botswana and the Caprivi Game Reserve (including the Kwando Core Area). However, following a re-appraisal of the fence by the Botswana authorities, sections of the fence have been removed, notably the first 30km westwards from the Kwando river. Although the remainder of the fence still has an impact on wildlife migrations into the Caprivi Game Reserve, the Kwando - Linyanti Conservation Area is no longer affected by this fence.

**MET Management Strategy**

The MET have defined eight management programmes that will form the basis of the management and development plans (Table 1).

**Table 1: Definition of the Eight Management Programmes for the North-East Parks Project**

<table>
<thead>
<tr>
<th>Management Programme</th>
<th>Brief Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Administration</td>
<td>The actions and activities taken by MET leadership to facilitate the attainment of objectives of all management programmes.</td>
</tr>
<tr>
<td>2. Protection</td>
<td>The actions and activities aimed at preserving the physical and biological integrity of the parks.</td>
</tr>
<tr>
<td>3. Research and Monitoring</td>
<td>The actions and activities to determine the status and dynamics of park natural resources as well as the effects of management actions upon these resources.</td>
</tr>
</tbody>
</table>
4. Tourism and Visitor  The actions and activities to enhance visitor experiences in the parks as well as to minimise the impact of tourism on park natural resources.

5. Support Zone  The actions and activities aimed at encouraging compatible land uses in areas bordering the parks. In particular, the establishment and development of conservancies is to be encouraged, with MET providing technical advice on all aspects of wildlife management. The flow of benefits from the park to neighbouring communities will be facilitated.

6. Education, Communication and Public Relations  The actions and activities designed to increase knowledge and awareness of the parks and their role in the conservation of the nation's natural resources.

7. Infrastructure Development  The actions and activities relating to infrastructure development (roads, buildings, water development, fire breaks, disposal of liquid and solid waste).

8. Maintenance  The actions and activities designed to maintain, rehabilitate and/or enhance the parks bio-physical resources as well as infrastructure and equipment.

On the basis of these management programmes and taking into consideration the issues raised above, a situation analysis and needs assessment was conducted in the Kwando Core Area in late 1997 and early 1998. This exercise identified a wide range of issues that needed to be addressed in order to implement the management and development plans. These management programmes have been analysed and listed in order of priority, including a ranking of the various management activities to be address under each programme (Table 2).

Given the legal status and current development of the Park, the priority management programmes are:

1. Administration programme
2. Infrastructure Programme
3. Protection Programme
4. Maintenance Programme
5. Support Zone Programme
6. Education, Communication and PRO Programme
7. Tourism and Visitor Programme
8. Research and Monitoring Programme

Table 2 provides a summary of the prioritised management programmes and ranks the specific activities under each. The crucial issue here is the acceptance and proclamation of the Bwabwata National Park and the Kwando Core Area and its boundaries. Unless this is put in place, it will be difficult to implement this management plan. Thereafter, MET must appoint the staff and provide the necessary infrastructure, equipment and operational budgets to manage the park.
Table 2: Priority of Management Programmes and Ranking of Situation Analysis and Needs Assessment for the Kwando Core Area. The indicative time scale illustrates the time frame to resolve the various issues.

<table>
<thead>
<tr>
<th>Priority of Management Programmes</th>
<th>Ranking of Situation Analysis and Needs Assessment for the Kwando Core Area</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Priority (1st to 3rd years)</td>
</tr>
<tr>
<td>1. Administration</td>
<td>1. The status of the proposed Bwabwata National Park is not clear.</td>
</tr>
<tr>
<td></td>
<td>2. The boundaries of the Kwando Core Area need to be formalised and gazetted.</td>
</tr>
<tr>
<td></td>
<td>3. Warden and staff responsible for the management of the Park must be appointed.</td>
</tr>
<tr>
<td></td>
<td>4. Park entry and fee structure is to be developed and implemented.</td>
</tr>
</tbody>
</table>
### Ranking of Situation Analysis and Needs Assessment for the Kwando Core Area

<table>
<thead>
<tr>
<th>Priority of Management Programmes</th>
<th>Priority (1st to 3rd years)</th>
<th>Secondary (2nd to 4th years)</th>
<th>Tertiary (4th to 5th years)</th>
</tr>
</thead>
</table>
| 2. Infrastructure development    | 1. Staff accommodation at Susuwe Station needs to be upgraded.  
2. There are no workshop facilities capable of undertaking major repairs to equipment (vehicle services, routine repairs, pump maintenance etc.).  
3. Power and telephones should be installed.  
4. An entrance gate should be constructed on the road leading from the Trans-Caprivi highway to Susuwe.  
5. Road maintenance is non-existent. | 1. There are few signs to direct visitors in the Park.  
2. Tourist facilities (hides, camping areas etc) need to be developed.  
3. Cleaning up of dilapidated sites to commence.  
4. Additional access roads/firebreaks are needed to assist in controlling wild fires. | 1. Cleaning up of dilapidated sites to be completed.  
2. Inappropriate road alignments are to be closed or relocated. |
| 3. Protection                    | 1. To combat poaching from Angola, and by local people, a comprehensive law enforcement programme needs to be organised and implemented.  
2. Wild fires that enter the Park need to be controlled.  
3. Settlements within the Park (e.g. Wilson, Bailey Holmes, Kongola Bridge) are to be removed. | 1. Train staff to deal with visitors to the Park | |

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### Priority of Management Programmes

<table>
<thead>
<tr>
<th>Priority of Management Programmes</th>
<th>Ranking of Situation Analysis and Needs Assessment for the Kwando Core Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>4. Maintenance</td>
<td><strong>Priority</strong> (1st to 3rd years)</td>
</tr>
<tr>
<td></td>
<td>1. There is no road maintenance. Roads should be monitored and steps taken to ensure that maintenance is timely and effective.</td>
</tr>
<tr>
<td></td>
<td>2. There are no firebreaks in the Park to control extensive annual wild fires.</td>
</tr>
<tr>
<td></td>
<td>3. None of the infrastructure is maintained.</td>
</tr>
<tr>
<td></td>
<td>4. There is no recognised waste disposal site.</td>
</tr>
<tr>
<td></td>
<td><strong>Secondary</strong> (2nd to 4th years)</td>
</tr>
<tr>
<td></td>
<td>1. Develop maintenance programme for mechanical equipment</td>
</tr>
<tr>
<td></td>
<td><strong>Tertiary</strong> (4th to 5th years)</td>
</tr>
<tr>
<td></td>
<td>1. Develop maintenance programme for mechanical equipment</td>
</tr>
<tr>
<td>Priority of Management Programmes</td>
<td>Ranking of Situation Analysis and Needs Assessment for the Kwando Core Area</td>
</tr>
<tr>
<td>----------------------------------</td>
<td>--------------------------------------------------------------------------------</td>
</tr>
<tr>
<td></td>
<td>Priority (1st to 3rd years)</td>
</tr>
</tbody>
</table>
| 5. Support Zone                  | 1. Support Zone Co-ordinator is to be appointed to facilitate the establishment of conservancies and support groups.  
2. Local communities do not recognise park boundaries  
3. Park staff to not respond to problem animal complaints.  
4. Communication with local communities is poor.  
5. The “ownership” of the “Golden Triangle” is contested by different tribal authorities.  
6. Various tribal authorities have awarded PTOs to private sector operators to establish tourist camps in the “Golden Triangle” (although these have yet to be approved by MET). | 1. People encroach into the park on a regular basis, mainly for the purpose of fishing and harvesting natural resources. | |
| 6. Education, Communication & PRO | 1. There is no communication, public relations or interpretative programme for the area. | 1. The Kwando Core Area is not promoted as a tourism destination. | |
| 7. Tourism and Visitor           | 1. No fees are levied for the use of the area. A system should be implemented as soon as possible.  
2. The area does not have a tourism management plan. | 1. There are no rules and regulations governing the use of the Kwando Core Area. | |
### Ranking of Situation Analysis and Needs Assessment for the Kwando Core Area

<table>
<thead>
<tr>
<th>Priority of Management Programmes</th>
<th>Priority (1st to 3rd years)</th>
<th>Secondary (2nd to 4th years)</th>
<th>Tertiary (4th to 5th years)</th>
</tr>
</thead>
</table>
| 8. Research and Monitoring       | 1. A research and monitoring programme specifically for the Kwando Core Area (*e.g.* aerial surveys to monitor population trends in the KLCA) needs to be developed.  
2. Protocols that allow local communities to harvest natural resources from within the Park are to be formulated. | 1. Movement of key species between Botswana, Angola and Zambia should be monitored.  
2. Impact of elephant on the riverine vegetation should be monitored.  
3. Impact of fire and the effectiveness of the fire management programme should be monitored. | 1. Assess the need to develop long-term strategies for research both within and adjacent to the parks.  
2. Tourism use of the Conservation Area and the potential income should be monitored. |
2.2 Goals and Objectives

Given that MET regards the Kwando Core Area as an important conservation area that can make a positive contribution to the local economies of surrounding communities, the overall goal of the Kwando Core Area is defined as:

*To facilitate the natural movement of wildlife between Botswana, Angola and Zambia through improved conservation status and sustainable economic development of the Kwando Core Area and adjacent Conservation Areas.*

The overall objective of the area is to:

*Secure the integrity of the Kwando Core Area in order to protect the unique biodiversity of the Kwando riverine habitats, Kalahari Woodlands and Omuramba grasslands.*
2.3 Zonation of the Kwando Core Area

Although it is recognised that there are pockets of woodland within the area that are unique in Namibia, no Special Protection Zones are recommended at this time. However, this designation should be applied if future research or inventories reveal unique, valuable or sensitive features that are of high ecological sensitivity or conservation value, particularly regarding the riverine habitats, Omuramba grasslands and the Kwando river itself.

It is recommended therefore that the entire Kwando Core Area be zoned as a Natural Zone except for an area of up to 50 hectares that will form the Development Zone site around Susuwe Station where the Kwando Core Area (and Kwando-Linyanti Conservation Area) headquarters will be established (Figure 3).

Figure 3: Zonation of the proposed Kwando National Park
2.3.1 Description of the Kwando Core Area Management Zones

<table>
<thead>
<tr>
<th>Zone</th>
<th>Description</th>
<th>Purpose</th>
<th>Permitted Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kwando Natural Zone</td>
<td>The whole of the Kwando Core Area with the exception of the Susuwe Development Zone</td>
<td>To generate funds from non-consumptive, low-volume, low-impact tourism. To maintain a corridor to facilitate the movement of wildlife between Botswana, Namibia, Angola and Zambia.</td>
<td>All forms of non-consumptive tourism activities conducted either from vehicles or on foot. Camping at designated sites Establishment of community based tourism concessions Motorised boating</td>
</tr>
<tr>
<td>Susuwe Development Zone</td>
<td>An area of up to fifty hectares around Susuwe station.</td>
<td>To allow the establishment of infrastructure needed to effectively manage the park. To accommodate services necessary for the management of the Kwando-Linyanti Core Conservation Area</td>
<td>Infrastructure development (staff housing, workshop facilities, tourist campsites, waste disposal site etc.). Establishment of waste disposal site.</td>
</tr>
</tbody>
</table>
3 STAFFING REQUIREMENTS FOR THE KWANDO CORE AREA

The staffing requirements for Kwando Core Area have been determined based on the activities to be undertaken under each management programme and the fact that Susuwe will form the central headquarters for the Kwando – Linyanti Conservation Area. Furthermore, it is assumed that the staff will fill several roles (e.g. a Scout will also be trained as a driver as well as carrying out patrol duties).

The critical path determining the number of staff will depend on the number of Scouts employed to patrol the park. This figure is determined using the following parameters:

- The minimum Patrol Area/Scout shall not be less than 40km² and not greater than 0km².
- Scouts will be expected to patrol up to 25 days per month.
- Each patrol shall consist of a maximum of 5 men. Each patrol unit will therefore complete up to 125 patrol-days/month.
- It is assumed that 50% of the Scout force will not be available for a variety of reasons (sick, leave, assigned to other duties etc.).
- The number of labourers is not to exceed 50% of the number of Scouts.
- At least two Gate Guards will be assigned to man entrance gates on a rotational basis.
- The number of Rangers is set at 1 for every 10 Scouts.
- The number of Senior Rangers is set at 1 for every 20 Scouts or part thereof.
- The number of Principle Rangers is set at 1 for every 3 Senior Rangers.
- One Warden is appointed to be in charge of the park.
- One ecologist is employed for every 2 000 km².
- One Support Zone Co-ordinator is employed for every 5 000 km².
- One technician is employed to assist each ecologist with data collection.
- One technician is employed to assist each Support Zone Co-ordinator.
- One clerk is employed for every 50 Scouts.
- One typist is employed for every 50 Scouts.

On the basis of the above assumptions, the staffing requirements for Kwando Core Area are provided in Table 3.
Table 3: Staff compliment for Kwando Core Area as determined by the eight management programmes

<table>
<thead>
<tr>
<th>STAFF COMPLIMENT</th>
<th>Management Programmes</th>
<th>TOTA L</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Administration</td>
<td></td>
</tr>
<tr>
<td>Warden</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Principle Ranger</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Senior Ranger</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Ranger</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Scout</td>
<td>20</td>
<td>21</td>
</tr>
<tr>
<td>Gate Guard</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Labourer</td>
<td>8</td>
<td>12</td>
</tr>
<tr>
<td>Ecologist</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Support Zone Co-ordinator</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Technicians</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Clark</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Typist</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total Staff Compliment</strong></td>
<td><strong>5</strong></td>
<td><strong>49</strong></td>
</tr>
</tbody>
</table>

A Warden is to be appointed as the Officer In Charge of all national parks in the Kwando – Linyanti Conservation Area. The Scout patrol force could be augmented using Community Game Guards, and thus the number of Scouts has been reduced. Two technicians are to be appointed to assist the Support Zone Co-ordinator and Conservation Scientist respectively. No staff are allocated to the Infrastructure and Education Programmes. These programmes are to be co-ordinated by the Warden using donor funded technical assistance.

3.1 Organisational Structure

The organisational structure of the North-East Parks is illustrated below (Figure 4). This structure conforms to that applied elsewhere in MET with the Regional Warden answering to the Directorate of Resource Management in Windhoek.

Three “Conservation Area” Wardens’ will be appointed to administer, manage and develop the **Kwando - Linyanti Conservation Area, Okavango Conservation Area** and **Kalahari Conservation Area** respectively.

The Support Zone Co-ordinator will be attached to the Regional Office but carry a rank similar to that of a Warden and Senior Conservation Officer. The Support Zone Co-ordinator will be responsible for the entire North-East Parks. However, since the greatest emphasis is required in the Kwando-Linyanti Core Conservation Area, this officer will be based at Susuwe, but expected to work in the other two Conservation Areas as well.
The three Wardens will be answerable to the Regional Warden who will be based at Rundu. A conventional staffing structure will apply at station level with the most senior officer being in overall command and answerable to the Warden. Rangers, Scouts, Gate Guards and labourers will be answerable to the Warden through their respective Senior Rangers and Principle Rangers.

Professional staff attached to the Division of Specialist Services will be based at Susuwe, Buffalo and Sikaretti respectively. These staff will be responsible for the respective Conservation Areas and will work closely with the Wardens and Regional Warden. They will, however, be answerable to the Division of Specialist Services based in Windhoek.

3.1.1 Staff Functions and Responsibilities

At the Conservation Area level, the Warden will be responsible for the overall administration and management of the Parks under his control. He/she will also be responsible for all disciplinary actions and will fulfill the role of co-ordinator between his junior staff and the Regional Warden. As a general rule all staff members will familiarise themselves with the Public Service Act, 1995, the Regulations under the Public Service Act, 1995 and the rules, regulations and policies of the Ministry of Environment and Tourism. Procedure guidelines on personnel administration and law enforcement are given in Appendix IV.

Responsibilities of the Warden

The Warden is the ultimate level of authority in the Park and thus assumes overall responsibility for the development and management of all management programmes with the exception of the Support Zone Programme and Research Programme. He/she will however represent the Kwando - Linyanti Conservation Area on all park/support zone related matters. His/her responsibilities shall include:

- Assuming overall responsibility for the administration and management of the Park, including all assets.
- Fulfilling the role of co-ordinator between the Directorate, Regional Warden and all staff in the Park.
- Liase with other government agencies, non-government organisations, adjacent communities and the private sector.
- Co-ordinate the preparation of comprehensive staffing plans.
- Determine and recommend to the Regional Warden the in-service and other training requirements of staff.
- Prepare and implement Annual Work Plans, schedules and budgets following the approval of the Regional Warden.
- Prepare Staff Establishment list in accordance with the Management Plans for approval of the Regional Warden and Directorate.
- With permission of the Regional Warden recruits and dismisses Junior Staff in his/her Park.
- Allocates duties to all Junior Officers (patrol duty, gate duty, routine maintenance etc.).
- Ensures that all infrastructure development within the park is in accordance with Namibian’s laws, policies, regulations and health and safety standards.
- Visits all parks under his/her control at least once a month, including visits to the field.
• Submits periodic progress reports and liaises regularly with the Regional Warden to ensure that his office is informed regarding progress and problems in the development and management of the parks.

• Periodically communicates and co-ordinates with government organisations, non-government organisations, neighbouring communities and the private sector regarding the development and management of the park.

• Overall in charge of co-ordinating and combating illegal activities.

• Responsible for financial accountability through:
  
a  Recording all monies receipted in the park
b  Monthly cash returns to Regional Office
c  Government recurrent and operational budgets under his control

• Carrying out stock takes at the end of each financial year and reporting on the findings to the Regional Warden.

• Ensuring that all tourist facilities are clean and operational.

• Attends to Scout force, parades and kit inspection.

• Actively involving local Support Group in Park Management wherever possible.

• Attends local authority meetings.

• Responds to all problem animal reports and deals with the issues expeditiously.

• Preparing contracts, terms of reference, reports and briefings as required by the exigencies of the position.

• Procuring all necessary materials required to develop and manage the park (fuel, building material, hire or equipment etc.).

• Carrying out regular spot-checks on how work plans are being implemented.

• Providing the Regional Warden with confidential reports on all his/her staff.

• Calling regular staff meetings.

• Recording any ecological or other data related to biophysical characteristics of the Park (climate, river flow, animal trends, deaths, fire etc.).

• Ensures proper maintenance of equipment and facilities.

• Maintains discipline in the Park.

• Carries out any other duties assigned to him/her from time to time by the Regional Warden and Directorate.

Responsibilities of the Senior Conservation Officer

The Senior Conservation Officer will hold the same rank as the Warden and will be responsible for the staff under his control. He/she will work closely with the Warden to ensure the smooth running of the administration, development and management of the park. He/she will assume overall responsibility for the Research and Monitoring Programme for the Kwando-Linyanti Core Conservation Area. His/her responsibilities shall include:

• Develop a comprehensive plan for the management and staffing of the Research and Monitoring Programme for the Kwando - Linyanti Core Conservation Area.

• Prepare and implements budget and work plans following approval of the Directorate of Specialist Services.

• Supervise research and monitoring activities.

• Compile, process and interpret baseline data.
• Assist in the production of information materials for the Education, Communication and Public Relations programme.
• Assist the Support Zone Co-ordinator in the development of Conservancies.
• Prepare contracts, terms of reference and agreements with scientists and research institutions.
• Organise and supervise the research and monitoring functions within the individual parks.
• Ensure that clearly defined and appropriate duties are described in individual job descriptions for all research and monitoring staff.
• Determine and recommend to the Regional Warden and Directorate of Specialist Services the in-service training requirements for research and monitoring staff.
• Appraise the level of performance of research and monitoring staff, and make recommendations to the Regional Warden and Directorate of Specialist Services regarding staff transfers, discipline, promotion and general welfare.
• Formulates and proposes to the Directorate of Specialist Services and Regional Warden, through a mechanism of annual submission of a budget and work plan, specific tasks and activities for research and monitoring that are consistent with the 5-year Management Plan.
• Oversees the implementation of research projects and work plans, and provides guidance to all ongoing research and monitoring within the Kwando-Linyanti Core Conservation Area.
• Evaluates and recommends to the Division of Specialist Services the relevance of proposed independent research projects as they relate to the Management Plans.
• Determines and directs the appropriate timing and methods employed to assess the abundance and distribution of natural resources in the individual parks and adjacent Support Zones, using such information to determine and recommend to the Regional Warden appropriate ways of managing and utilising these resources.
• Monitors the efficacy of the tourism industry in the area, and compiles a data base of occupancy, rates and economics of the various operations.
• Assists the Regional Warden and Directorate of Specialist Services in vetting applications for recruitment of research and monitoring staff.
• Compiles and submits such reports and briefings as may be required by the Regional Warden and Directorate of Specialist Services.
• Undertakes any other related duties as assigned by the Regional Warden and/or Directorate of Specialist Services.

Responsibilities of the Support Zone Co-ordinator

The principle functions and responsibilities of this position are to assume overall responsibility for all activities related to the Support Zone Programme in the North East Parks. He/she will also provide input into the Education, Communication and Public Relations programme to ensure that information regarding the development and management of Conservancies is accurately reflected. His/her specific responsibilities will include:

• Develop a 5-year comprehensive plan for the management and staffing of the Support Zone Programme that is consistent with the Management Plans for the North East Parks.
• Develop and implement annual work plans and operational budgets in accordance with the Integrated Development Plans.
- Establish protocol and working relationships with governmental organisations, non-government organisations, support zone communities and private sector.
- To be the liaison between the park and support zone communities, NGOs and private sector.
- Closely co-ordinate and co-operate with all park personnel and provide in-service training of all staff in communication and community liaison skills.
- Organise support zone functions for the individual Conservation Areas and supervise the effective discharge of these functions.
- Determine and recommend to the Regional Warden the required number and grade of Support Zone Personnel and their duty station placement.
- Ensure that clearly defined and appropriate duties are described in individual job descriptions.
- Determine and recommend the in-service training requirements for Support Zone staff.
- Appraise the level of performance of Support Zone staff and make recommendations to the Regional Warden regarding staff transfers, discipline, promotion and general welfare.
- Formulate and propose to the Regional warden, through a mechanism of annual submission of a budget and work plan, specific tasks and activities for Support Zone development that are consistent with the 5-year Management Plans.
- Oversee the implementation of Support Zone projects and work plans, and provide guidance to all Support Zone personnel within the North East Parks.
- Liase with local non-government organisations in the creation of conservancies within Support Zones.
- Liase with the individual Wardens to develop methods and schedules for Community Game Guard participation in patrolling of the Conservation Areas.
- Liase with the Senior Conservation Scientist and Warden to develop protocols and procedures whereby neighbouring communities may be allowed access to the parks for the sustainable utilisation of natural resources consistent with the primary conservation purposes of the parks.
- Co-ordinates the compilation of financial estimates relating to the Support Zone programme and supervises the disbursement and expenditure of allocated funds.
- Assists the Regional Warden in vetting applications for recruitment of Support Zone staff.
- Evaluates and recommends to the Regional Warden and/or MET the relevance of proposed independent research projects as they relate to the Management Plans.
- Compiles and submits such reports and briefings as may be required by the Regional Warden and/or Ministry of Environment and Tourism.
- Undertakes any other related duties as assigned by the Regional Warden.
Figure 4: Proposed Organisational Structure of the North-East Parks

- Regional Warden will be located at Rundu
- The Support Zone Co-ordinator will be attached to the Regional Office, but based at Susuwe. He/she will be responsible for co-ordinating all Support Zone activities in the North East Parks Project area.
- Three wardens will be in overall control of the three Conservation Areas
- All staff will be based in the respective parks
Senior Conservation Officer KLCA*
Senior Conservation Officer Khaudum
Senior Conservation Officer Okavango Caprivi

*Kwando-Linyanti Conservation Area
4 MANAGEMENT PLAN FOR THE KWANDO CORE AREA

A summary of the Kwando Core Area’s background and inventory is provided in Appendix II. The management of the Park will conform to eight pre-defined management programmes described in Table 1 in the previous section. The situation analysis and needs assessment has identified various problems and issues that need to be addressed under each management programme (Table 2). These are transformed into specific activities that are to be undertaken by the park management authorities in order to achieve the goals and objectives of the park as outlined in the Vision Statement. The resources and operational budgets to undertake these activities are identified here and summarised in Volume 3: Integrated Development Plan for the Kwando Core Area.

4.1 Management Framework

This is the first five-year plan for the Kwando Core Area starting 1st January 2000. Its purpose is to guide the MET, and particularly the Regional Headquarters and Conservation Area Wardens in the allocation of resources to develop and operate the Core Area. The priorities for action have been identified in the situation and needs assessment. Furthermore, this management plan has been developed within a framework of parameters that have been dictated by the realities on ground coupled with the mission and goals of the Ministry of Environment and Tourism, and the Vision Statement of the Kwando Core Area.

In summary, these are:

1. The Kwando Core Area is too small to accommodate extensive tourism infrastructure development without compromising its conservation goals. Therefore no permanent facilities for overnight visitor accommodation should be developed within the park, but short duration camping at selected sites will be permitted.

2. To promote economic benefits of surrounding communities, permanent visitor accommodation (lodges, tented camps, camping sites) should be developed outside the Kwando Core Area and within the Kwando, Mayuni and Mashi Conservancies.

3. Hunting and photographic tourism are not compatible within the very limited areas of the Kwando Core Area. Therefore no hunting is to be allowed within the park.

4. Hunting should take place only outside the Kwando Core Area and in the Kwando, Mayuni and Mashi Conservancies in terms of quotas approved by MET. Hunting will also take place in the Bwabwata Multiple Use Area.

5. The Kwando Core Area is too small to accommodate unlimited tourism access. The initial recommended daily limit is 27 vehicles based on 55 kilometres of available road and a sight distance of two kilometres.

6. Reservations, permits and entry fees will be required of all visitors using the park. Entry fees to be shared with the adjacent Conservancies once established.

7. No persons should reside in the Kwando Core Area except within the Susuwe Development Zone and only then if specifically permitted by the Permanent Secretary of the Ministry of Environment and Tourism. This restriction applies to all persons, including MET personnel.
8. All staff assigned to the Kwando Core Area should reside within it (subject to the provisions of #7 above).

9. Susuwe will be the central headquarters for the Kwando-Linyanti Core Conservation Area accommodating the research and community-based functions for the area.

4.2 Management Programme Activities

The activities identified here are designed to serve the objective of the park, and allocate the responsibilities for the required actions. Recurrent and Operational budgets to carry out these actions are provided here, while Capital Budgets to undertake the necessary infrastructure developments are summarised in Volume 3: Integrated Development Plan for the Kwando Core Area.

4.2.1 Administration Programme

The administration programme seeks to ensure that enabling legislation is passed to facilitate protection of the Kwando Core Area, and to identify the staff requirements and responsibilities. It also sets in place certain administrative procedures, such as the collection of entry fees and visitor control. In order to achieve its objectives the following activities are to be

Activity 1: Survey the boundary of the Kwando Core Area and prepare legal description to be incorporated in the legislation.

Current problem and issues

The current legal status of the Kwando Core Area is unclear. The area abutting the Kwando river known as the “Kwando Triangle” or “Golden Triangle” is currently unproclaimed. The remainder of the area is protected as part of the Caprivi Game Park. There is also some confusion regarding the future status and boundaries of the proposed “Bwabwata National Park”, especially if this area is subdivided by Veterinary Control Fences. Without a clearly defined boundary and acceptance by the local communities, management of this area will be extremely difficult.

Proposed solutions

It is recommended that the status of the proposed Bwabwata National Park be resolved as soon as possible. This will afford legal protection to the entire Kwando Core Area. Furthermore, the boundaries of the Kwando Core Area should be clearly defined and double as a firebreak. The issue of the future status of the “Kwando Triangle” is to be resolved through negotiation with the various tribal authorities. Until this is resolved, this area is to be managed by MET as part of the Kwando Core Area.

Implementation
This activity is to be implemented by the Ministry of Environment and Tourism in Windhoek in conjunction with the local staff and communities. The western boundary is to be surveyed and concrete cairns are to be erected at one kilometre intervals such that at least 0.5 metres are above the ground. If considered necessary the cutline is to be widened to act as a firebreak, and cleared annually either manually or through the use of a motorised grader. Appropriate drains are to be installed to avoid erosion.

The Support Zone Co-ordinator will be responsible for initiating the negotiations with the various tribal authorities concerning the “Kwando Triangle”.

The description of the area boundary is then to be gazetted.

**Resources required**

- Surveyor to physically map and mark the boundary
- Legal advice to draft the appropriate legislation
- Boundary clearing where necessary
- Boundary marker cairns
- Casual labour
- Logistic support for Support Zone Co-ordinator

**Activity 2: Appoint the Warden and staff responsible for the management and development of the Park.**

**Current problem and issues**

The staff compliment for the Kwando Core Area consists of a Principle Ranger, 5 Scouts, 1 operator/driver, 6 watchman and 2 labourers. The Warden resides in Katima Mulilo together with the Senior Conservation Scientist responsible for the Eastern Caprivi. There is no person within MET who is responsible for co-ordinating the implementation of the “Parks and Neighbours” policy (this is left largely to local NGOs operating in the area). This staff compliment cannot manage the Park effectively. Furthermore, staff recruited from local tribes is often viewed with suspicion by rival tribes while various stakeholders are under the impression that the current staff is unable to do their job.

**Proposed solutions**

MET is to recruit the Warden for the Kwando Core Area and ensure that this person resides at Susuwe, together with the Senior Conservation Scientist and Support Zone Co-ordinator. These officers should preferably be recruited from outside the region and not have any affiliations to any of the local tribes. Similarly other senior staff (Principle Rangers, Senior Rangers etc.) should not be drawn from the region if possible. Scouts may be recruited locally, but preference is to be given to persons originating from outside the region.

**Implementation**

This activity is to be implemented by the Ministry of Environment and Tourism in conjunction with the Regional Warden. The staff is to be based in the Park as soon as possible and the Warden will be responsible for developing the annual work programme in
conjunction with the Conservation Scientist and Support Zone Co-ordinator. He/she will also establish the lines of communication with staff based in Mamili and Mudumu National Parks.

**Resources required**

No specific resources are required for this activity. Staff is to be recruited from within MET wherever possible.

**Activity 3: Park entry system and fee structure to be developed and implemented.**

**Current problem and issues**

No fees are currently levied for the use of any of the North East Parks in the Kwando - Linyanti Conservation Area. Furthermore, no systems have been developed regarding the fee structure or how local communities can benefit from the proceeds.

**Proposed solutions**

In conjunction with the local communities, MET is to set standardised park entry fees for all parks in the Kwando-Linyanti Conservation Area. These fees are to conform to the legislation. Mechanisms to collect and account for all park entry fees are to be established at Susuwe.

**Implementation**

A fee structure is to be developed, taking into consideration comparable fees charged in Botswana and Zimbabwe. The proposed fee structures are then to be discussed with the management committees of the Kwando, Mayuni and Mashi Conservancies. Local staff is to be trained to collect and account for all park entry fees.

**Resources required**

If the data are not available in Windhoek, a short consultancy is to be undertaken to gather the necessary information on comparable park entry fees. Appropriate permit systems and receipts to be developed. Staff training to account for entry fees.

**Activity 4: Design and implement training programme for all levels of staff**

**Current problem and issues**

It will be necessary to recruit staff for the park. The experience and level of competency of the staff will vary depending on where the staff originates. Senior staff are likely to have some experience, either gained at other stations as a result of in-house training or following graduation from a wildlife training institute. The junior staff (Rangers, Senior Game Scouts *etc.*) is not likely to have a broad range of skills.

The net result will be that there will be a wide range of skills and experience amongst all levels of staff, and all will need some form of training in practical wildlife management and ecology. Some of this training can be accomplished in house, however, since there are
no local wildlife training institutions, it may be necessary to send recruits to national and regional training programmes in wildlife management.

**Proposed solution**

A simple training needs assessment will be conducted of all the staff on the station to determine their level of skills and what level of training is required. As a guide, the following table illustrates the type of skills that various levels of staff should acquire.

<table>
<thead>
<tr>
<th>Senior staff</th>
<th>Junior Staff</th>
<th>Scouts</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Accounting and budget control</td>
<td>• Artisan skills (bricklaying, carpentry, plumbing, painting etc)</td>
<td>• Basic Scout Training</td>
</tr>
<tr>
<td>• MET Accounting systems</td>
<td>• Leadership and supervisory course</td>
<td>• Basic bird and mammal identification</td>
</tr>
<tr>
<td>• Man management</td>
<td>• Advanced vegetation, bird and mammal identification</td>
<td>• Basic report writing</td>
</tr>
<tr>
<td>• Leadership and supervisory course</td>
<td>• Collection of field data</td>
<td>• Defensive driving</td>
</tr>
<tr>
<td>• Advanced vegetation, bird and mammal identification</td>
<td>• Basic Biometry</td>
<td>• Handling firearms</td>
</tr>
<tr>
<td>• Collection of field data</td>
<td>• Communication</td>
<td>• Fire fighting</td>
</tr>
<tr>
<td>• Basic Biometry</td>
<td>• Community development</td>
<td>• Guiding (walks/trails)</td>
</tr>
<tr>
<td>• Communication</td>
<td>• Computer orientation</td>
<td>• Map reading</td>
</tr>
<tr>
<td>• Community development</td>
<td>• Conservancy Guard Training</td>
<td>• Radio techniques</td>
</tr>
<tr>
<td>• Computer orientation</td>
<td>• Customer relations</td>
<td>• Radio techniques</td>
</tr>
<tr>
<td>• Conservancy Guard Training</td>
<td>• Defensive driving</td>
<td>• Tractor drivers course</td>
</tr>
<tr>
<td>• Customer relations</td>
<td>• First Aid</td>
<td></td>
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<tr>
<td>• Defensive driving</td>
<td>• Handling firearms</td>
<td></td>
</tr>
<tr>
<td>• Display design and construction</td>
<td>• Fire fighting</td>
<td></td>
</tr>
<tr>
<td>• Environmental Impact Assessment</td>
<td>• First Aid</td>
<td></td>
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<tr>
<td>• First Aid</td>
<td>• Guiding (walks/trails)</td>
<td></td>
</tr>
<tr>
<td>• Fleet management</td>
<td>• Investigation techniques</td>
<td></td>
</tr>
<tr>
<td>• Managing meetings</td>
<td>• Mechanics course</td>
<td></td>
</tr>
<tr>
<td>• Professional hunting</td>
<td>• Radio maintenance</td>
<td></td>
</tr>
<tr>
<td>• Industrial relations</td>
<td>• Road construction</td>
<td></td>
</tr>
<tr>
<td>• Internal Audit</td>
<td>• Trophy processing</td>
<td></td>
</tr>
<tr>
<td>• Investigation techniques</td>
<td>• Solar panel maintenance</td>
<td></td>
</tr>
<tr>
<td>• Strategic planning</td>
<td></td>
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</tr>
</tbody>
</table>

**Implementation**

Training is the long term key to attaining the Ministry's mission. In-service training is essential if management professionals are to perform at peak levels. However, natural resource management is a highly skilled and technical profession, and it is no longer possible to rely on training in ecology, forestry, wildlife conservation etc. Modern professional wildlife managers must also acquire skills in communications and public relations, sociology, economics, leadership, administrative management, new technologies etc. It is beyond the scope of this management plan to design a specific Career Path Training Plan for professional staff. This is the responsibility of MET.

Nonetheless, it will be necessary for staff to acquire the range of skills necessary to manage the park. It will be the responsibility of the Regional Warden to identify appropriate training courses and to ensure that all staff undergo a structured training programme that will improve their management skills.

**Resources required**

In house assessment of training needs.
 Funds to support staff on training courses
 Funds to bring in specialist trainers to undertake in-house training programmes.
4.2.2 Infrastructure Development Programme

Introduction

All capital investment requirements to develop the Park’s infrastructure (housing, roads, boreholes, entrance gates etc.) are dealt with under the Infrastructure Development Programme in Volume 3: Integrated Development Plan for Mamili National Park.

Please refer to this document for the details of this programme together with the estimated budgets.
4.2.3 Protection Programme

Introduction

The objective of the Protection Programme is to maintain the integrity of the park both in terms of law enforcement and from biophysical effects such as fire. Although the current staff is deployed on anti-poaching patrols, illegal activities are widespread. Furthermore, there is no fire protection system to prevent wild fires from entering the park. To address these issues, the following activities are proposed:

Activity 1: Develop law enforcement programme for the Kwando Core Area

Current problems and issues

Enforcement of the law in the Kwando Core Area is poor. Poaching by local people is widespread along the Kwando river, and it is suspected that the incidence of fire can be directly attributed to the activities of illegal person in the park.

Furthermore, poaching by Angolan nationals, particularly of elephant, is of serious concern to MET. Dealing with this particular problem is difficult, especially as the poachers are usually heavily armed.

Proposed solutions

The protection programme must be based on the permanent presence of staff in the park who are equipped to undertake regular patrols. The following activities are to be undertaken:

3. All park borders are to be patrolled at least once weekly on a random basis. Follow-up will be conducted on all evidence relating to unauthorised incursions of people and/or livestock into the park. Contravention of any park rules and regulations will be noted, enforced and reported. Reports of each incident must be submitted to the Warden and kept on record.

4. All park roads will be patrolled at least twice weekly on a random basis. Contravention to park rules and regulations will be noted, enforced and reported. Reports of each incident will be submitted to the Warden and kept on record.

5. Maintain rapid response capabilities and procedures for following up on reported incidents from other law enforcement officers, concessionaires and/or members of the general public.

6. Maintain a reporting structure for incidents. Reports are to be filed, maintained and analysed by the Warden. All incident reports will, at a minimum, contain information on the area(s) affected, animals or products involved, rules/regulations contravened, names of individuals involved (if known), arresting or investigating officer, recommendations for further actions, etc. The Warden will ensure that a comprehensive file of this information is kept, analysed and utilised to assess priority areas for patrols, arrest performances of individual officers, trends in illegal activities, etc.
7. Provide a list of park regulations to all visitors as they enter the park and encourage them to report any illegal incidents they may observe.

8. The Warden will maintain liaison with the Namibian Defence Force and the Namibian Police and utilise their capabilities to deal with cross-border violations and co-operative patrolling of the borders with Botswana and, when appropriate, Angola.

9. The Warden will maintain liaison with Botswana and Angolan authorities in matters relating to the prosecution of cross-border violations.

Implementation

This activity will be implemented by the Warden for the Kwando Core Area using a compliment of Scouts and Community Game Guards. Using the local knowledge of the Park, the Warden will plan regular patrols varying from one to five days. The Warden will also be required to liaise with the NDF and Police. Where necessary, the Scout force can be augmented with staff from other stations.

Resources required

Uniforms, transport, weapons, radios
Patrol equipment (backpacks, water bottles, sleeping bags, tents, mosquito nets etc.)
Logistic support

Activity 2: Fire Management Programme developed and implemented

Current problem and issues

As much as 60% of the eastern Caprivi is burnt annually and the Kwando Core Area does not escape this. It is suspected that most of the fires originate outside the park, yet there are no firebreaks installed to curtail or stop wild fires from entering the park. Furthermore, the staff based in the park is not equipped to deal with wild fires should they occur.

Proposed solutions

This activity will concentrate on preventing wild fires from entering the park. It will also be responsible for controlling and extinguishing fires that occur within the park. A basic fire management programme is to be established using the following guidelines:

1. The western park boundary and border with Angola is to be cleared to a width of at least 18 metres.

2. The boundary firebreaks will be reinforced by burning narrow strip approximately 5 metres wide adjacent to the road. These strips will be burnt on alternate sides of the road each year to avoid damage to the tree and shrub layer.

3. The internal road network is to be used as firebreaks, particularly those roads that are at right angles to the prevailing wind. The roads are to be cleared to a width of not less than 9 metres. The access roads are:
Management Plans for the North-East Parks
Kwando Core Area Management Plan

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- Delta Road
- Trans-Caprivi Highway
- Sanzo Road
- Proposed north-south access roads

4. Both internal and external firebreaks are to be cleared annually as early as possible after the end of the rainy season but not later than July. Heavy machinery may be used to establish the firebreaks but should not be used for firebreak maintenance on an annual basis. Hand tools and limited back burning should be used instead.

5. To avoid control fires escaping, all control burns of fire breaks or block burns conducted as part of an early burning programme are to be conducted during the late afternoon and/or at night. No control burns are to be attempted on windy days.

6. An early burning programme is to be implemented based on the recommendations of the fire management workshop results. This programme will examine the feasibility and practicality of strategically burning blocks on a rotational basis to mitigate against late season wild fires.

7. A fire officer will be appointed from existing staff and a fire duty roster for coordinating operations is to be maintained during the main fire season (April to November) who will be responsible for keeping a fire register.

8. All fires inside or adjacent to the park will be investigated and action taken if necessary (or feasible). Backburning will be the preferred method of controlling wild fires.

9. Local staff will initiate co-operative programmes and actions with other fire control authorities, adjacent communities and neighbouring landowners.

10. Conservation scientists will provide for the recording of fire history in the parks. Where feasible, NOAA satellite data should be accessed to assist in this task.

Implementation

This activity is to be implemented in conjunction with similar programmes in Mudumu and Mamili National Parks. The Warden for the Kwando-Linyanti Conservation Area will be responsible for holding a joint workshop with key staff, including selected members from the local communities, to plan the annual fire management programme. This workshop will review the previous fire season, analyse the lessons learnt, identify problems and propose solutions to reducing the incidence of wild fires in the Conservation Areas.

The Warden and park staff is responsible for the implementation of the programme.

Resources required

Annual fire management workshop with key stakeholders and local staff
Heavy machinery to establish initial firebreaks.
Tools for firebreak maintenance (shovels, fire beaters)
Staff and casual labour to be used for clearing, maintenance and fire fighting.
Transport to move staff to scene of wild fires
4.2.4 Maintenance Programme

Introduction

The Maintenance Programme enables the Warden to rehabilitate and/or enhance key infrastructure developments that are necessary to manage the park. This includes the regular maintenance of the park boundary, fire breaks, buildings and roads. It also includes regular maintenance of all vehicles and associated equipment, including stationary equipment such as water pumps/engines, solar power equipment, radios etc.

The Warden will be responsible for developing annual work programmes under this management programme to carried out the following routine maintenance:

1. Annual border clearance
2. Annual road clearance
3. Installation of annual fire breaks
4. Waste removal from tourist camps as well as Susuwe Camp
5. Inspection and maintenance of tourist facilities
6. Vehicle maintenance
7. Inspection and maintenance Susuwe Camp

Whilst each of the above can be regarded as distinct activities, they all require very

Activity 1: Maintenance of the bio-physical resources and park infrastructure

Current problem and issues

The Vision Statement emphasises that the Kwando Core Area will be managed to provide the visiting tourists with a high-quality nature experience. To achieve this goal, the Kwando Core Area will need to be managed to the highest standard. This will require that the park is accessible at all times, it is not regularly burnt out, camp sites are kept clean and tidy and staff morale is maintained at a high level through proper supervision, support, communications and good accommodation. It will also be necessary to ensure that the vehicle fleet and communication network is well maintained so that staff are able to carry out their duties efficiently.

Proposed solution

The Warden is to be provided with the necessary financial budget and equipment to undertake routine maintenance in the park. In situations where it is necessary to use heavy equipment (motorised grader, tipper lorry etc), the Warden will approach the Regional Warden to access this equipment from within the region or through private contract. Generally, the park management will use local contract labour wherever possible to clear boundary lines, prepare firebreaks, maintain roads etc. Where masonry work is required to maintain buildings, plumbing, carpentry etc, the Warden shall have the flexibility of hiring local contractors or using in-house expertise.

The station workshop will also be equipped to undertake vehicle repairs and services, and small to medium engineering projects. A fuel depot capable of storing a minimum of 7
500 litres of diesel fuel will be established at Susuwe. Major repairs to vehicles and plant equipment will be out-sourced.

All waste material recovered from the park will be separated into combustible and hard waste. Hard waste is to be removed to an approved waste disposal site (preferably outside the park) while combustible litter will be incinerated.

The procedure guidelines on waste disposal site will consist of:

- Adequate structures for waste collection will be placed at the entrance gate. Structures should be designed to exclude baboons, monkeys and any other potential problem animal.
- Notices will be posted at appropriate places throughout the park instructing visitors to take their waste out of the park themselves.
- All waste is to be collected at least weekly and more often if necessary.
- If the solid waste disposal site is located in the park, it should be enclosed with a five-metre mesh fencing to contain any windblown loss of refuse and should be electrified if deemed necessary. The top should also be covered if possible (i.e. to form a cage). Heavy soils should be avoided as these may impede drainage and so pose a health risk during the wet season.
- Where possible, all tin cans etc should be crushed to reduce their size and burnt before be disposed. The contents of the site should be set alight regularly to reduce the volume.
- The disposal site should be at least three metres deep and should not be filled beyond 2.5m. Once full, the site is to be filled and the top soil compacted.
- All hazardous substances (e.g. engine oil, used batteries, poisons, caustic chemicals etc.) will be collected, stored in leak proof containers and taken to collection centres in the nearest municipality.

**Implementation**

The Warden is responsible for developing the maintenance budget to be included in the annual work programme. Specific tasks will be overseen by junior staff in the field (road maintenance, camp clearance, firebreaks etc). This work programme will identify the sub-tasks that need to be undertaken during the course of the year.

**Resources required**

Contract labour
Hire of heavy equipment (grader, lorries etc)
Tools
Incinerator
Fuel
Vehicle repairs and maintenance
Pump/generator repairs and maintenance
Diesel supply to camp

**Activity 2:** Maintenance of existing game viewing roads, access roads and firebreaks
**Current problem and issues**

The current road network in the Kwando Core Area is adequate for both current tourism levels and management purposes. However, roads that are not used frequently become overgrown and blocked by fallen trees and thus hamper access to remote areas of the park. There is also a tendency for tourists (and staff) to drive off the main roads thus creating roads that are inappropriately sited.

**Proposed solutions**

The level of maintenance of the current road network is to be maintained according to the management classification. Prime Game Viewing Roads (i.e. Class 1) are to be inspected twice annually (May and October) to assess whether the levels of tourism traffic are causing any environmental damage. Compulsory inspections will be conducted after the rainy season, and all roads will be closed to traffic during heavy or persistent rains. Rehabilitation and road maintenance will consist of replacing road surface material. This material is to be recovered from designated borrow pits, preferably located outside the park.

Class 2 roads (i.e. transit roads and single traffic tracks) used primarily by park staff for management purposes are only to be established outside the prime game viewing areas. These roads are not to be used regularly, and are to be closed if they exhibit signs of deterioration.

**Implementation**

Implementation of this activity will be the responsibility of the Warden. The road maintenance and rehabilitation programme will be catered for in the Annual Work Programme. During routine patrols, all trees that have fallen across the road are to be removed to pre-empt off road travel. Roads requiring major rehabilitation involving heavy machinery will be evaluated by the Regional Warden in conjunction with the Warden. This evaluation will consider the option of road closure, rehabilitation or construction of an alternative route. Where necessary, professional advice is to be sought regarding the most cost-effective option.

**Resources required**

- Tractor/trailer to transport road surface material
- Tools (shovels, picks)
- Funds to hire contract labour
- Tyre drag for low level road maintenance
4.2.5 Support Zone Programme

Introduction

The support zone programme is effectively a liaison programme between the MET and the Conservancies and is the method by which MET will implement its "Parks and Neighbours" policy (see Appendix VI). This policy involves all levels of staff and its success heavily depends on the establishment of the Conservancies.

Given that the Conservancies are still in the formative stage and have yet to be gazetted, it is premature to identify specific activities under this management programme that will address the issues identified by the situation analysis and needs assessment. There is still a great deal to be accomplished at a regional level, particularly concerning the modus operandi of the support groups. This task will be the responsibility of the Support Zone Co-ordinator who will be appointed at the regional level.

Nonetheless, it will be necessary for the Kwando Core Area management staff to establish a good relationship with local communities that will facilitate the

Activity 1: Implementation of the "Parks and Neighbours" Policy developed at the regional level

Current problems and issues

A number of Conservancies are in the early stages of formation with the Kwando-Linyanti Conservation Area. This process has been complicated by the fact that there is some degree of confusion regarding the boundaries of the Conservancies, who are the representative communities and how the Support Groups will operate. Furthermore, various tribal authorities have all claimed the “rights” to the proposed national parks, particularly the “Kwando Triangle”.

This state of flux means that it is extremely difficult to develop working relationships between the various Conservancies and the park authorities. Furthermore, staffing arrangements, infrastructure developments and equipment in the Kwando-Linyanti Conservation Area are not conducive to becoming actively involved in the Support Zone Programme. The staff does not have the capacity or the capability to meet this mandate.

Proposed solution

A "Support Zone Co-ordinator" is to be appointed at the regional level to co-ordinate the implementation of the "Parks and Neighbours" policy in the Kwando-Linyanti Conservation Area. This person would be based at Susuwe and would have the following responsibilities:

- Promote the establishment and development of new conservancies, and assist with the management of existing ones.
- Promote and establish Support Groups
• Assist the Support Groups and Parks administration to define their respective roles in the development and management of the Kwando-Linyanti Conservation Area
• Develop a comprehensive understanding of the conditions within the support zones
• Facilitate the agreement of park boundaries with the communities concerned
• Identify and promote a range of economic activities that can be associated with parks
• Develop mechanisms to improve and formalise communications between parks and stakeholders regarding policies, objectives and processes
• Establish a protocol for problem animal control in support zones
• Assist local Wardens in dealing with local communities
• Liase with any NGOs actively involved in community-based natural resource management initiatives
• Work with communities and staff in the Kalahari and Okavango Conservation Areas
• Advise the Regional Warden on policy issues related to the “Parks and Neighbours” initiatives.

At the park level, the Warden will facilitate the implementation of the "Parks and Neighbours" policy by:

• Establishing a "Parks and Neighbours" committee that will meet on a regular basis to discuss mutual problems and resolve areas of conflict
• Reacting to problem animal reports

This will require the Warden to establish lines of communication with the Support Zone Co-ordinator and the local Support Group. With regard to problem animal control, there is a need to establish the magnitude of this problem, frequency and species involved.

Implementation

The overall support zone programme will be co-ordinated by the Support Zone Co-ordinator (SZC) based at Susuwe. The Support Zone Co-ordinator will be responsible for developing an annual work programme and establishing communication links with the various Conservancies. His/her overall responsibility will be to guide the formation of the Conservancies in the Kwando-Linyanti Conservation Area, and to improve relations between the local communities and the park management authorities (see Appendix VI for further details).

The Warden will co-ordinate and arrange regular meetings with the local Support Group. The purpose of these meetings will be to discuss mutual problems and attempt to find amicable solutions. These meetings will also establish the lines of communication to deal with problem animals.

Resources required

Operational budget for Support Group Co-ordinator
Vehicle
Funds to convene workshops to discuss formation and operations of Conservancies
Transport for Support Group members to attend meetings
Logistic support to undertake PAC
4.2.6 Education, Communication, Public Relations and Tourism Programme

**Introduction**

The education, communication and public relations programme is responsible for increasing public knowledge and awareness of the Park and its role in conserving the Kwando-Linyanti wetlands. It is also responsible for ensuring that any published material is accurate and up-to-date, and that it reaches as wide an audience as possible. Outreach activities, such as school visits, are also facilitated under this programme. In addition, this programme is closely linked to activities undertaken by the Support Zone Programme.

This management programme is important at the present stage of the development of the Kwando Core Area for two main reasons. The legal status of the park itself is not yet secure, and will require that the park authorities develops strong lines of communication with the local communities. Secondly, there is an urgent need to attract more tourists to the park, and this can be achieved by raising the tourism profile of the park.

**Activity 1: Develop an education, communication and public relations programme**

**Current problem and issues**

MET do not have a structured programme that can disseminate its goals and objectives concerning the development of the Kwando Core Area to the local communities and the general public. Furthermore, there are no educational materials or handouts available for the general public. Added to this, MET are not in a position to promote or support many activities under this programme.

**Proposed solution**

A comprehensive Education, Communication and Public Relations Programme is to be developed in collaboration with other government agencies, non-governmental organisations and private sector interests. The development of this programme will be done in close co-operation with similar activities in the other North East Parks. The programme will include, but not be limited to, the following:

- The reasons for the creation of the parks and Support Zones and the unique features therein.
- Rationale for park zoning.
- Importance of the Kwando-Linyanti wetlands.
- Tourism opportunities.
- The history of human use of the parks and Support Zones.
- Soil conservation problems and the ways in which visitors may minimise their impact.
- Native plant and animal species and communities, including historical and present conditions of these resources.
- The control of introduced plants and animals within the park and Support Zones and the management strategies adopted to deal with them.
• The traditional role of fire in the ecosystems of the area and present fire management policy and practice.
• The development of curriculum packages on the above subjects for schools within the Support Zones.
• Contracting the development of tourist guidebooks for the area.
• Production of materials for tourists, which include rules, regulations, park use protocols and suitable behaviour within conservation areas.

Implementation

Implementation of this activity is beyond the capacity of MET field staff. This activity will therefore be developed and implemented using donor funded technical assistance in co-operation with the Support Zone Co-ordinator, NGOs and the private sector. Associated government agencies, such as the Namibia Tourism Board, will also play a significant role in this activity.

Resources required

Donor funded technical assistance
Logistical support
Short term consultancy to produce educational and tourism promotional material
Production of educational and promotional material

Activity 2: Promote the tourism potential of the Kwando Core Area

Current problem and issues

The Kwando Core Area is located in a remote part of the Eastern Caprivi Strip. Although the park has been in existence for several years, it is not frequently visited either by passing tourists or tour operators. To justify the investment in infrastructure development, and to meet the overall objectives of improving the rural economy of the area, it is essential that the park be visited by tourists.

Proposed solution

With the assistance of the Namibia Tourist Board and relevant tour operators, a strategy will be developed to promote the North East Parks in general and the Kwando Core Area in particular. This strategy will consider the publication of feature articles in travel magazines, production of brochures and marketing at international tourism fairs attended by the Namibian Tourism Board. The National Tourism Development Plan will provide valuable input in this regard.

Implementation

Implementation of this activity will be co-ordinated by the Regional Warden in conjunction with the Directorate of Tourism and Resorts using donor funded technical assistance. The activity will be developed in parallel to similar initiatives in Mudumu and Mamili National Parks.

Resources required
Donor funded technical assistance
Production of promotional material
Logistic support
4.2.7 Tourism and Visitor Programme

Introduction

The purpose of this management programme is to control and manage all tourism and visitor activities in the park. It is also the purpose of this programme to ensure that the park receives the maximum financial benefit from tourism, and that tourists adhere to any rules or regulations regarding the use of the park (see Appendix VII). Currently, there are no mechanisms in place that ensures the smooth running of tourist activities nor is there any reliable information available about the park. To

Activity 1: Develop and implement a tourism management programme

Current problem and issues

At present there is a very rudimentary tourism programme in place but it has many weaknesses. The more important of these are:

- No entry fees are paid.
- Entry permits are issued at Katima Mulilo or at Susuwe but control is poor and it is possible to enter the park without permits.
- There are no reliable records of the number of tourists visiting the park.
- Availability of information for visitors to the park is sporadic and of poor quality.
- Visitors are not made aware of the Park rules and regulations.
- There are no restrictions on the numbers and types of vehicles allowed in the Park.
- Nambwa Camp site currently used by tourists has no facilities.
- There is indiscriminate use of firewood by tourists.
- There are no guidelines for general use of the park (e.g. commercial filming, commercial tour operators, walking safaris etc.).

Proposed solution

A tourism management programme for the Kwando Core Area is to be developed. This programme will conform to similar tourism management programmes developed for the other North East Parks. Issues to be addressed in the management programme will include (but not be restricted to) the following:

1. Gazettement and collection of fees.

2. Control of access:
   - Designated entry/exit points
   - Vehicle limitations (e.g. no vehicles with double rear wheels permitted)
   - Speed limit of 40km per hour
   - No caravans permitted
   - No motorboats permitted
   - Maximum number of vehicles in the park limited to 27 tourist vehicles at any one time
   - Operators leaving vehicles in the park are to charged for this privilege
   - Only two commercial operator licenses to be granted for the park at any one time
3. Control of use:
   - No firewood to be collected inside the park.
   - Behaviour that is disturbing to wildlife not permitted.
   - Commercial filmmakers and photographers need special permits.
   - Walking safaris encouraged, preferably accompanied by a qualified guide.
   - Camping only permitted at designated campsites.

Implementation

The overall tourism management programme will be developed at a regional level, and modified to suit the conditions of the Kwando Core Area. Draft procedure guidelines on tourism, visitors and concessionaires have been developed (Appendix VII). These should be modified where necessary. The warden and other park staff will be responsible for enforcing the programme.

Resources required

Entrance gate
Receipt books
Information materials
Signs at park entrances and on the Trans-Caprivi Highway and in Katima Mulilo
4.2.8 Research and Monitoring Programme

**Introduction**

The primary aim of the research and monitoring programme is to provide practical solutions to management problems affecting the park. It also seeks to establish baseline data sets to monitor trends such as population numbers, climate, flood regimes, vegetation, fire, visitor usage, poaching and other illegal activities etc. In addition specific research projects will be promoted where practical. In the case of the Kwando Core Area, the presence of a full time research ecologist is not justified however there is a need to undertake research and monitoring activities in the Kwando – Linyanti Conservation Area as a whole. At the area level specific

**Activity 1: Develop a strategic research and monitoring plan for the Kwando Core Area**

**Current problem and issue**

There is no structured research programme for the Kwando Core Area. Sporadic research projects such as invertebrate, fish and bird inventories have been carried out in the past, while aerial surveys to monitor large mammal population trends have been irregular. These have been done by both the Namibian and Botswana Governments. There are no active ecological baseline monitoring programmes.

**Proposed solution**

A structured plan for research and monitoring is to be developed. This plan will focus on addressing management problems affecting the park, and be regularly updated. Baseline inventories are to be established and designed to address management specific problems. The following monitoring programmes identify some of the options to be considered.

a Fire: The park is regularly burnt out by wild fires. Little is known about the source of these fires or who causes them (honey gatherers?, hunters?). Neither fire-fighting techniques exist nor are there any records of previous fire history. The monitoring programme should examine the source of fires and where best to concentrate the mitigating efforts. Using the data gathered each year, this monitoring programme should lead to the establishment of a fire break system that could incorporate an early controlled burning programme.

b Climate: Records of rainfall and temperature should be monitored in the park.

c River levels: Monthly records of the Kwando river are to be recorded, together with the extent of flooding.

d Monitoring population numbers: Although a regional aerial survey is planned, local staff can keep a record of the number and location of key species. These data can be analysed to provide an index of whether the populations are increasing or decreasing.
e Collation of incidents of illegal activity with patrol effort: The success of the protection programme can be measured by keep a record of the number of patrol nights relative to the number of illegal incidences recorded.

f Elephants and vegetation. Research into this topic has been carried out in the past. It is recommended that the transects be identified and monitored. New transects and research activities should be developed as the need arises (e.g. the effect of the Botswana border fence)

Where possible, local staff will be responsible for data collection. Large mammal surveys will be conducted as part of the regional aerial survey programme of the Kwando-Linyanti Conservation Area and co-ordinated by the Senior Conservation Officer.

Research into problems specific to the Kwando Core Area (i.e. elephant damage to vegetation, fire management) are to be developed as projects that can be carried out using existing staff. Research personnel from academic institutions will be encouraged to carry out in-depth studies identified under the strategic plan.

**Implementation**

The Senior Conservation Officer (currently based in Katima Mulilo) will be responsible for formulating research plans for the Kwando-Linyanti Conservation Area and for the individual parks within the area. In doing so, he/she will liaise with the Warden for the Kwando Core Area to identify research and monitoring projects that specifically address management issues in the area. Research proposals developed as a result are to include equipment and manpower needs, and cost estimates.

**Resources required**

Input from Warden and Conservation Scientist
Logistical support

**Activity 2: Develop protocols for consumptive use of natural resources in the Kwando Core Area**

**Current problem and issues**

There is pressure from local residents to harvest various resources in the Kwando Core Area. This is at two levels: local and nationally. Locally, residents wish to cut reeds, catch fish and kill animals, and nationally safari hunters wish to shoot trophies in the Park.

**Proposed solution**

Protocols regarding consumptive use of the Parks resources must be developed. No hunting is permitted in the park (either commercial or subsistence; see Management Framework; Section 4.1). Grass and reed cutting should be allowed under supervision. Fishing, using rod and line only, is to be permitted in the Kwando river. In allowing this activity, the Warden must be fully aware of any political implications and should remain in
close contact with the NDF, Namibia Police and Regional Warden. Local communities are to be kept informed of any adverse developments.

**Implementation**

Implementation will be at two levels. First, a regional policy governing the use of selected natural resources in the North East Parks is to be developed. This will be the responsibility of the Regional Warden.

Secondly, the level of usage, products involved and time of year is to be determined for the Kwando Core Area. This exercise will be carried out in conjunction with the local communities and an agreed strategy developed. The Warden will be responsible for developing this strategy in conjunction with the local communities. He/she will also be responsible for monitoring the harvesting activities, and determining the time of year and quantities involved. These may change annually so as to fit the prevailing conditions in the Kwando Core Area.

**Resources required**

- Short term consultancy to develop broad policy guidelines
- Short term consultancy to determine demands for products in the Kwando Core Area
- Logistic support to monitor harvesting

**Activity 3 Design and undertake aerial surveys of the Kwando-Linyanti Conservation Area**

**Current problem and issues**

The wildlife populations of the Kwando-Linyanti Conservation Area have drastically declined in recent years. The reasons for this vary from excessive hunting, changing climatic conditions and expansion of alternative land use practices. The thrust of the North East Parks Project is to improve the socio-economic environment of local communities in the area through the development of the North East Parks. This can only be achieved if the status wildlife populations in the area increase leading to increase use of the area by tourists. To achieve this, MET will be investing in the development and management of the North East Parks, particularly in its Protection programme. The effectiveness of this programme cannot be assessed if it is not possible to monitor the growth (or decline) of the key wildlife populations in the area.

**Proposed Solution**

Aerial surveys of the entire Kwando-Linyanti Conservation Area will be undertaken every alternative year. The surveys will be implemented by qualified staff from the Division of Specialist Services in Windhoek. Local parks staff are to be involved wherever possible, particularly the Senior Conservation Officer.

**Implementation**

A stratified systematic transect sampling technique is to be applied for the survey using a 4 or 6 seater aircraft (Cessna 182, 185 or 206 or equivalent) equipped with a radar altimeter.
and Global Positioning System. The surveys are to be conducted between August and October. Two observers experienced in aerial survey techniques will call out animal sightings to a recorder/navigator who will note their position from the GPS, species and number. The recorder will also note the height a.g.l every 30m seconds from the radar altimeter to allow the calculation of the mean height of each transect, and also the time that the transect started and ended.

The area will be stratified based on previous surveys, and the strata are to remain constant as far as possible to allow comparisons between years. Sampling intensity will be determined by the mean density of elephants (or another species if the this is warranted) determined over 3 years according to the distribution of $\sqrt{d}$ where:

\[ a = \text{Stratum Area} \]
\[ d = \text{Mean density} \]

Transects in each stratum will be spaced according to the required sampling intensity, using a randomly selected starting point. The angle of orientation of the transects in each stratum will be selected so as to cross ecologically important features at right angles.

The aircraft will be calibrated to provide strip widths of up to 150m either side of the aircraft at a height of 300ft above ground level. The strip width is to be demarcated using streamers or other suitable markers.

Analysis of the data will be the responsibility of the aerial survey co-ordinator, and the data will be disseminated to all interested and affected parties.

**Resources Required**

Funds to undertake aerial survey (hire aircraft, purchase fuel, local transport, subsistence, report production and dissemination)

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# 5 Planning Matrix for Kwando Core Area

## Overall Goal
To facilitate the natural movement of wildlife between Botswana, Angola and Zambia through improved conservation status and sustainable economic development of the Kwando Core Area and adjacent Conservation Areas.

## Overall Objective
Secure the integrity of the Kwando Core Area in order to protect the unique biodiversity of the Kwando riverine habitats, Kalahari Woodlands and Omuramba grasslands.

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Means of Verification</th>
<th>Assumptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>National Park gazetted</td>
<td>Boundary of park respected</td>
<td>Wildlife numbers increase</td>
</tr>
<tr>
<td>Benefits to Mayuni/Kwando Conservancy</td>
<td>Statutory instrument</td>
<td>Record of incursions from patrol reports</td>
</tr>
<tr>
<td></td>
<td>Ground and aerial survey reports</td>
<td>Support Zone annual reports</td>
</tr>
</tbody>
</table>

## Results

### 1. Legal integrity of Kwando Core Area
- Park established

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Means of Verification</th>
<th>Assumptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public notification of proclamation</td>
<td>Legal instruments</td>
<td>Political support for park at local level</td>
</tr>
</tbody>
</table>

### 2. Staff permanently based in the Park
- Staff permanently resident in the park
- Staff housing in place
- Support infrastructure in place

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Means of Verification</th>
<th>Assumptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Staff permanently resident in the park</td>
<td>Annual reports</td>
<td>Competent staff in place</td>
</tr>
<tr>
<td>Annual budgets</td>
<td>Physical inspection of infrastructure</td>
<td>Vehicles maintained, equipment functional</td>
</tr>
<tr>
<td>Staff housing in place</td>
<td>Support infrastructure in place</td>
<td></td>
</tr>
</tbody>
</table>

### 3. Level of illegal activity reduced
- Patrol reports indicate 80% reduction in poaching in Year 3 compared to Year 1

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Means of Verification</th>
<th>Assumptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patrol reports indicate 80% reduction in poaching in Year 3 compared to Year 1</td>
<td>Annual reports</td>
<td>Park boundary gazetted</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Appropriate records kept by Warden</td>
</tr>
</tbody>
</table>

### 4. Co-operation with Mayuni and Kwando Support Group improved
- Disposal of funds to Conservancies
- Responding to PAC

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Means of Verification</th>
<th>Assumptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disposal of funds to Conservancies</td>
<td>Annual Reports</td>
<td>MET able to recruit suitable Support Zone Co-ordinator</td>
</tr>
<tr>
<td>Responding to PAC</td>
<td>Record of PAC reports</td>
<td>Conservancies proclaimed</td>
</tr>
</tbody>
</table>

### 5. Incidence of wild fires reduced
- Firebreaks in place

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Means of Verification</th>
<th>Assumptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Firebreaks in place</td>
<td>Annual report indicate extent of areas burnt</td>
<td>Staff adequately equipped and trained to deal with wild fires</td>
</tr>
</tbody>
</table>

## Administration Programme Activities

### 1.1 Survey the boundary of Kwando Core Area and prepare legal description to be incorporated in the legislation

<table>
<thead>
<tr>
<th>Activities</th>
<th>Means</th>
<th>Resources</th>
<th>Assumptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Survey the boundary of Kwando Core Area and prepare legal description to be incorporated in the legislation</td>
<td>Boundary surveyed, cleared and marked with concrete cairns</td>
<td>Surveyor, Legal advice, Boundary clearance (grader, labour), Concrete cairns</td>
<td>Local communities agree to incorporate “Kwando Triangle” in Core Area</td>
</tr>
</tbody>
</table>

### 1.2 Appoint the Warden and staff responsible for the management and development of the Park

<table>
<thead>
<tr>
<th>Activities</th>
<th>Means</th>
<th>Resources</th>
<th>Assumptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appoint the Warden and staff responsible for the management and development of the Park</td>
<td>Staff recruited by MET</td>
<td>No specific resources</td>
<td>Suitable qualified and experienced staff available</td>
</tr>
</tbody>
</table>

### 1.3 Park entry system and fee structure to be developed and implemented

<table>
<thead>
<tr>
<th>Activities</th>
<th>Means</th>
<th>Resources</th>
<th>Assumptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Park entry system and fee structure to be developed and implemented</td>
<td>Review of fee structure, Permit systems/ receipts, Staff trained</td>
<td>Short term consultancy, Stationary, Training</td>
<td></td>
</tr>
</tbody>
</table>

### 1.4 Design and implement training programme for all levels of staff

<table>
<thead>
<tr>
<th>Activities</th>
<th>Means</th>
<th>Resources</th>
<th>Assumptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design and implement training programme for all levels of staff</td>
<td>Training needs assessment, Identification of suitable training programmes</td>
<td>Funds to attend training programmes</td>
<td></td>
</tr>
</tbody>
</table>

## Infrastructure Development Programme Activities

### See Volume 3: Integrated Development Plan for the Kwando Core Area for Details

## Protection Programme Activities
<table>
<thead>
<tr>
<th>ACTIVITIES</th>
<th>MEANS</th>
<th>RESOURCES</th>
<th>ASSUMPTIONS</th>
</tr>
</thead>
</table>
| 3.1 Develop law enforcement programme for Kwando Core Area | • Boundary patrols  
• Road patrols  
• Rapid response  
• Reporting structures  
• Liaison  
• Training of game scouts | • Game scouts  
• Patrol equipment  
• Weapons  
• Transport  
• Boat | • Contact with Angolan commercial ivory poachers does not escalate |
| 3.2 Fire Management Programme developed and implemented | • Prepare annual fire management programme  
• Prepare boundary fireguards  
• Prepare internal firebreaks  
• Investigate and deal with wild fires  
• Record fire history | • Planning workshop  
• Grader  
• Contract labour  
• Transport  
• Tools | • Installation of additional firebreaks completed |
## 4. MAINTENANCE PROGRAMME ACTIVITIES

<table>
<thead>
<tr>
<th>ACTIVITIES</th>
<th>MEANS</th>
<th>RESOURCES</th>
<th>ASSUMPTIONS</th>
</tr>
</thead>
</table>
| 4.1 Maintenance of the biophysical resources and park infrastructure | • Financial budget to undertake maintenance  
• Procurements of equipment (vehicles, tractor, trailer)  
• Hire of heavy equipment  
• Contracting specialist skills (builders, plumbers, electricians, mechanics)  
• Waste removal  
• Equipped workshop  
• Boundary/firebreak clearance  
• Inspection of tourist facilities  
• Basic vehicle maintenance | • Vehiles  
• Contract labour  
• Contract specialist staff  
• Incinerator  
• Basic workshop tools | • Local staff permitted to outsource specific tasks  
• Government meets recurrent budget  
• Capacity of staff |
| 4.2 Maintenance of existing game viewing roads, access roads and fire breaks. | • Hire of heavy machinery  
• Hire of contract labour  
• Tools  
• Transport for road construction material | • Tractor/trailer  
• Contract labour  
• Field equipment (tents etc)  
• Ration allowances  
• Implements (shovels, picks) | • Heavy machinery available locally |

## 5. SUPPORT ZONE PROGRAMME ACTIVITIES

<table>
<thead>
<tr>
<th>ACTIVITIES</th>
<th>MEANS</th>
<th>RESOURCES</th>
<th>ASSUMPTIONS</th>
</tr>
</thead>
</table>
| 5.1 Implementation of the “Parks and Neighbours” Policy developed at the regional level | • Support Zone Co-ordinator develops 5-year management programme  
• Protocols with Support Zone communities developed  
• Provides guidance on the creation of Conservancies  
• Liases with NGOs  
• Warden to communicate with local Support Group  
• Warden responds to Problem Animal Reports  
• Liase with Support Zone Co-ordinator | • Transport  
• Logistic support for PAC  
• Transport for Support Group members  
• Funds to convene workshops  
• Operational budget for Support Zone Co-ordinator | • Support Zone Co-ordinator recruited  
• Conservancies move towards legalisation  
• Support Group established  
• Effective Problem Animal Reporting system established. |

## 6. EDUCATION, COMMUNICATION AND PUBLIC RELATIONS PROGRAMME ACTIVITIES

<table>
<thead>
<tr>
<th>ACTIVITIES</th>
<th>MEANS</th>
<th>RESOURCES</th>
<th>ASSUMPTIONS</th>
</tr>
</thead>
</table>
| 6.1 Develop an education, communication and public relations programme | • Technical assistance to develop programme  
• Production of educational material | • Donor funded technical assistance  
• Logistic support  
• PRO material | • Promotion of Mudumu National Park justified  
• Donors support |
| 6.2 Develop and promote the tourism potential of Kwando Core Area | • Develop promotional strategy  
• Production of brochures and other materials (maps etc.) | • Donor funded technical assistance | • Donor support |

## 7. TOURISM AND VISITOR PROGRAMME ACTIVITIES

<table>
<thead>
<tr>
<th>ACTIVITIES</th>
<th>MEANS</th>
<th>RESOURCES</th>
<th>ASSUMPTIONS</th>
</tr>
</thead>
</table>
| 7.1 Develop and implement a tourism development and management programme | • Entry gate manned  
• Tourist information provided  
• Fee structure gazetted  
• Campsites prepared  
• Game viewing hides | • Short term consultancy  
• Entrance gate  
• Stationary (permits, receipt books)  
• Tourism information  
• Training for staff  
• Radio communications | • Tourist levels increase |

## 8. RESEARCH AND MONITORING PROGRAMME ACTIVITIES
### 8. RESEARCH AND MONITORING PROGRAMME ACTIVITIES

<table>
<thead>
<tr>
<th>ACTIVITIES</th>
<th>MEANS</th>
<th>RESOURCES</th>
<th>ASSUMPTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.1 Develop a strategic research and monitoring plan for Kwando Core Area</td>
<td>• Formulate research and monitoring programme &lt;br&gt; • Develop research proposals</td>
<td>• Conservation Scientist recruited &lt;br&gt; • Logistic support to Conservation Scientist &lt;br&gt; • Transport</td>
<td>• Availability of research staff</td>
</tr>
<tr>
<td>8.2 Develop protocols for consumptive use of natural resources in the Kwando Core Area</td>
<td>• Regional policy developed &lt;br&gt; • Determine local level of demand for natural resource products &lt;br&gt; • Monitor harvesting</td>
<td>• Facilitated workshop &lt;br&gt; • Short term consultancy &lt;br&gt; • Logistic support</td>
<td>• Protocols accepted by local communities &lt;br&gt; • Local communities adhere to harvest quotas</td>
</tr>
<tr>
<td>8.3 Design and undertake aerial surveys of the Kwando – Linyanti Conservation Area</td>
<td>• Hire aircraft &lt;br&gt; • Purchase fuel &lt;br&gt; • Local transport &lt;br&gt; • Subsistence allowances &lt;br&gt; • Survey design</td>
<td>• Research staff &lt;br&gt; • Budgets</td>
<td>• Suitable aircraft available &lt;br&gt; • Staff availability</td>
</tr>
</tbody>
</table>
6 RECURRENT AND OPERATIONAL BUDGETS

The recurrent and operational budgets for the Kwando Core Area have been derived based on the staffing structure of the park and the individual management programmes. These costs are usually met under the recurrent expenditure of government funding. The assumptions used to derive these costs are provided, together with the costs of the various inputs.

The Basic Recurrent Costs consider:

- Staff salaries
- Field allowance
- Equipment (uniforms, camping, radios etc)
- Mileage
- Training

The Operational Costs required to implement the individual management programmes are identified, including the assumptions used to derive the operational budgets.

These data are summarised in Volume 3: Integrated Development Plan for the Kwando Core Area to indicate the overall cost of developing and managing the Kwando Core Area.

6.2 Recurrent Costs for the Management of the Kwando Core Area

The assumptions used to develop the recurrent costs for Mudumu National Park are:

- Field scouts are expected to be on patrol for up to 25 days per month. Labourers may accompany them. A field allowance is to be paid as an incentive to ensure proper patrolling.
- Officers are expected to spend up to 10 days per month in the field. Junior officers are to lead patrols. Both are entitled to the field allowance.
- All staff is to be provided with patrol rations. This is calculated at N$360/man month.
- Uniforms are treated as consumables because they are generally worn out after one year.
- Camping equipment is written off after two years.
- One VHF radio is to be provided for every five scouts, and each officer should have a radio. Radio handsets to be replaced every four years.
- A lump sum is provided for base station and repeater links^4.
- Every scout and every officer should be armed.
- A lump sum is provided to cover costs for implements for labourers (picks, shovels etc.).
- An allowance of 2 500km per month for each 4 x 4 vehicle will provide for all necessary travel within the park and allow one trip to a major centre per month.
- The mileage allowance for the 5-tonne lorry will be limited to 1 000km per month. This includes one trip per month to a major centre to collect materials.
- The provision for the tractor assumes it will be used on average 100 hours per month.
- The mileage provision for reporting to the Regional and Head Office will be shared amongst senior officers, including travelling for training.

^4 Depending on the terrain and siting, one repeater could service Mamili, Mudumu and Kwando National Parks.
• A lump sum is allocated for vehicle repairs/maintenance.
• The cost/kilometre includes depreciation.
• The running cost for diesel-powered borehole pumps and generators assumes that this equipment will operate 6 hours per day.
• Each station will receive a bulk fuel supply (up to 10 000 litres). Frequency and volume of supply will depend on number of vehicles on station.
• A lump sum provision is provided for all routine house maintenance (painting, plumbing, electrical repairs etc.).
• Provision is made for all scouts to undergo 14 days training either in service or elsewhere in Namibia once annually.
• Provision is made for senior officers to undergo 28 days training annually. This could involve travel to outside of Namibia but within the southern African region.

Maintenance of firebreaks, road construction and rehabilitation

The total length of road in the Kwando Core Area will be increased over the next five years through the construction of additional access roads. The eastern, western and northern boundary cutline will double as the major external firebreak for the park. A five-metre strip will be burnt on alternate sides of the boundary each year.

• All tourist roads will be maintained to a standard which most tourists are prepared to endure in a vehicle exceeding 1800cc capacity (preferably 4 x 4), and which allow staff to carry out their daily duties. No major mechanical equipment inputs are envisaged, nor construction of major earth works, culverts, bridges etc.
• Such roads will be maintained by a labour gang using normal implements (pick, shovel, grass cutter) and aided by a tractor/trailer/tow grader.
• Firebreaks will be cleared sufficiently to allow easy travel by 4 x 4 vehicle.
• The cost of road maintenance is based on the assumption that a contract labour gang of 15 people can clear one kilometre of road in one day. The cost for a year of operation is as follows:

<table>
<thead>
<tr>
<th>Description</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wages: 15 labourers @ N$200/month</td>
<td>N$ 36 000</td>
</tr>
<tr>
<td>Field allowance: N$6/day x 15 labourers x 365</td>
<td>N$ 32 850</td>
</tr>
<tr>
<td>Ration allowance: N$6/day x 15 labourers x 365</td>
<td>N$ 32 850</td>
</tr>
<tr>
<td>Implements: 15 labourers @ N$200 each</td>
<td>N$ 3 000</td>
</tr>
<tr>
<td>Tentage: 3 x 5-man tents @ N$3 000 each</td>
<td>N$ 9 000</td>
</tr>
<tr>
<td>Total (365 days)</td>
<td>N$113 700</td>
</tr>
</tbody>
</table>

Cost/km of road in Kwando Core Area (±350km) N$ 325

Adjusted for 15% down time N$ 375

• The cost of installing firebreaks assumes that a contract labour gang can prepare 10km of roads/firebreaks per day. The cost/km is therefore calculated at N$37/km.
• Mileage is provided to transport labourers, and for use of tractor.
• Provision is made for the hire of a grader or bulldozer for those portions of the road/firebreak which are beyond the capacity of hand labour.

A summary of the basic recurrent costs and operational costs per management programme are provided in Table 4 and 5. The basic recurrent costs are approximately N$2 million.
per year. A further N$500 000 to N$800 000 will be required to implement the overall management programme.

This translates to an overall cost/km² of approximately N$2 100 to N$2 300/km² (or US$350 – US$390¹). This is similar to the accepted rate of US$300/km² used as a guide by park authorities in southern Africa illustrating the effect of the size of the park on the economies of scale of managing protected areas in southern Africa.

¹ Assumes an exchange rate of US$1 : N$6.00
Insert Spread sheet Table 4 and 5 here
Ministry of Environment and Tourism - Mission Statement and Conservation Goals

The vision statement for Kwando Core Area is tempered by the mission and conservation goals of the Ministry of Environment and Tourism. These state:

It is the mission of the Ministry of Environment and Tourism...

“To maintain and rehabilitate essential ecological processes and life support systems, to conserve biological diversity and to ensure that the utilisation of natural resources is sustainable for the benefit of all Namibians, both present and future, as well as for the international community.”

— Mission Statement and Mandate of the Ministry of Environment and Tourism, May 1994 —

Further to this mission...

“it is the policy of the Ministry of Environment and Tourism to ensure adequate protection of all species and subspecies, of ecosystems and of natural life support processes, by means of:

1. inventories, monitoring and appropriate research,
2. education and extension,
3. managing, and assisting and advising in the management of land and natural resources in Namibia,
4. legislation,
5. co-operation with local, national, regional and international organisations working for biotic diversity and habitat protection.”

— Conservation of Biotic Diversity and Habitat Protection, May 1994 —

Additionally, the Government of the Republic of Namibia recognises “the key role that protected areas play in the conservation of ecosystems, essential ecological processes and biological diversity. The Government also recognises that these are the primary objectives for the establishment and management of protected areas,” and within this context it is the policy of the Government to:

“Manage protected areas in ways which are sensitive to the needs and aspirations of people whose lives are impacted or affected by these areas, giving particular attention to promoting their socio-economic development, promoting communication and consultation and providing preferential opportunities in order to meet obligations for the establishment of mutually compatible land uses on an equitable basis particularly with regard to people removed from their land or denied access to key resources through the establishment of a protected area.”

— Parks and Neighbours: A policy for linking Namibian protected areas with neighbouring people and sharing protected areas with resident communities, January 1998 —

With the promulgation of this mission and clarifying policies the Government has defined the criteria for protected area management in Namibia and set the stage for the
establishment and prioritisation of the goals for the development and management of the North-East Parks...

Through the promulgation of its mission and policies the government has established that the **primary purpose of the North-East Parks is to act as conservation areas.** Secondary is the recognition that these parks can also serve to enhance local economies and increase the quality of life in neighbouring communities. In addition, they are a tourism product, playing a role in the national economy and serving as a window through which the world views Namibia’s conservation ethic (Table 1).

**Table 1: Primary and secondary conservation goals for Namibian National Parks.**

| **Primary Goals** | 1. To maintain and, where necessary, rehabilitate areas or features essential to the functioning of ecological processes.  
|                  | 2. To conserve biological diversity.  
|                  | 3. To conserve and manage renewable natural resources for sustainable production.  
|                  | 4. To provide opportunities for expanding understanding of biological diversity, ecological processes and the effects of management actions.  |
| **Secondary Goals** | 1. To provide opportunities that increase awareness, appreciation, positive relations, economic benefits and compatible land uses in neighbouring communities.  
|                  | 2. To facilitate, promote, develop, administer, co-ordinate and/or manage a range of opportunities to enhance visitor experiences with Namibia’s natural environments and optimise economic returns from these resources.  
|                  | 3. To provide Namibian citizens the opportunity for aesthetic, educational and recreational experiences at affordable cost.  |
APPENDIX II

NORTH-EAST PARKS PROJECT

BACKGROUND AND INVENTORY
Kwando Core Area

The status of the proposed Kwando Core Area is complicated. Part of the area is currently designated as the Kwando Core Conservation Area of the Caprivi Game Park\(^7\) while the other segment (the Kwando or “Golden” Triangle) does not enjoy legally protected status\(^5\) (Figure 1).

![Figure 1: The proposed Kwando Core Area](image)

However, from the point of view of wildlife conservation as well as the ecological integrity and viability of the Kwando-Linyanti Conservation Area this is the most important area. The Kwando Triangle and the Kwando Core Conservation Area of the Caprivi Game Park should therefore be combined. This whole area should be known as the Kwando Core Area, which will be a management zone of the proposed Bwabwata National Park (Figure 2).

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\(^7\) Currently legally protected as part of the Caprivi Game Park.

\(^8\) However, it is administered by the MET through an agreement with the Mafwe Tribal Authority and the Department of Landbou en Natuurbewaring prior to Independence. No documentation available after 1990.
Environmental Baseline

The Kwando Core Area is comprised of two distinct ecological zones: 1) the Kwando river valley and 2) the Kalahari sandveldt portion west of the river.

Topography and Hydrology

The Kwando River is represented topographically as a slight depression traversed by numerous channels (many now dry). The entire park is relatively flat, varying between 946 m a.s.l. and 960 m a.s.l. With the exception of the river, omiramba are the only distinguishing topographical features.

There are several backwaters and lagoons along the Kwando River floodplain which retain water throughout the year. Most important are two known as “Lagoon” and “Horseshoe” (Figure 3). Both attract a great deal of wildlife.

There are a number of pans in the area which retain water for part of the year. Most of these pans are within omiramba.
Vegetation

The Kwando Core Area contains eight main vegetation types (Table 1, Figure 4; Hines, 1997).

West of the floodplain is an ancient dune and omiramba system. Teak woodland and savanna, *Burkea-Combretum* woodland and *Burkea* shrubland are the main vegetation associations found on the sand dunes. The omiramba floors are grassland and represent some of the best grazing in the Caprivi area. A distinct woody species margin occurs along some of the omiramba fringes.

The main vegetation groupings in the floodplain are the Okavango-Kwando Valley Grassland in the wetter areas and Okavango-Kwando Valley Woodland on the drier areas (floodplain margins etc).
Table 1: Broad vegetation units for the Kwando Core Area (from Hines, 1997)

<table>
<thead>
<tr>
<th>VEGETATION TYPE</th>
<th>COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Okavango-Kwando Grassland</td>
<td>Extensive mats of <em>Eichinocloa stagnina</em>, <em>Vossia cuspidata</em> and <em>E. pyramidalis</em> on the seasonally flooded plains. Tall emergents such as <em>Vetiveria nigritana</em> and <em>Miscanthus junceus</em> are characteristic. <em>Cynodon dactylon</em> forms lawns at the water margin and drawdown zone. Perennially wet areas are dominated by <em>Phragmites australis</em> and <em>Cyperus papyrus</em>. Woody species (at low densities) represented by <em>Rhus quartiniana</em>, <em>Acacia hebeclada</em> and <em>Sesbania</em> species.</td>
</tr>
<tr>
<td>Okavango-Kwando Valley Woodland</td>
<td>On old floodplain margins, levees and fluvial courses. <em>Acacia nigrescens</em>, <em>A. erioloba</em>, <em>Ficus sycomorus</em>, <em>Kigelia africana</em>, <em>Lonchocarpus capassa</em> and <em>Diospyros mespiliformis</em> being the characteristic trees.</td>
</tr>
<tr>
<td>Teak Woodland</td>
<td>Found on deep, well drained sandy plains and dunes. Dominated by <em>Baikiaea plurijuga</em>, <em>Burkea africana</em>, <em>Schinziophyton rautanenii</em>, <em>Guibourtia coleosperma</em> and <em>Pterocarpus angolensis</em> all occur at low density. Shrub layer is characterised by <em>Baphia massaiensis</em>, <em>Bauhinia petersiana</em> and <em>Markhamia acuminata</em>. Grasses are predominantly annuals such as <em>Melinis repens</em>, <em>Eragrostis dinteri</em>, <em>Tricholaena monachne</em> and <em>Megaloprotachne albescens</em>.</td>
</tr>
<tr>
<td>Teak Savannah</td>
<td>Occurs in areas of deflated dunes where the landscape is made up of gently rolling sandy plains. <em>Baikiaea plurijuga</em> is the most important tree. <em>Terminalia sericea</em>, <em>Burkea africana</em>, <em>Pterocarpus angolensis</em> and <em>Guibourtia coleosperma</em> are also common. Sparse shrub layer with <em>Baphia massaiensis</em>, <em>Bauhinia petersiana</em> and <em>Grewia retinervis</em> being common. Perennial grasses such as <em>Digitaria eriantha</em>, <em>Schmidtia pappophoroides</em>, <em>Aristida stipitata</em> and <em>Eragrostis pallens</em> occur.</td>
</tr>
<tr>
<td>Burkea-Combretum Woodland</td>
<td>Dominated by <em>Burkea africana</em>, <em>Pterocarpus angolensis</em>, <em>Schinziophyton rautanenii</em> and <em>Guibourtia coleosperma</em> occur as well. <em>Colophospermum mopane</em> is present at low densities. Lower tree layer is dominated by <em>Terminalia sericea</em> with <em>Combretum collinum</em>, <em>Erythrophleum africanum</em>, <em>Combretum psidioide</em> and <em>Ochna pulchra</em>. The shrub layer is mostly <em>Baphia massaiensis</em>, <em>Bauhinia petersiana</em> and <em>Grewia retinervis</em>. Grass cover is generally low with <em>Schmidtia pappophoroides</em>, <em>Digitaria eriantha</em>, <em>Eragrostis pallens</em> and <em>Stipagrostis uniplumis</em>.</td>
</tr>
<tr>
<td>Burkea Shrubland</td>
<td>Degraded form of <em>Burkea</em> woodland. Characteristic species include <em>Burkea africana</em>, <em>Pterocarpus angolensis</em>, <em>Combretum collinum</em> and <em>Acacia erioloba</em>. Shrub layer is composed of <em>Terminalia sericea</em>, <em>Lonchocarpus nelsii</em>, <em>Bauhinia petersiana</em>, <em>Baphia massaiensis</em>, <em>Burkea africana</em> and <em>Grewia retinervis</em>. Grasses are generally unpalatable annuals or woody perennials such as <em>Eragrostis pallens</em>, <em>Aristida stipoides</em> and <em>Aristida stipitata</em>.</td>
</tr>
</tbody>
</table>
### Omiramba Grassland

Occurs on omiramba bottoms. Lacking woody vegetation with the exception of large isolated specimens of *Acacia erioloba*, *Combretum imberbe* and *C. hereroense*. The wetter areas are dominated by *Imperata cylindrica* and the drier areas are made up of palatable species such as *Schmidtia pappophoroides*, *Brachiaria nigropedata*, *Digitaria eriantha* and *Antheaphora pubescens*. These grasslands represent some of the best grazing areas in the Caprivi.

### Omiramba Fringe Woodland

Distinct margin along the lower slopes of dunes or the omiramba margins. *Acacia erioloba*, *Combretum imberbe* and *A. nigrescens* form a distinct tree layer. *Terminalia sericea* dominates the heavier soils.

---

**Figure 4: Vegetation of the Kwando Core Area (Hines, 1997)**

Caprivi Game Park and Kwando Core Area boundaries shown.

![Vegetation Map](attachment:image.png)
Fauna

The Kwando Core Area is well known for elephant and buffalo. Both sometimes aggregate into large herds which results in spectacular game viewing opportunities. Sable, giraffe, tsessebe and roan are relatively common.

Population surveys for this area show a great deal of year to year variability in animal numbers (Table 2). This variation could be due to seasonal differences but this is unclear from the available data set (no dates on surveys prior to 1994). It is also likely to be related to the small size of the park. Even surveys conducted a few days apart could show high variation as animals moved in and out of the survey area. Elephant and buffalo numbers appear to have increased while wildebeest, waterbuck and roan appear to have decreased (Table 2).

The park borders Angola on the north and cross-border incursions by poachers may also be affecting population dynamics.

Table 2: Kwando area surveys - 1981 to 1994
(Data from Rodwell et. al, 1995)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Elephant</td>
<td>410</td>
<td>884</td>
<td>728</td>
<td>2825</td>
<td>2946</td>
</tr>
<tr>
<td>Buffalo</td>
<td>19</td>
<td>0</td>
<td>7</td>
<td>656</td>
<td>950</td>
</tr>
<tr>
<td>Hippo</td>
<td>122</td>
<td>94</td>
<td>89</td>
<td>251</td>
<td>220</td>
</tr>
<tr>
<td>Sable</td>
<td>113</td>
<td>64</td>
<td>47</td>
<td>32</td>
<td>133</td>
</tr>
<tr>
<td>Kudu</td>
<td>75</td>
<td>52</td>
<td>28</td>
<td>48</td>
<td>126</td>
</tr>
<tr>
<td>Lechwe</td>
<td>113</td>
<td>102</td>
<td>59</td>
<td>33</td>
<td>68</td>
</tr>
<tr>
<td>Eland</td>
<td>75</td>
<td>15</td>
<td>39</td>
<td>106</td>
<td>94</td>
</tr>
<tr>
<td>Impala</td>
<td>21</td>
<td>49</td>
<td>21</td>
<td>147</td>
<td>87</td>
</tr>
<tr>
<td>Zebra</td>
<td>95</td>
<td>49</td>
<td>23</td>
<td>63</td>
<td>78</td>
</tr>
<tr>
<td>Giraffe</td>
<td>15</td>
<td>32</td>
<td>4</td>
<td>27</td>
<td>43</td>
</tr>
<tr>
<td>Tsessebe</td>
<td>35</td>
<td>16</td>
<td>0</td>
<td>20</td>
<td>31</td>
</tr>
<tr>
<td>Roan</td>
<td>66</td>
<td>4</td>
<td>0</td>
<td>7</td>
<td>4</td>
</tr>
<tr>
<td>Wildebeest</td>
<td>32</td>
<td>9</td>
<td>8</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>Waterbuck</td>
<td>49</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Ostrich</td>
<td>47</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

\[\text{Faunal lists are not included with this document as comprehensive listings applicable to the entire North-East Region were prepared for the proposed Okavango National Park (Management and Development Plans for the Okavango National Park held by the MET).}\]
only surveyed south of main Rundu-Katima road.

**Socio-economic Baseline**

The Caprivi Game Park was a military zone during Namibia’s struggle for independence that has resulted in the park being settled\(^7\). There are some villages close to the proposed boundary (23\(^\circ\)E) and this may result in the boundary being moved east to ensure that they remain outside the proposed protected area.

There are a number of villages along the east bank of the Kwando floodplains – Singalamwe, Sikaunga, Sesheke, Kongola, Choyi and Ngonga – and these are included in the three conservancies being established here (Kwando, Mayuni and Mashi). There are approximately 4 000 people living in this area. In addition the people living in the Caprivi Game Park have also applied to the MET for conservancy status. The application from this area (Muto’lku-Bwabwata) is being considered even though current legislation does not allow conservancy formation within a protected area.

There are problems between local residents and the proposed Kwando Core Area. Most of these problems revolve around fishing (especially the floodplains and lagoons west of the main channel of the Kwando River – e.g. Horseshoe Lagoon) and the use of other resources such as reeds, grass, wood, etc.

Although the Kwando Triangle is not legally protected, local people treat it as such and inquiries reveal a general consensus that the area should be managed for wildlife conservation. There is not, however, consensus on what legal status should be given to the area in order to accomplish this.

**Administration and Infrastructure**

The broad infrastructure and administrative status of the Kwando Core Area was discussed in Section 2.2, Volume 1 (Kwando-Linyanti Conservation Area). Only items specific to the park are discussed here.

**Staffing**

There are 16 field staff based at Susuwe Station and a Warden based at Katima Mulilo. All buildings used by the MET at the station are in various stages of decay and most have been recovered from old SADF sites.

Water is supplied from the Kwando River. There is no electricity. Communications between Katima Mulilo and Rundu are by radio. IRDNC has a complex for its staff in the immediate vicinity of Susuwe Station and at the "Buffalo" site.

**Monitoring and Enforcement**

There are three 4x4 vehicles assigned to Susuwe Station as well as a tractor and a Mercedes truck. Maintenance is done by the Government Garage in Katima Mulilo (120

\(^{7}\) It should be noted that the area was settled prior to the proclamation of the Caprivi Game Park and to the military occupation of the area. However, the current settlements near the Kwando core area are as a result of the military occupation.
km distant). This often results in shortages of working transport. Fuel for all vehicles is bought in Katima Mulilo as there are no storage facilities at Susuwe. Grading of roads and cutlines is done once a year with a grader temporarily seconded from Etosha National Park.

**Communications**

There are currently 260 km of road within the park (Figure 5). Road segments have been named and categorised in two classes for management purposes (Table 3):

- **Class 1**  **Prime Game Viewing Road** -- roads located in wildlife concentration areas and suitable for tourist traffic.

- **Class 2**  **Management/Transit Road** – roads located outside wildlife concentration areas and/or unsuitable for tourist traffic.

**Figure 5: Roads within the Kwando Core Area.**
Table 3: Description and name of roads in the proposed Kwando Core Area.

<table>
<thead>
<tr>
<th>NAME</th>
<th>DESCRIPTIONS</th>
<th>KM</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>North of the Trans-Caprivi Highway</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kasimba Road</td>
<td>From Angola road to Kasimba Pan</td>
<td>4.5</td>
</tr>
<tr>
<td>Baikiaea Road</td>
<td>Link between Trans-Caprivi Highway and Angola road</td>
<td>13.0</td>
</tr>
<tr>
<td>Angola Road(^1)</td>
<td>Between Trans-Caprivi highway and Angola. Passes through Susuwe and has offshoots to the floodplains at Mongwe and Chisu</td>
<td>17.0</td>
</tr>
<tr>
<td>Golden Highway North</td>
<td>Old main road north of the Trans-Caprivi Highway</td>
<td>17.0</td>
</tr>
<tr>
<td>Container Road</td>
<td>Off the Golden Highway North road and north to Angola</td>
<td>10.0</td>
</tr>
<tr>
<td>Delta Road</td>
<td>From Container road running west to Delta Pan</td>
<td>11.5</td>
</tr>
<tr>
<td>Golden Highway West</td>
<td>Old main road north of the Trans-Caprivi Highway but in the extreme west of the park</td>
<td>5.0</td>
</tr>
<tr>
<td><strong>South of the Trans-Caprivi Highway</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Doppies Road(^1)</td>
<td>Between the Trans-Caprivi highway and the Mulombe road</td>
<td>8.0</td>
</tr>
<tr>
<td>Mulombe Road</td>
<td>From Doppies road west to the Trans-Caprivi Highway. “illegal” extension by road contractor over the Golden Highway North road</td>
<td>13.0</td>
</tr>
<tr>
<td>Horseshoe North Road(^1)</td>
<td>Between the Doppies road/Mulombe road junction to the southern end of Horseshoe Lagoon. Poor placement 2m from the Lagoon.</td>
<td>10.5</td>
</tr>
<tr>
<td>Horseshoe South Road(^1)</td>
<td>From the southern end of Horseshoe Lagoon to the Botswana border</td>
<td>12.5</td>
</tr>
<tr>
<td>Botswana Cutline Road</td>
<td>Road running along the international boundary.</td>
<td>30.5</td>
</tr>
<tr>
<td>River Road(^1)</td>
<td>An “illegally” made track parallel to the Horseshoe South Road. Presently passes through a carmine bee-eater nesting colony.</td>
<td>7.0</td>
</tr>
<tr>
<td>Sandveldt Road</td>
<td>West of, and almost parallel, to the Horseshoe North road</td>
<td>13.0</td>
</tr>
<tr>
<td>Sanzo Road</td>
<td>Follows the Sanzo Omuramba westwards.</td>
<td>22.5</td>
</tr>
<tr>
<td>Guesha Road</td>
<td>North/south section of the Sanzo road. Passes Guesha Pan</td>
<td>9.5</td>
</tr>
<tr>
<td>Golden Highway South Road</td>
<td>Old main road south of the Trans-Caprivi Highway. Passes Manywa pan.</td>
<td>16.5</td>
</tr>
<tr>
<td>Trans-Caprivi Highway</td>
<td></td>
<td>39.0</td>
</tr>
</tbody>
</table>

\(^1\)Prime Game Viewing Road

There are 55 km of Class 1 (Prime Game Viewing Road) within Kwando Core Area. On average, vehicles are out of sight of each other in this area when two kilometres apart. Utilising this “sight distance” as a basis for calculation of allowable vehicle density results in a recommendation of 27 vehicles in the park at any one time (55 km of road divided by 2 km sight distance = 27 vehicles).

There is an airstrip at Immelman capable of taking twin engined aircraft (1 500metre runway).
Boating is possible along parts of the Kwando river but the extent of this is limited owing to the narrow channels and the presence of hippo.

Tourism

There are a number of tourist establishments on the east bank of the Kwando River but none are located within the park (Table 4, Figure 6).

Table 4: Tourism and related developments on the east bank of the Kwando River

<table>
<thead>
<tr>
<th>DEVELOPMENT</th>
<th>COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mazambala</td>
<td>Rustic camp with chalets, tents and camping sites on the floodplains. PTO still needs final approval</td>
</tr>
<tr>
<td>14 Beds</td>
<td></td>
</tr>
<tr>
<td>“Somewhere” Camp</td>
<td>Private camp on a beautiful part of the river. Parking area under construction in the Kwando Core Area opposite the camp. PTO status unknown.</td>
</tr>
<tr>
<td>Aloe Hunting Camp</td>
<td>Close to “Somewhere” camp. Used during the hunting season</td>
</tr>
<tr>
<td>Namashasha</td>
<td>Up-market camp. Vehicles parked on the west bank (Kwando Core Area) for game drives. PTO status unknown</td>
</tr>
<tr>
<td>26 Beds</td>
<td></td>
</tr>
</tbody>
</table>

Figure 6: Tourism and related infrastructure south of the Trans-Caprivi Highway
Entry into Kwando Core Area is free. Visitors are should obtain a permit from either Katima Mulilo or one of the park ranger stations but in practise this does not often happen.

PTO’s are being sought for Horseshoe and Fort Doppies by a Rundu businessman and it appears that Chief Mbambo⁸ has agreed. However, there is widespread disagreement about the extent of this Chief’s influence or authority. In addition, Chief Mayuni (head of the Mafwe) has authorised a South African businessman to start a campsite at Horseshoe lagoon.

There are a number of sites along the river and floodplains in the Kwando Triangle which have been used for tourism in the past (Table 18). Also, some discussion has taken place between MET representatives and emerging Conservancies with regard to sites for community campsites.

**Table 5: Tourism sites within the Kwando Core Area.**

<table>
<thead>
<tr>
<th>SITE</th>
<th>COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nambwa</td>
<td>South of Susuwe. Large well wooded island with several campsites.</td>
</tr>
<tr>
<td>Susuwe</td>
<td>Two campsites.</td>
</tr>
<tr>
<td>Chisu</td>
<td>North of Susuwe. Closed owing to proximity to Angolan border.</td>
</tr>
<tr>
<td>Mongwe</td>
<td>North of Susuwe. Not used at present.</td>
</tr>
</tbody>
</table>

⁸ Chief Mbambo is a Humbukushu Chief living west of the Okavango river who has traditional claims on large areas in Namibia, Botswana, Zambia and Angola.
Tourism Potential

The tourism potential of the park must be considered in the context of the small size of the area and the even smaller size of the “quality area” (i.e. the Kwando floodplains). Walking and hide-based activities would allow visitor flow to increase without causing environmental damage. However, there will be a dangerous element to these activities and regulations should be implemented to safeguard both people and wildlife.

Hunting

Hunting currently takes place only in the extreme western portion of the Kwando Core Area. The two-year concession (1998/1999) has a quota of three elephant, two buffalo, two hyena, two leopard, two sable and two kudu. It was sold for N$ 400 000 per annum.
KWANDO CORE AREA

APPENDIX III

NORTH-EAST PARKS PROJECT

CONCEPTS OF PARK ZONATION
GENERAL CONCEPTS OF ZONATION

The purpose of subdividing a protected area into "zones" is to facilitate the management objectives of the park. It also defines the type of activities that can or cannot take place in the "zone". Zonation is therefore a double process:

a  A park is zoned for management purposes. This could apply to factor such as fire management, removal of animals, protection of sensitive habitats etc. These zones would therefore define what management actions are required to achieve the objectives. For example, an objective may be to prevent wild fires from entering a particular zone.

b  A park is zoned for visitor use. This implies that the park management will allow access to different zones of the protected area based on set criteria. For example, a zone may feature a popular tourist attraction, and will be managed to accommodate large numbers of tourists. Alternatively, the park management may not want large numbers of tourists to enter a particular area thus conserving its "wilderness" or "wild" ambience. Access to such areas will therefore be limited to relatively few tourists.

The net result of the above approach is that two "zonation maps" are produced which overlay each other to define the various zones. These zones are then used to develop the management strategies of the park. The number of zones identified will depend on the complexities of the protected area. Ideally, a number of variables are used to determine the characteristics of the zone. These would include:

- Rating of the area as a tourist attraction
- Habitat sensitivity
- Dispersal capacity of the area
- Tourist behaviour
- Location of support staff
- Management capability of staff
- Financial status of management authority
- Visitor satisfaction

The present degree of management capability and data gathering sophistication that exists in the MET in the North East Parks does not warrant a complex zonation process. For this reason, only three "zonation" categories were identified under the Phase I planning process. These appear in the Okavango National Park Management Plan as:

- Special Protection Zone
- Natural Zone
- Development Zone

With time, and as the capacity of the North East Parks management increases, it will be possible to define additional management zones that meet the objectives of the protected areas.
For the purpose of this planning process, the zonation criteria will follow that adopted under Phase I. The description, restrictions, goals and objectives of the three categories are provided in the following table.
### Description of the three zonation categories used in the planning process

<table>
<thead>
<tr>
<th>ZONE</th>
<th>DESCRIPTION</th>
<th>RESTRICTIONS</th>
<th>GOALS AND OBJECTIVES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Special Protection Zone</td>
<td>This zone comprises the unique, valuable and sensitive features that are either of high ecological sensitivity and/or high conservation value. Location is independent of distance from the park boundaries and permanent constructions. No infrastructural development may take place within these zones. Restrictions relating to these areas may be permanent, seasonal, intermittent or incidental. Access to this zone is severely restricted.</td>
<td>- The areas may only be accessed by MET staff for management purposes, for purposes of research and monitoring (registered projects only) and for educational purposes subject to the approval of the Regional Head.&lt;br&gt;- Outside research scientists may only access these areas if they are working on approved research and monitoring programmes.&lt;br&gt;- No vehicle access may take place. Access to riverine habitats by boat is permissible. Only essential management of these areas is envisaged and the priority for park staff would be the restriction of access and the collection of monitoring data.&lt;br&gt;- Management for the sake of tourism is not permissible and controlled tourism access may be permitted but should be minimal.</td>
<td>- Maintain essential ecological processes and life support systems, conserve biodiversity and genetic diversity;&lt;br&gt;- Maintain and preserve areas or features essential for ecological processes intrinsic to the functioning of the parks;&lt;br&gt;- Protect unique habitats, species, aquatic systems and ecological processes associated with the parks; and&lt;br&gt;- Provide opportunities for research and monitoring to further understand processes within the parks.</td>
</tr>
</tbody>
</table>
### Description of the three zonation categories used in the planning process

<table>
<thead>
<tr>
<th>ZONE</th>
<th>DESCRIPTION</th>
<th>RESTRICTIONS</th>
<th>GOALS AND OBJECTIVES</th>
</tr>
</thead>
</table>
| Natural Zone | This zone is characterised by being essentially unmodified, except through natural processes. No infrastructure development will be allowed, except for limited management and tourism facilities and access roads. Any infrastructural developments in this area will be subject to the EA procedure (at an appropriate level) as laid out in the National Policy on Environmental Assessment. | • No camps/lodges permitted  
• Off-road driving not permitted  
• Walking not permitted unless accompanied by a registered guide | • Conserve a representative sample of the bioclimatic region in a state relatively unaltered by man and to use the area as a benchmark;  
• Provide a tourism environment which is less restrictive and which allows for the broadest possible base of potential users; and  
• Generate economic benefits and opportunities, while not compromising the conservation and ecological objectives of the North-East Parks. |
## Description of the three zonation categories used in the planning process

<table>
<thead>
<tr>
<th>ZONE</th>
<th>DESCRIPTION</th>
<th>RESTRICTIONS</th>
<th>GOALS AND OBJECTIVES</th>
</tr>
</thead>
</table>
| Development Zone    | This zone comprises all areas of infrastructure development, roads, staff accommodation, fire-breaks, entrance control facilities, airfields, tourism facilities, private camps and management facilities (e.g. game-capture holding pens). All future developments within this zone are required to be approved by the Planning Committee after submission of a full motivation. An EA (as laid out in the National policy on EA) may have to be done before such a development takes place. Large areas cannot be classified as Development Zones as this would compromise the primary conservation and ecological objectives of the parks. | Permission required to live in this zone           | • Generate economic benefits and opportunities, while not compromising the conservation and ecological objectives of the parks;  
• Provide an environment in which innovative tourism opportunities and tourism experiences can be optimised through a combination of activities;  
• Provide the infrastructural framework for research and monitoring to take place in an effective and efficient manner, such that processes within the park are better understood; and  
• Provide an enabling management infrastructure through which the park staff will be able to carry out their duties. |
APPENDIX IV

PROCEDURE GUIDELINES ON PERSONNEL ADMINISTRATION

MAMILI INTEGRATED DEVELOPMENT PLAN
Procedure Guidelines on Personnel Administration

All staff engaged by MET and stationed in a National Park are expected to maintain the highest standard of conduct, efficiency and personal behaviour. They are also expected to be courteous, helpful and attentive in their dealings with the general public.

The following guidelines are provided on personnel administration

a  **Conduct of staff members:**

No staff member shall perform or engage himself or herself to perform remunerative work at any time outside his or her employment with the government unless granted permission to do so by the permanent secretary.

b  **Dress code:**

It is the responsibility of supervisors to ensure that all staff members who are required to wear a uniform on duty do so, and that they comply with instructions issued in that respect.

c  **Acceptance of gifts or benefits:**

A staff member shall not accept any gift or benefit, pecuniary or otherwise, offered to him or her by any person by reason of him or her occupying a particular office or post in the MET.

d  **Use of government vehicles:**

No staff member shall drive a government vehicle unless he or she is in possession of a valid driver’s license, and has permission from a competent staff member to make the journey concerned. A staff member who has been granted permission to drive a government vehicle shall not:

- Deviate from the authorised route,
- Take the vehicle to his or her place of residence unless he or she has permission in writing from the appropriate authority to do so,
- While undertaking any journey with such vehicle;

- allow any unauthorised person to travel; or
- convey any unauthorised goods.

- Use such vehicle for any purpose other than official purposes,
- Drive such vehicle while under the influence of intoxicating liquor or stupefying drugs;
- Commence a journey until the appropriate entry has been made in the log book of such vehicle.

e  **Official hours of attendance:**

The Warden is responsible for the observance by staff members under his or her supervision of the official hours of attendance as established. A staff member shall at all
times during his or her official hours of attendance be present for duty at his or her place of work and give his or her full attention to the duties entrusted to him or her.

A staff member shall not, without the consent of his or her supervisor, be absent from his or her place of work during his or her official hours of attendance.

f Duties of a supervisor:

It is the duty of every supervisor to supervise his or her subordinates and to take appropriate action in every case of breach of any of the provisions of the Public Service Act, 1995, the Regulations under the Public Service Act, 1995 and/or staff rules as adopted by MET. A supervisor who fails to comply with this duty shall be deemed to have been negligent in the performance of his or her duties.

g Misconduct:

Any staff member shall be guilty of misconduct if he or she;

- Disobeys, disregards or makes wilful default in carrying out any lawful order given to him or her by any person authorised to do so, or by word or conduct shows insubordination,
- Is negligent or indolent in the performance of his or her duties,
- Operates or undertakes, without the approval of the Prime Minister, any private agency or private work in regard to any matter directly or indirectly related to the performance of his or her official functions or any matter directly or indirectly related to the field of operations of the office, ministry or agency in which he or she is employed or fails to declare that any member of his or her household operates or undertakes any such private agency or private work,
- Uses his or her position in the Public Service or utilises any property of the State to promote or prejudice the interests of any political party,
- Uses his or her position in the Public Service or utilises any property of the State to promote or prejudice the interests of any private business or private agency, except in the performance of his or her official duties,
- Conducts himself or herself in a disgraceful, improper or unbecoming manner causing embarrassment to the MET or to the Public Service or, while on duty, is grossly discourteous to any person,
- Uses intoxicating liquor excessively or uses stupefying drugs without a prescription of a medical practitioner resulting in his or her incapacity to perform his or her duties efficiently,
- Uses or is under the influence of intoxicating liquor or stupefying drugs during the prescribed official hours of attendance without a prescription of a medical practitioner,
- Accepts or demands in respect of the performance of or the failure to perform his or her duties any commission, fee or reward, pecuniary or otherwise, to which he or she is not entitled by virtue of his or her office, or fails to report forthwith to the permanent secretary the offer of any such commission, fee or reward,
- Misappropriates or improperly uses any property of the State,
- Absents himself or herself from his or her office or official duties without leave or valid cause,
- With a view to obtain any privilege or advantage in relation to his or her official position or his or her duties, or to cause prejudice or injury to the government or any
office, ministry or agency or any member of the Public Service, makes a false or incorrect statement, knowing it to be false or incorrect,

- Contravenes or fails to comply with any provision relating to his or her employment or conditions of service, or contravenes or fails to comply with any provision of a prescribed code of conduct.
Procedure Guidelines on Law Enforcement

Parks staff will ensure the provisions of *Nature Conservation Ordinance 4 of 1975* and all subsequent amendments as well as all Ministry of Environment and Tourism rules and regulations are effectively applied. Toward this end:

a **With regard to control of illegal activities by tourists:**

- Provide a list of all the most applicable (and contravened) park regulations to all visitors as they enter the park. Point these regulations out to visitors on handing them their park entry permit, guidebook and map and encourage them to report illegal incidents they observe.
- Maintain a reporting structure for incidents. Reports are to be filed, maintained and analysed by the Warden.

b **With regard to contractual contravention’s by concessionaires:**

- Exclusions from any regulations and sections of the *Nature Conservation Ordinance 4 of 1975* and subsequent amendments must clearly and unambiguously be stated in any concessionary agreement or contract.
- Contravention of park rules and regulations will not be tolerated. Three written warnings (together with the appropriate fine) for minor contravention’s, such a driving off designated roads, are to be given before going to review of a concessionaire’s agreement. Major contravention’s, such as illegal hunting in a park, will result in immediate loss of concession.

c **With regard to poaching and other illegal activities:**

- All park borders are to be patrolled at least once weekly on a random basis. Follow-up will be conducted on all evidence relating to unauthorised incursions of people and/or livestock into the park. Contravention’s of any and all park rules and regulations will be noted, enforced and reported. Reports of each incident will be filed with the Warden.
- All park roads will be patrolled at least twice weekly on a random basis. Contravention’s to park rules and regulations will be noted, enforced and reported. Reports of each incident will be filed with the Warden.
- Maintain rapid response capabilities and procedures for following up on reported incidents from other law enforcement officers, concessionaires and/or members of the general public.
- All incident reports will, at a minimum, contain information on the area(s) affected, animals or products involved, rules/regulations contravened, names and addresses of individuals involved (if known), arresting officer, recommendations for further actions, etc. The Warden will ensure a comprehensive file of this information is kept, analysed and utilised to assess priority areas for patrols, arrest performances of individual officers, trends in illegal activities, etc.

d **With regard to cross-border contravention’s:**
• The Warden will maintain liaison with the Namibian Defence Force and the Namibian Police and utilise their capabilities to deal with cross-border violations and co-operative patrolling of the borders with Botswana and/or Angola.
• The Warden will maintain liaison with Botswana and/or Angola authorities in matters relating to the prosecution of cross-border violations.

APPENDIX V

NORTH-EAST PARKS PROJECT

PROCEDURE GUIDELINES ON INFRASTRUCTURE DEVELOPMENT
PROCEDURE GUIDELINES FOR INFRASTRUCTURE DEVELOPMENT

Procedure guidelines on design, placement and construction of firebreaks:

Fire-breaks on park boundaries are to be at least eighteen metres in width (this is a double fire-break). Internal fire-breaks are to be at least nine metres in width. Internal fire-breaks should follow natural features or ecotones which may act as natural fire-breaks. Road locations should be considered in the context of roads also serving as fire breaks.

Fire-breaks should be cleared and/or burnt annually as early in the calendar year as possible but no later than July. For the maintenance and monitoring of fire-break condition see policies on roads, tracks, trails and paths.

Heavy machinery may be used to establish fire-breaks, but should not be used in fire-break maintenance.

A fire officer will be appointed from existing staff and a fire duty roster for co-ordinating operations maintained during the main fire season (April to October).

Park staff will initiate co-operative programmes and actions with other fire control authorities, adjacent communities and neighbouring landowners.

Conservation scientists will provide for the recording of fire history in the parks.

Procedure guidelines on buildings, temporary structures, power supplies and equipment:

All buildings will be designed and placed in line with the primary objectives of the park and the level of facility development shall be in accord with park plans.

All structures will be designed and placed as unobtrusively as possible so as to not detract from the natural landscape, scenic beauty or ecological integrity of the parks. Whenever possible, natural barriers will be used to screen facilities from general view.

All buildings will be assigned a registration number and a maintenance record kept by the Warden.

All buildings will be inspected annually by the Warden.

Annual maintenance priorities will be assigned, motivated and budgeted. Buildings will be prioritised as follows:

- Staff housing and accommodation
- Administrative buildings and stores
- Plant buildings and structures (e.g. pump house)
- Workshop and maintenance areas.

Where appropriate the Warden will consider annual service contracts to the private sector for building (and other capital items) maintenance. This will be done on the basis of an analysis of the most cost-effective options for maintenance.
Power supply infrastructure and development will be designed to cause minimal ecological, visual and/or aesthetic impact. Underground lines are to be utilised in preference to overhead lines where feasible.

Domestic power supplies will be separately metered and the costs borne by occupants.

The Warden will ensure that temporary structures are removed on completion of the task for which they were constructed. Additionally, he or she will ensure that the site is fully rehabilitated and cleaned after completion of assigned tasks.

The Warden will designate sites within the park (consistent with the park zonation scheme) to specific tasks which are repeated regularly (e.g. game capture). These sites, activities, or structures will not conflict with park goals and objectives.

Equipment will be issued to individuals who will be held responsible for the items and their maintenance and servicing.

Training in the use of sophisticated equipment is compulsory for all users.

**Procedure guidelines on potable water for parks staff:**

No toilets, ablution facilities or water-based service facilities are to be positioned within 100m of a borehole or other primary water source.

Game capture pens and bomas must not be placed within 100 m of a borehole or other primary water source.

Water quality testing is done by NamWater, Private Bag 13389, Windhoek. A one litre sample of the water to be tested must be delivered in a closed glass container.

**Procedure guidelines on water supply management:**

The Warden will ensure that all water abstraction infrastructure is unobtrusive and blends in with the surroundings as best possible. Every effort should be made to suppress exhaust noise at installations using diesel or petrol engines. Solar installations should be used where possible.

No water abstraction for non-park purposes is permitted.

The provision of artificial water points for wildlife within the parks must be preceded by an Environmental Assessment in which the ecological framework for that supply must be given the fullest consideration.

Artificial water points for wildlife must not be constructed near (<2 km) park boundaries where there is a potential for conflict with surrounding communities or land-uses.

No barriers or obstructions of any type may be built on drainages.
A monitoring programme must be developed at each artificial water point for wildlife. Wildlife species and numbers, seasonality of use and the effects on vegetation (at varying radii around the water point) are to be assessed in terms of whether the water point is achieving a stated management objective.

Adequate protection measures against damage and theft must be developed for installations.

Development of water sources for wildlife carries with it the responsibility to ensure that these sources do not fail the wildlife which becomes dependent upon them. All sources of water for wildlife will be inspected, and maintenance performed if necessary, at least weekly throughout the dry season (or year round during droughts).

**Procedure guidelines on sewage disposal facilities:**

Soak pits for waterborne sewerage should not be built within 100 m of a borehole or water source to avoid contamination. Developments on the river margin must ensure that pits do not cut through the permanent water table.

No chemical toilets will be allowed within the park. Concessionaires should be made aware of this restriction.

No direct discharge of human wastes into any of the parks’ perennial or seasonal rivers are allowed under any circumstances.

No open water, evaporation pan sewerage treatment systems are allowed within the parks.
APPENDIX VI

NORTH-EAST PARKS PROJECT

PROCEDURE GUIDELINES ON NEIGHBOURING COMMUNITY RELATIONS
PROCEDURE GUIDELINES ON NEIGHBOURING COMMUNITY RELATIONS

_The Warden_ in conjunction with the Support Zone Co-ordinator and other park staff will promote the establishment and development of conservancies by providing assistance to communities within Support Zones by:

- Providing information to emerging Conservancy Committees with regard to the process and procedure for formation
- Forwarding applications through the appropriate channels
- Providing information to Conservancy Committees with regard to economic opportunities related to wildlife and the conservation of the park,
- Providing technical support to Conservancy Committees to assist in management issues such as problem animal control, identifying potential lodge sites, _etc._
- Providing technical support for the development of long term management plans for Conservancies including land use plans.
- Supporting non-governmental organisations in assisting communities with the establishment and development of Conservancies.
- Training Conservancy members in modern techniques for natural resource management.

_The Support Zone Co-ordinator_ will develop a comprehensive understanding of the conditions within the Support Zones and the environments in which they exist by:

- Documenting available socio-economic information particularly with regard to local livelihood strategies and traditional social structures.
- Documenting existence of non-governmental organisations (if any) and other conservation and development organisations operating within Support Zones to the parks.
- Documenting historical claims to the land on which parks are located.
- In conjunction with the Conservation Scientist, conducting joint research and establishing an information sharing system which combines indigenous knowledge and modern science in order to establish sustainable levels of resource use and harvest within Support Zones.
- Identifying and documenting the different natural resource user groups operating within the conservation area.
- Identifying how other government departments can assist communities with the development of Conservancies and conservation activities.
• Identifying and documenting current and probable conflict points between the management of the parks and neighbours.

The Support Zone Co-ordinator will, in conjunction with appropriate park staff, private interests and non-governmental organisations, identify and promote a range of economic opportunities that can be associated with the parks. This will include:

• Providing technical support to link tourist development between the park and Conservancies to diversify the tourist products available to local communities.
• Identifying sites to establish community operated craft and curio shops at park entrance gates and/or visitor centres.
• Exploring opportunities for Community Game Guard walking safaris within the parks.

The Support Zone Co-ordinator will, in conjunction with the appropriate park staff, will develop mechanisms to improve and formalise communications between parks and stakeholders regarding policies, objectives and processes. This will be accomplished by:

• Maintaining close liaison with Support Zones and Conservancies.

Developing guidelines and procedures to enable Support Zone residents to use selected natural resources, where sustainable use levels have been determined by the Conservation Scientist and the park and neighbouring Conservancy Committees have established and agreed a set of rules governing the use of these resources. These rules will establish:

• Who can harvest,
• How much material can be harvested by each person,
• When it can be harvested,
• Where it can be harvested,
• What techniques and instruments can be used,
• Who will be responsible for checking on use,
• What will be the procedures for dealing with those who abuse this privilege.

• Promoting labour intensive maintenance programmes (roads, construction, etc) so as to maximise local employment opportunities.

• Presenting changes in park plans, policies or management strategies for comment and contributions from Conservancy Committees.

• Establish a protocol for problem animal control in Support Zones by:

• Providing support to Community Game Guard programmes operating within Support Zones.

• Supporting Conservancies and Support Zones in establishing, where necessary, electrified fencing around vulnerable fields.

• Investigating cattle keeping practices and providing support for improved techniques for kraal building.
• Developing a rapid response procedure for dealing with problem animal complaints.
APPENDIX VII

NORTH-EAST PARKS PROJECT

PROCEDURE GUIDELINES ON TOURISM, VISITOR AND CONCESSIONAIRES
PROCEDURE GUIDELINES FOR TOURISM, VISITORS AND CONCESSIONAIRES

Tourism will be encouraged in the parks where it is not in conflict with the purposes for which the parks were established and the goals and objectives thereof. Emphasis will be placed on low density and high quality tourism.

Visitor access will be controlled, or if necessary restricted, by Special Protection Zone designation of any areas where there are unique, valuable and sensitive features that are either of high ecological sensitivity and/or high conservation value and may be impacted by visitor use.

Visitor activities and numbers will be monitored in the parks and carrying capacities assessed. If deemed necessary, the numbers of individuals and/or vehicles will be regulated. At such time as this becomes necessary, it is essential that a centralised booking system be established for all North-East Parks.

Commercial, promotional or documentary filming will be allowed in the parks subject to proper permitting and the approval of the Warden.

The use of private boats will be monitored and controls introduced where it is established that such use is resulting in accelerated bank erosion, pollution and/or significant conflict with wildlife or other park user groups. A maximum speed of 10 km per hour will apply to all private watercraft used within the parks.

Any commercial operation utilising the parks is subject to the provisions of the Nature Conservation Ordinance and its regulations. A limited number of commercial operators that can offer high quality services consistent with the mission, goals and objectives of the parks will be permitted to operate therein. Such operations will be conducted within terms and conditions defined by the Warden.

Once granted, the terms and conditions applicable to the concessionaire will be made available to all staff members within the park as well as affected Conservancies, such that the management of the concessionary agreement can be carried out with the minimum conflict between parties.

Ministry of Environment and Tourism personnel will consult with outside tourism interests in the areas involved to ensure development of tourism which is appropriate to and in harmony with park goals and objectives.

Commercial operations within the parks will be monitored to ensure that permit conditions are be adhered to and to assess the relevance and quality of the services provided. The information collected will be used to evaluate any application for lease and/or permit renewal.

Commercial operators utilising the parks must ensure their customers are aware of possible dangers and the rules of proper behaviour.

Firewood for use within any campground or picnic site must be from sources outside the parks.
Park Entrance. The Warden will ensure those officials at all park entrance and registration facilities are aware of and charge current park tariff structures and that the current tariff structures are clearly displayed at entrance gates and reception facilities.

The Warden will ensure that all visitors to the park are provided with a list of park regulations as well as pertinent information about the park and its natural resources.

The Warden will ensure that rules and regulations are posted in prominent places at visitor reception facilities.

Walking safaris will be encouraged in the North-East Parks if visitors are accompanied by a qualified guide.

Guides undertaking walking safaris in the North-East Parks need to be holders of a “Big Game” Professional Hunters Licence as stipulated in the Nature Conservation Ordinance.

Visitor densities will be regulated by the approved management plan for each protected area.
NAMIBIA
Ministry of Environment and Tourism

NORTH-EAST PARKS PROJECT
VOLUME 3
KWANDO CORE AREA
INTEGRATED DEVELOPMENT PLAN

Dated: 15th January, 1999
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MINISTRY OF ENVIRONMENT AND TOURISM: NORTH EAST PARKS PROJECT

Kwando Core Area: Integrated Development Plan

Introduction

1 INTRODUCTION

Development of the North-East Parks is a priority of the Ministry of Environment and Tourism. They are important for a number of reasons, including biological diversity protection, maintenance of ecological systems, income generation and rural development. The north-east region is currently underdeveloped, with limited agricultural potential and virtually no mineral or industrial potential, yet strategically located in terms of tourism. Development of these parks is therefore one of the few options for economic expansion.

Under Phase II of the Planning Phase: North-East Parks Programme, management plans have been prepared for Mamili National Park, Mudumu National Park, Kwando Core Area, Khaudum Game Reserve and Mangetti Game Camp.

The background information regarding the biophysical, ecological, legal, socio-economic and infrastructure characteristics of these North-East Parks is provide in Volume 1. The Management Plans detailing the management of the specific parks is given in Volume 2. This document, Volume 3: Integrated Development Plan for the Kwando Core Area, uses Volume 1 and Volume 2 to develop the investment programme for the Kwando Core Area, and access its potential income from tourism.

A Master Integrated Development Plan summarises all the IDPs for the individual parks to indicate the elements required for the planning of a larger scale management and development programme for the North East Parks.

1.1 Structure of this document

The objective of the Integrated Development Plan is to elaborate on:

1. An investment programme for actions that are required to develop the parks' potential in an economically viable and sustainable way.

2. Summarise the capital budgets, including revenue potentials.

3. Present a chronogramme (or schedule) for implementing the development programme.

The development programme itself is summarised in a planning matrix that adopts a log frame format. The Capital Budgets are presented using a spreadsheet format, and consider the costs for infrastructure development over a 5-year period. These are presented in the Appendices together with a summary of capital and recurrent costs, and a schedule of implementation.
In terms of the management plan, a Warden is to be appointed for the Kwando-Linyanti Conservation Area who will be responsible for the administration and management of the Mamili, Mudumu and Kwando National Parks. However, all field staff responsible for the Kwando Core Area will reside in the park and be based at Susuwe, and be answerable to the Warden. At present, the staff compliment consists of a Principle Ranger, five Scouts, one operator/driver, six watchmen and two labourers. Currently the Warden resides in Katima Mulilo. Furthermore, infrastructure development is poor and the staff does not have the necessary equipment to carry out their mandate.

The operational budgets needed in protected areas in southern Africa are determined by the number of men required for effective patrolling\(^1\) to deter illegal activities, and undertake routine management. Despite the establishment of effective community wildlife programmes in areas adjacent to national parks, there is still the ever-present threat from illegal hunters who may come from further afield in search of meat and other natural resource products. As a general rule the number of men required is related to the size of the park as follows (after Martin, 1997):

\[
N_s = \sqrt{A}
\]

- where \(A\) is expressed in square kilometres.

The number of men also determines the annual running costs (made up of salaries, field allowances, equipment, transport, maintenance costs etc.). Allowing for variations in salaries and other costs from country to country in the region, the operational costs are approximately given by the formula:

\[
C_R = US\$50 \left(1 + \frac{2 + 3}{A} \sqrt{A}\right)
\]

Similarly, capital requirements are also dependent on the total staff complement in the park but vary depending on building costs across the region. The required capital per unit area is approximately given by the formula:

\[
C_C = US\$500 \left(1 + \frac{1 + 1}{A} \sqrt{A}\right)
\]

Where \(A = \) thousands of square kilometres (i.e. \(A = 1 = 1000km^2\)).

These formula suggest the recurrent and capital expenditure required to manage and develop a park of 1 000km\(^2\) will require US$300/km\(^2\) and US$1 500/km\(^2\) respectively.

The table below illustrates these relationships.

<table>
<thead>
<tr>
<th>Park size (km(^2))</th>
<th>50</th>
<th>150</th>
<th>500</th>
<th>1000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of men</td>
<td>7</td>
<td>12</td>
<td>22</td>
<td>32</td>
</tr>
<tr>
<td>Total Recurrent Cost (US$)</td>
<td>136 041</td>
<td>165 595</td>
<td>231 066</td>
<td>300 000</td>
</tr>
<tr>
<td>Total Capital Cost (US$)</td>
<td>636 803</td>
<td>768 649</td>
<td>1 103 553</td>
<td>1 500 000</td>
</tr>
</tbody>
</table>

These budgets represent a threshold: where the state provides annual operating budgets equal to or greater than the amounts given in the table, there can be some certainty that the protected area will be adequately managed and conserved. Where budgets are lower than the amounts given, it is almost certain that the park management authority will not be able to protect the resources of the park.

---

\(^1\) "Effective" patrolling is defined by the requirement that illegal activities are detected in less than two days.
Furthermore, these data illustrate the very high cost of developing and managing relatively small-protected areas. The cost of equipping and manning small protected areas cannot escape from the economies of scale associated with large protected areas. The general rule of thumb is that recurrent and capital costs should be in the order of magnitude of US$300/km² and US$1 500/km² respectively.

However, in reality, protected agencies are very rarely provided with “optimal” budgets, and very often have to compromise. The approach adopted here is to present the “optimal” budgets required to develop and manage the Kwando Core Area. The budgets thus derived will therefore serve as an indication to government (and donors) of the level of funding required to management this area so as to achieve its objectives.
3 INTEGRATED DEVELOPMENT PLAN FOR KWANDO CORE AREA

The Integrated Development Plan for the Kwando Core Area is to be implemented over a five-year period. The estimated capital costs take into consideration expenditures such as:

- Staff housing
- Other buildings (workshop, entrance gates etc)
- Expansion of tourist facilities
- Road construction
- Vehicles
- Firearms
- Workshop/office equipment
- Water supplies
- Power/fuel supplies
- Wildlife introductions (or removals)

3.1 Capital Costs for the Development of the Kwando Core Area

The following assumptions are used to derive the capital costs for the infrastructure development programme.

- Two Scouts will share a house with two bedrooms, central mess area and an external kitchen.
- Four labourers will be housed in one “barrack” unit.
- Principle Rangers have a two-bedroomed house with sitting room/dining room, shower and toilet.
- Gate Guards have the same style of house as Senior Rangers.
- Ablution blocks consist of three showers and three toilets and are intended to be shared by up to 25 people.
- The office space provides space for the Warden, Ecologist, Support Zone Co-ordinator and Principle Ranger. Senior Rangers would not necessarily enjoy a room to themselves. Clerks and Typists to have separate offices.
- The basic design of the entrance gate will include a lockable office, reception area and toilet facilities. Solar power will be optional.
- Provision is made for nominal office furnishing for each office.
- The number of 4 x 4 vehicles is calculated in the basis of 1 vehicle per 5 scouts. All vehicles will be diesel powered.
- Each park and will be allocated at least one 5-tonne lorry. Parks greater than 500km$^2$ will be provided with an additional vehicle for every 500km$^2$ (i.e. a 1 000km$^2$ park will be allocated two lorries).
- Each park will be allocated one tractor, trailer and tow grader. Mowers and disc ploughs are optional. Parks greater than 500km$^2$ will be provided with an additional tractor/trailer combination for every 500km$^2$ or part thereof (i.e. a 1 000km$^2$ park will be allocated two tractor/trailers).
- The size of the workshop/storeroom complex has been made proportional to number of field staff scouts on station.
- A flat allowance is made to kit the workshop out with tools.
- Provision is made for game water supplies for a number of boreholes plus pumps calculated on the basis of one unit to 500km$^2$ (this implies a radius of approximately 10km for each water point)
- Provision is made for one 50kva generator per station.
- A lump sum is provided to translocate wild animals to or from the park.

---

2 Recurrent and operational costs for the Management Programmes are provided in Volume 2, and summarised in Appendix II.
The capital costs are provided in Appendix I, and summarised together with the Recurrent and Operational Costs in Appendix II. Assuming that the entire programme is implemented, it is estimated that approximately N$8.0 million will have to be invested in the park over the 5-year period. Most of these investments will occur in the first three years (85%). Construction of staff housing and associated infrastructure will form the bulk of this investment. The overall cost/km² varies from N$450 to N$2 400/km² (or US$75 – US$400/1).

When these costs are combined with the estimated recurrent and operational costs (see Appendix II), it is estimated that approximately N$21 million will be required to develop and manage Mudumu National Park over the 5-year period. The bulk of the expenditure (approximately N$15 million) will be required in the first 3 years of this plan.

3.2 Infrastructure Development Programme

Introduction

All infrastructure development in the Kwando Core Area will be co-ordinated under this management programme. This includes construction of any buildings, staff accommodation, entry gates, signs, water (both domestic and game water supplies), power (including fuel supply), sewerage, fire breaks etc. Procedure guidelines on design, placement and construction of infrastructure developments are provided in Appendix IV. Where possible, the implementation of any major construction programmes will be out-sourced following an analysis of the most cost-effective options.

An Environmental Impact Assessment will be done prior to any infrastructure development.

Infrastructure development in the Kwando Core Area is poor. Staff accommodation is inadequate and facilities to deal with tourists are non-existent. The fact that few facilities exist in the park affects all other management programmes, particularly the protection programme. The objective of the Infrastructure and Development Programme is therefore to address this problem. This will be accomplished through the implementation of the following activities.

Activity 1: Upgrade Susuwe base camp to form the central headquarters for the Kwando – Linyanti Core Conservation Area, and procure necessary equipment (vehicles, radios, firearms, uniforms etc.)

Current problem and issues

Staff based at Susuwe is accommodated in “buffalo huts” remaining from the SADF era that is inadequate. Furthermore, since Susuwe will be the central headquarters for the Kwando-Linyanti Core Conservation Area, it will require electric power and telecommunications in order to function effectively. There are also no basic workshop facilities capable of undertaking even the most rudimentary maintenance or repairs nor are there any storage facilities to protect equipment.

Proposed solution

Susuwe Camp is to be upgraded to become the central headquarters for the Kwando-Linyanti Conservation Area. All unnecessary structures are to be removed. A telecommunication

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1 Assumes an exchange rate of US$1 : N$6.00
system is to be installed together with a radio network linked to the other parks. Since the nearest electric power is in Katima Mulilo, a generator is to be installed capable of servicing the camp.

Construction of staff housing is to be commissioned taking the following points into consideration:

- The area’s main climatic characteristics are heat and dryness. The area has a high intensity of direct solar radiation plus an added factor of high levels of reflected radiation from the ground. High diurnal and annual temperature ranges are prevalent.
- Low humidity levels and generally low precipitation are features of the local climate. The area has low average wind speeds contrasting with occasional violent wind storms. A large portion of the area has a sandy environment.
- Uncomfortable living and working conditions are created by the extreme heat and dryness. Flies, sand and dust storms need to be counteracted. All building must therefore be adapted to summer conditions i.e. protected from intense radiation from the sun, ground and surrounding buildings.
- Buildings are to be designed where reduction of heat takes precedence over air circulation during the daytime. Measures are to be taken to reduce glare and to prevent dust and insect penetration.
- Buildings are to be designed to take advantage of the prevailing weather conditions (i.e. have courtyards, wide patios and large roof overhangs. No mechanical ventilation systems will be required.
- The largest dimensions and windows should face south. West faces of buildings should have no openings or windows. Eastern faces may have openings, but must be kept to a minimum. Non-inhabitable rooms (e.g. storerooms) should be located on the western side of the buildings to form a thermal barrier.
- Rooms are to be rectangular, with the narrow width as the external wall. They are to have high ceilings and ideally open on to a patio of indoor courtyard. Heat producing areas, such as kitchens, should be isolated and separately ventilated.
- Outdoor areas should contain plants and be shaded most of the day. Paved surfaces should be avoided wherever possible. Provision is to be made for outdoor sleeping (a patio screened with gauze is ideal).
- Windows are to be relatively small, particularly on outside walls and must be shielded from direct radiation and glare. Ventilation during daytime must be kept to a minimum, but designed for good ventilation at night.
- Direct sunlight on work spaces is to be avoided.
- Walls facing north and west (i.e. exposed to direct sunlight) must be thick and solid. They are to be shielded by large eaves and by vegetation. Generally walls of 600mm thickness is sufficient to provide heat sink capabilities.
- The exterior is to be painted white to make them as reflective as possible.
- Roof should be thatched where possible. The ceiling space is to be open to allow for maximum ventilation.
Housing Specifications

The following specifications are provided as a guide for the construction of a purpose build 1-bedroom or 2-bedroom house.

a. Construction

- Bricks or blockwork walls
- Floors – Cement screed
- Walls – Woodfloat cement plaster
- Steel frame windows and doors, and plasterboard ceiling.
- Limited electrical installation is to be installed to facilitate solar powered lighting.
- Kitchen installation to include a stainless steel sink, wooden shelving, one steel cabinet unit.

b. Room sizes

- One-bedroom (with built in cupboard) 16m²
- Two-bedroom (with built in cupboard) 13m²
- Bathroom (possibly with shower only) 5m²
- Toilet (with washbasin) 2m²
- Living room (lounge/dining) 30m²
- Kitchen (including pantry/storeroom) 12m²
- Circulation/cupboards 6m²
- Total 84m²

Veranda (optional) 18m²

Sewage and water reticulation

- Sewage disposal is to consist of septic tanks. A reliable water reticulation system is to be installed.

The complex is to be provided with a power generator (staff housing is to be equipped with solar power), and basic workshop facilities incorporating a storeroom and overhead fuel tanks are to be constructed.

The workshop facilities capable of undertaking simple engineering and mechanical works (welding, engine/pump repairs, vehicle repairs, carpentry etc) are to be installed. A storeroom to protect bulk supplies (cement, building material and other hardware) not exceeding 10m x 20m is to be constructed within the vicinity of the workshop. Overhead fuel tanks are to be installed.

Implementation

The rehabilitation of Susuwe Camp is to be co-ordinated by the Regional Warden in conjunction with the Warden and officials from the Ministry of Works. Siting of the various facilities will be the responsibility of the Warden, using the guidelines provided in Appendix IV. Construction will be out-sourced wherever possible.

Resources required

- Building materials
- Funding to engage contractors
- Solar powers and associated equipment
- Electric generator
- Basic workshop tools
- Radio communication system
Funds to remove unwanted infrastructure

Activity 2: Construct entry gate for the Kwando Core Area

Current problem and issues

There is no entry gate for the Kwando Core Area with the result that tourists and visitors to the area can come and go as they please. In addition, there are no facilities that enable staff to collect entry fees or distribute promotional information.

Proposed solution

An entrance gate is to be constructed at the turn-off from the Trans-Caprivi highway to Susuwe. The gate is to conform to a standard design applicable for all North East Parks that consists of a reception area and lockable weatherproof office. The office will be equipped with a radio to communicate with other stations in the Kwando-Linyanti Conservation Area. Logbooks, tourist receipts and tourist information is to be available at all times.

Implementation

This activity will be co-ordinated by the Regional Warden in conjunction with the Warden. Construction of the entrance gate will be out-sourced.

Resources required

Building materials
Funding to engage building contractor
Radio equipment, including solar power system
Safe

Activity 3: Construction of access roads and firebreaks.

Current problem and issues

The Kwando Core Area is frequently burnt out by wild fires, and this has had a marked impact on the Kalahari woodlands in the area. Although there is a fairly extensive network of roads in the area, they do not always act as appropriate firebreaks (Figure 1). Of particular concern is the lack of a western boundary cutline. Fires approaching the park from the west will undoubtedly burn out virtually the entire area. Similarly, fires entering the area of Angola in the north will de difficult to contain since there are only a few access roads. Once fires have entered the park, there are a very limited number of roads from which to back burn in order to contain the fires.

Proposed solution

A series of access roads are to be installed so that the area is subdivided into a number of blocks (Figure 1). The purpose of these access roads will be to facilitate anti-poaching activities and act as firebreaks. They will not normally be used for game viewing purposes.

Implementation

This activity is to be implemented by the Warden in conjunction with input from the Senior Conservation Officer. Aerial photographs will be used to determine the exact route, and the proposed route will be physically checked before construction commences.

The actual construction of the firebreak shall not involve the removal of large trees (i.e. trees greater than 20cm diameter). The final routes therefore need not necessary follow a straight
line. The exception will be the western border road between the Bwabwata Multiple Use Area and the Kwando Core Area.

The order of implementation will be determined at the annual fire management workshop (see Activity 2, Protection Programme), however, the following is provided as a guide:

1. Installation of the western border firebreak to form the Western Boundary Road.
2. Extension of Delta Road from Delta Pan westwards to the Western Boundary Road
3. Extension of Sanzo Road westwards to the Western Boundary Road
4. Construction of a north-south access road from the Angola border south through Delta Pan to the Trans-Caprivi Highway
5. Construction of a north-south access road from the junction of Sanzo and Guesha Road (south of Guesha Pan) to the Botswana Border.
6. Construction of a north-south road from the intersection of Mulombe Road/Trans Caprivi Highway to the Botswana border.

**Resources Required**

- Global Positioning System
- Aerial photographs
- Contract labour to clear track
- Tractor/trailer to transport staff
- Tools (shovels, picks, axes)
- Camping gear and allowances.
Activity 4: Manufacture and erect appropriate signs in the park

Current problem and issues

The road network is fairly extensive, consisting of several inter-linked loop roads (see Figure 2). However, signs directing tourism traffic consist of inappropriate concrete tablets, and it is easy for visitors to get lost.

Proposed solution

The design and construction of signs for the Kwando Core Area will conform to the standards agreed to at the regional level. The design of the signs is to be sufficiently robust to withstand elephant damage, yet not obtrusive. These are to be erected at the intersection of all roads, indicating destination, distances, directional arrows, right of access as appropriate. Information notice boards are to be provided at the entrance gates and visitor reception areas.
Implementation

The Warden will be responsible for co-ordinating the implementation of this activity, including the installation of the signs.

Resources required

Materials to fabricate signs (Sheet metal, paint, iron bars, concrete)

Activity 5: Development of tourism facilities (campsites, game viewing hides etc)

Current problem and issues

There are currently four camping sites at Susuwe, Nambwa, Mongwe and Chisu. Horseshoe Pan is also regarded as a popular camping site. There are no sites west of the Kwando riverine area e.g. at Delta or Guesha Pan (see Figure 6, Appendix II). Apart from Susuwe there are no facilities at any of these sites to deal with refuge, nor are there any ablution facilities to deal with overnight camping.

The demand for these sites is not excessive at present, however should the tourism traffic increase, additional sites will be required.
**Proposed solution**

In keeping with the management framework, no permanent structures are to be erected at any of these sites. In particular, no overnight camping is to be allowed at Horseshoe Pan.

To cater for short duration self-catering camping (up to three days), long-drop toilet facilities are to be constructed to an approved design. No water reticulation system is to be installed (tourists will be expected to carry their own water). Animal proof bins are to be provided for litter and these must be emptied at regular intervals. Firewood is to be brought in from outside the park – firewood collection with the Kwando Core Area is prohibited.

Hides and picnic sites should be designed and built at specific sites with the first of these being installed at Horseshoe Pan.

Additional campsites may be opened at “Doppies”, Delta Pan and Guesha Pan if (or when) the demand from tourism traffic warrants this initiative.

**Implementation**

This activity is to be implemented by the Warden who will inspect the sites on a regular basis. A labour crew will be used to ensure that the sites are kept clean and tidy. Toilet facilities will be inspected regularly to ensure that these do not become a health hazard. A regular schedule will be installed to clear litter bins on a weekly basis (and more frequently during peak usage times).

**Resources required**

- Construction of toilet facilities
- Animal proof refuse bins
- Logistic support (waste collection, inspection)

**Activity 6: Removal of all dilapidated structures**

**Current problem and issues**

Dilapidated structures from the previous SADF exist at a number of places within the Kwando Core Area (e.g. at Susuwe, Fort Doppies and Horseshoe). In addition, substantial infrastructure was erected by Wilson, Bailey Holmes during the construction of the Trans-Caprivi Highway.

**Proposed solution**

All material dating from the SADF occupation of the area is to be removed and the sites rehabilitated to ensure that the natural vegetation returns. The issue concerning the Wilson, Bailey Holmes road camps needs to be resolved. If this camp becomes the property of MET, then the camp should be dismantled and the materials recovered used to assist in the construction of headquarters in Mamili, Mudumu and Kwando.

**Implementation**

This activity is to be implemented by the Warden in conjunction with the Department of Works. It is recommended that the possibility of outsourcing this activity be investigated.

**Resources required**

- Transport, Labour
## 4  PLANNING MATRIX FOR KWANO CORE AREA

### OVERALL GOAL
To facilitate the natural movement of wildlife between Botswana, Angola and Zambia through improved conservation status and sustainable economic development of the Kwando Core Area and adjacent Conservation Areas.

### OVERALL OBJECTIVE
Secure the integrity of the Kwando Core Area in order to protect the unique biodiversity of the Kwando riverine habitats, Kalahari Woodlands and Omuramba grasslands.

<table>
<thead>
<tr>
<th>INDICATOR</th>
<th>MEANS OF VERIFICATION</th>
<th>ASSUMPTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>National Park gazetted</td>
<td>Statutory instrument</td>
<td>• Park accepted politically</td>
</tr>
<tr>
<td>Boundary of park respected</td>
<td>Record of incursions</td>
<td>• Mayuni/Kwando Conservancy established</td>
</tr>
<tr>
<td>Wildlife numbers increase</td>
<td>from patrol reports</td>
<td>• No natural catastrophes (droughts, fire).</td>
</tr>
<tr>
<td>Benefits to Mayuni/Kwando Conservancy</td>
<td>Ground and aerial</td>
<td></td>
</tr>
<tr>
<td></td>
<td>survey reports</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Support Zone annual</td>
<td></td>
</tr>
<tr>
<td></td>
<td>reports</td>
<td></td>
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</table>

### RESULTS

1. Legal integrity of Kwando Core Area Park established

<table>
<thead>
<tr>
<th>INDICATOR</th>
<th>MEANS OF VERIFICATION</th>
<th>ASSUMPTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public notification of proclamation</td>
<td>Legal instruments</td>
<td>• Political support for park at local level</td>
</tr>
<tr>
<td></td>
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</tbody>
</table>

2. Staff permanently based in the Park with the necessary infrastructure, equipment and budgets to carry out their mandate

<table>
<thead>
<tr>
<th>INDICATOR</th>
<th>MEANS OF VERIFICATION</th>
<th>ASSUMPTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Staff permanently resident in the park</td>
<td>Competent staff in place</td>
<td>• MET able to recruit staff</td>
</tr>
<tr>
<td>Annual budgets</td>
<td>Annual reports</td>
<td>• Adequate recurrent budgets provided</td>
</tr>
<tr>
<td>Staff housing in place</td>
<td>Physical inspection of infrastructure</td>
<td></td>
</tr>
<tr>
<td>Support infrastructure in place</td>
<td>Vehicles maintained, equipment functional</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3. Level of illegal activity reduced

<table>
<thead>
<tr>
<th>INDICATOR</th>
<th>MEANS OF VERIFICATION</th>
<th>ASSUMPTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patrol reports indicate 80% reduction in poaching in Year 3 compared to Year 1</td>
<td>Annual reports</td>
<td>• Park boundary gazetted</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Appropriate records kept by Warden</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4. Co-operation with Mayuni and Kwando Support Group improved

<table>
<thead>
<tr>
<th>INDICATOR</th>
<th>MEANS OF VERIFICATION</th>
<th>ASSUMPTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disposal of funds to Conservancies</td>
<td>Annual Reports</td>
<td>• MET able to recruit suitable Support Zone Co-ordinator</td>
</tr>
<tr>
<td>Responding to PAC</td>
<td>Record of PAC reports</td>
<td>• Conservancies proclaimed</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

5. Incidence of wild fires reduced

<table>
<thead>
<tr>
<th>INDICATOR</th>
<th>MEANS OF VERIFICATION</th>
<th>ASSUMPTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Firebreaks in place</td>
<td>Annual report indicate extent of areas burnt</td>
<td>• Staff adequately equipped and trained to deal with wild fires</td>
</tr>
</tbody>
</table>
## 2. INFRASTRUCTURE DEVELOPMENT PROGRAMME ACTIVITIES

<table>
<thead>
<tr>
<th>ACTIVITIES</th>
<th>MEANS</th>
<th>RESOURCES</th>
<th>ASSUMPTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.1 Upgrade Susuwe base camp to form central headquarters for the Kwando – Linyanti Core Conservation Area</td>
<td>• Removal of building rubble</td>
<td>• Design of buildings</td>
<td>• Kwando Core Area awarded National Park status</td>
</tr>
<tr>
<td></td>
<td>• Rehabilitation funds</td>
<td>• Building contractor</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Construction of staff housing</td>
<td>• Borehole/pump</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Installation of water reticulation system</td>
<td>• Electrical equipment (generator, solar)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Construction of sewerage system</td>
<td>• Fuel storage tanks</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Construction of workshop/storeroom</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Installation of power generator</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Installation of solar system</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Installation of fuel storage</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Design of buildings</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Building contractor</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Borehole/pump</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Electrical equipment (generator, solar)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Fuel storage tanks</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Construction of workshop/storeroom</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Installation of power generator</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Installation of solar system</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Installation of fuel storage</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Design of buildings</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Building contractor</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Borehole/pump</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Electrical equipment (generator, solar)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Fuel storage tanks</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Design of buildings</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.2 Construct entry gate for Kwando Core Area.</td>
<td>• Construction of entrance gate to approved design</td>
<td>• Design of building</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Install radio equipment</td>
<td>• Building contractor</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Radio and solar power equipment</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.3 Construction of access roads and firebreaks</td>
<td>• GPS</td>
<td>• Contract labour</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Aerial photographs</td>
<td>• Tractor/tractor</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Transport for road construction material</td>
<td>• Tools</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Field equipment (tents etc)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Ration allowances</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Implements (shovels, picks)</td>
<td></td>
</tr>
<tr>
<td>2.4 Manufacture and erect appropriate signs in the park.</td>
<td>• Design and construct robust signs</td>
<td>• Materials to fabricate signs</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Erect signs at key road junctions</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Erect information board at entrance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.5 Upgrade of tourism facilities (camp sites, game viewing hides etc)</td>
<td>• Identify campsites</td>
<td>• Animal proof bins</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Provide animal proof refuse bins</td>
<td>• Contract labour</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Construct toilet facilities</td>
<td>• Logistic support</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Transport for refuge collection</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.6 Removal of all dilapidated structures</td>
<td>• Casual labour</td>
<td>• Contract labour</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Transport</td>
<td>• Tractor/Tractor</td>
<td></td>
</tr>
</tbody>
</table>
5 ESTIMATE OF POTENTIAL REVENUE

Total gross expenditure on tourism generated in the North-East Region is estimated at approximately N$ 25 million (N$1996). This represents the total value of tourism in the region to the country as a whole (see: Tourism Development Planning Framework for the Caprivi Region, 1996). Only a portion of this money stays in the region with the bulk, estimated at about 80%, moving out of the region as a result of "leakage's" into other areas of the country.

Expenditures remaining within the region can be viewed at two different levels (see: The Value of Non-Agricultural Land Use in Some Namibian Communal Areas: A Data Base for Planning, 1995). One is the net contribution of resource use activities to the regional economy (resulting in additional economic benefit and induced employment through the multiplier effect) and the second is the contribution of these activities to local community income.

Table 1 shows the estimated current and potential aggregate net economic contribution to the regional for the Caprivi and Northern Kalahari Regions.

Table 1: Comparison of estimates of the current and potential contributions of non-agricultural land use to regional income in the Caprivi and Northern Kalahari Regions (N$ 1994)

<table>
<thead>
<tr>
<th>Item</th>
<th>Caprivi Region</th>
<th>Northern Kalahari Region</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extent (sq. km.)</td>
<td>18,800</td>
<td>21,718</td>
</tr>
<tr>
<td>Estimated current contribution</td>
<td>4,886,466</td>
<td>260,616</td>
</tr>
<tr>
<td>Estimated potential contribution</td>
<td>8,274,234</td>
<td>1,541,978</td>
</tr>
<tr>
<td>Potential magnitude of increase</td>
<td>1.7</td>
<td>5.9</td>
</tr>
</tbody>
</table>

1entire Caprivi District; 2former Bushmanland plus Khaudum N.P.; 3extrapolation based upon N$12 per km² for Bushmanland alone (Barnes, 1995); 4extrapolation based upon N$ 71 per km² for Bushmanland alone (Barnes, 1995).

Assuming that in future the economic potential of the Caprivi and Northern Kalahari regions is realised it would total approximately N$ 10 million. Applying the 80% "leakage" figure discussed above to this amount suggests that the overall potential to the national economy is approximately N$ 50 million (N$1996).

The economic values discussed above are measures of the value of tourism to the region and the nation. These are impressive amounts of obvious importance to national and regional economies. They do not, however, reflect direct benefits to neighbouring communities. This is best measured by the contribution of these activities to local community income. Table 2 shows estimated current and potential income to communities (conservancies) from non-agricultural, natural resource land use inside and outside protected areas within the Kwando-Linyanti, Okavango and Kalahari Conservation Areas.
Table 2. Comparison of estimates of current and potential community income from non-agricultural natural resource use in land inside and outside protected areas in the North-East Region (N$ 1994).

<table>
<thead>
<tr>
<th>Item</th>
<th>Kwando-Linyanti C.A.</th>
<th>Okavango C.A.</th>
<th>Kalahari C.A.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Protected 1</td>
<td>Protected 2</td>
<td>Protected 3</td>
</tr>
<tr>
<td>Extent (sq. km.)</td>
<td>2,640</td>
<td>1,200</td>
<td>3,841</td>
</tr>
<tr>
<td></td>
<td>non-protected 2</td>
<td>non-protected 3</td>
<td>non-protected 4</td>
</tr>
<tr>
<td>Estimated current Community income</td>
<td>92,400</td>
<td>42,000</td>
<td>23,046</td>
</tr>
<tr>
<td></td>
<td>505,770</td>
<td>172,500</td>
<td>198,000</td>
</tr>
<tr>
<td>Estimated potential Community income</td>
<td>683,760</td>
<td>310,800</td>
<td>353,372</td>
</tr>
<tr>
<td></td>
<td>967,560</td>
<td>330,000</td>
<td>846,000</td>
</tr>
<tr>
<td>Potential magnitude Of increase</td>
<td>74</td>
<td>7.4</td>
<td>15.3</td>
</tr>
<tr>
<td></td>
<td>1.9</td>
<td>1.9</td>
<td>4.3</td>
</tr>
</tbody>
</table>

Information contained in Table 2 illustrates that these areas generate income to communities which, although moderate at present, has significant growth potential if natural resources are properly managed. Additionally, such things as locating tourist lodges and campgrounds just outside the parks would provide for joint venture partnerships between conservancies and the private sector. Also, issuing trophy hunting quotas to conservancies rather than within parks would enhance conservancy revenue earning potential. Yet another possibility for increasing revenues and improving neighbour relations is the sharing of gate receipts between the Ministry and conservancies.

5.1 Potential Income from Kwando Core Area

The are a number of tourist establishments on the east bank of the Kwando river. Two camps (Mazambala – 14 beds, and Namashasha – 26 beds) cater for the tourist trade. The remaining two (Somewhere Camp and Aloe Hunting Camp) are privately run and do not cater for the tourist trade.

Within the park there are four designated campsites (Nambwa, Susuwe, Chisu and Mongwe) that are used by casual visitors to the park.

Entry to the Kwando Core Area is free, although potential tourists are required to collect a permit either in Katima Mulilo or from Susuwe. This is not always adhered to and as a result, there are no reliable records indicating the number of visitors to this area, but it is unlikely that they exceed 1 500 per year.

The prime tourist area is confined to the “Kwando Triangle” and only the more adventurous visit the western part of the park. Furthermore, the range of tourism activities available to visitors is restricted to vehicle, walking and static game viewing. Water borne tourism is only possible for a short time after the floods have peaked, and is restricted to a small area north of the Kongola Bridge. There is therefore a high risk of this area becoming congested if the tourism levels increase substantially.

It may be possible to disperse tourists into the western sector of the park, using the omiramba as the source of attraction, but this will depend on developing prime game viewing opportunities in these areas. Possible activities here could include overnight camping and walking safaris (game viewing by vehicle may be difficult due to the heavy sands).

The following table illustrates the magnitude of potential tourism revenue under a best case and worst case scenario (Table 3). These data suggest that under the best case scenario or

---

3 Various businessmen have applied for PTO’s for Horseshoe and Fort Doppies, but there is disagreement as to which Chief has influence or authority of this area.
45% occupancy (representing approximately 17 700 visitors/year), the Kwando Core Area is only likely to generate N$462 500/year (or N$385/km²). If tourist numbers do not exceed 4 000/year (i.e. 10% of potential occupancy), the estimated total income drops to N$130 200/year (or N$109/km²).

### Table 3: The potential income from Mudumu National Park using best case and worst case scenarios.

<table>
<thead>
<tr>
<th>Park Activity</th>
<th>Fee Schedule</th>
<th>Occupancy - Best case scenario</th>
<th>Occupancy - Worst case scenario</th>
</tr>
</thead>
<tbody>
<tr>
<td>Park entry</td>
<td>N$20/day/person (No people)</td>
<td>45% (17 739)</td>
<td>10% (3 942)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>N$354 780</td>
<td>N$78 840</td>
</tr>
<tr>
<td>Overnight camping</td>
<td>N$1 200/3 days x 4 persons</td>
<td>No 3-day Parties</td>
<td>No 3-day Parties</td>
</tr>
<tr>
<td></td>
<td></td>
<td>52</td>
<td>39</td>
</tr>
<tr>
<td></td>
<td></td>
<td>N$62 720</td>
<td>N$47 040</td>
</tr>
<tr>
<td>Mobile Tour Operators</td>
<td>N$5 000/year</td>
<td>No operators</td>
<td>No operators</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>N$15 000</td>
<td>N$10 000</td>
</tr>
<tr>
<td>Concession</td>
<td>N$15 000/year</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>N$30 000</td>
<td>N$15 000</td>
</tr>
<tr>
<td>Potential Income (N$)</td>
<td>N$462 500</td>
<td>N$369 140</td>
<td>N$130 200</td>
</tr>
<tr>
<td>Income/km²</td>
<td>N$385</td>
<td>N$224</td>
<td>N$109</td>
</tr>
<tr>
<td></td>
<td>US$64</td>
<td>US$37</td>
<td>US$18</td>
</tr>
</tbody>
</table>

Assumptions used to derive these data are as follows:

- Occupancy: Maximum of 27 vehicles/day with 4 people/vehicle for 365 days = 27 x 4 x 365 = 39 420 visitors to the park. Therefore, 45% occupancy = 17 739 people.

- Overnight camping: One camp occupied for a maximum of 3 days by 4 people = 3 days x N$100 x 4 people = N$1 200/camp. Four camps are occupied between March and September. This represents 28 weeks or a maximum of 196 days/camp = 784 camping days. Therefore, the maximum number of parties = 784/4 camps = 261. Occupancy set at 20%, 15%, 10% and 5% respectively.

- Tour operators: concessions will be given to mobile commercial tour operators.

- Concession: Annual concession fee paid by resident concessionaires.

### 5.2 Financing of the Development and Management Programme

The projected potential income for the Kwando Core Area will not be sufficient to meet the running costs of the Park, nor will this money meet any of the capital costs. This situation is exacerbated by the fact that it is MET’s intention to “share” the income from the park with neighbouring communities.

The gap between potential income and capital and recurrent expenditure will therefore have to be met from Government allocations. It must be accepted that it is unlikely that the Kwando Core Area will ever be financially self sustainable in the short to medium future.
6 SCHEDULE OF IMPLEMENTATION

A schedule of implementation is provided in Appendix III, and assumes a 5-year period. Some of the tasks are "once off" activities while others will occur throughout the implementation phase.

6.1 Notes on the Implementation Programme

The following considerations are to be taken into account regarding the timing of the implementation programme.

- The project year will run from January to December
- The duration of each activity is indicative.
- A project startup period is envisaged. During this time, an Inception Report is to be prepared, together with the first Annual Work Programme that includes the annual budget.
- The formalisation of the park boundary is on the critical path, and is to be completed before any of the other project tasks are implemented.
- All staff housing and related infrastructure development is to take place within the first three years of the project.
- Law enforcement and fire management programmes recur each year throughout the project.
- Routine maintenance is conducted throughout the period of the project on an "as required basis".
- Specific research and monitoring activities are to begin in the second quarter of the second year.
- Similarly, all activities associated with the Tourism and Visitor programme and the Education, Communication and PRO programme are to commence in the second year once the basic infrastructure is complete.

The overall implementation programme is to be re-appraised annually and adjusted according to the previous years' progress and changing priorities.

This schedule is designed to facilitate the low input required to manage the Kwando Core Area to achieve four objectives. These are:

- Improve law enforcement
- Facilitate an improved tourist use, particularly the dispersion of tourists into the dry parts of the park.
- Maintain and improve relations with adjacent communities.
- Reduce the incidence of fire in the park.

Other activities will focus on routine maintenance of infrastructure, particularly the road network, and implementation of basic monitoring programmes.

6.2 Project Start-up Phase

The implementation of this Integrated Development Plan will be preceded by a Project Start-up Phase. The purpose of this phase is to appoint a Project Co-ordinator who will be responsible for implementing the IDP. The Project Co-ordinator can be appointed either from within MET or provided by a donor.

He/she will be responsible for:

- Setting up the Project Accounts
- Preparing an Inception Report
- Procuring the necessary equipment (vehicles etc)
- Procuring building contractors
• Preparing the Annual Work Programme for Year 2
• Fulfilling the role of co-ordinator between MET, Regional Office and Field Staff
APPENDIX I

CAPITAL COSTS

KWANDO INTEGRATED DEVELOPMENT PLAN
# SUMMARY OF CAPITAL, RECURRENT AND OPERATIONAL COSTS OF THE KWANDO INTTEGRATED DEVELOPMENT PLAN

<table>
<thead>
<tr>
<th>Area (km²)</th>
<th>Total ($N$)</th>
<th>Total ($US$)</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
<th>Five year total</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Staff Housing</td>
<td>2,072,500</td>
<td>345,417</td>
<td>1,127,500</td>
<td>537,500</td>
<td>407,500</td>
<td>-</td>
<td>2,072,500</td>
<td></td>
</tr>
<tr>
<td>B. Transport</td>
<td>1,448,500</td>
<td>241,417</td>
<td>1,448,500</td>
<td>-</td>
<td>300,000</td>
<td>650,000</td>
<td>498,500</td>
<td>2,897,000</td>
</tr>
<tr>
<td>C. Other Buildings</td>
<td>1,880,000</td>
<td>313,333</td>
<td>-</td>
<td>1,550,000</td>
<td>330,000</td>
<td>-</td>
<td>-</td>
<td>1,880,000</td>
</tr>
<tr>
<td>D. Workshop/Office Equipment</td>
<td>291,000</td>
<td>48,500</td>
<td>-</td>
<td>216,000</td>
<td>75,000</td>
<td>-</td>
<td>-</td>
<td>291,000</td>
</tr>
<tr>
<td>E. Water supplies</td>
<td>15,000</td>
<td>2,500</td>
<td>-</td>
<td>18,750</td>
<td>18,750</td>
<td>-</td>
<td>37,500</td>
<td>-</td>
</tr>
<tr>
<td>F. Power/Fuel Supply</td>
<td>120,000</td>
<td>20,000</td>
<td>-</td>
<td>60,000</td>
<td>60,000</td>
<td>-</td>
<td>-</td>
<td>120,000</td>
</tr>
<tr>
<td>G. Road Construction</td>
<td>37,500</td>
<td>6,250</td>
<td>-</td>
<td>18,750</td>
<td>18,750</td>
<td>-</td>
<td>-</td>
<td>37,500</td>
</tr>
<tr>
<td>H. Wildlife Introduction</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Contingency (10% of Costs)</td>
<td>586,450</td>
<td>97,742</td>
<td>265,100</td>
<td>238,225</td>
<td>113,125</td>
<td>65,000</td>
<td>49,850</td>
<td>731,300</td>
</tr>
<tr>
<td>Total</td>
<td>6,450,950</td>
<td>1,068,908</td>
<td>2,934,850</td>
<td>2,620,475</td>
<td>1,225,625</td>
<td>715,000</td>
<td>585,850</td>
<td>8,006,800</td>
</tr>
</tbody>
</table>

## BASIC RECURRENT COSTS

<table>
<thead>
<tr>
<th>Total ($N$)</th>
<th>Total ($US$)</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
<th>Five year total</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Staff Salaries</td>
<td>877,200</td>
<td>146,200</td>
<td>877,200</td>
<td>877,200</td>
<td>877,200</td>
<td>877,200</td>
<td>4,386,000</td>
</tr>
<tr>
<td>B. Field Allowance</td>
<td>111,960</td>
<td>18,660</td>
<td>111,960</td>
<td>111,960</td>
<td>111,960</td>
<td>111,960</td>
<td>559,800</td>
</tr>
<tr>
<td>C. Equipment</td>
<td>188,750</td>
<td>31,458</td>
<td>174,650</td>
<td>65,550</td>
<td>51,450</td>
<td>90,750</td>
<td>447,950</td>
</tr>
<tr>
<td>E. Mileage</td>
<td>693,000</td>
<td>115,500</td>
<td>693,000</td>
<td>693,000</td>
<td>693,000</td>
<td>693,000</td>
<td>3,465,000</td>
</tr>
<tr>
<td>F. Training</td>
<td>157,000</td>
<td>26,167</td>
<td>157,000</td>
<td>157,000</td>
<td>157,000</td>
<td>157,000</td>
<td>785,000</td>
</tr>
<tr>
<td>Contingency (10% of Costs)</td>
<td>202,791</td>
<td>33,799</td>
<td>190,471</td>
<td>190,471</td>
<td>190,471</td>
<td>190,471</td>
<td>964,375</td>
</tr>
<tr>
<td>Total</td>
<td>2,230,701</td>
<td>371,784</td>
<td>2,095,181</td>
<td>2,215,191</td>
<td>2,095,181</td>
<td>2,122,901</td>
<td>10,608,125</td>
</tr>
</tbody>
</table>

## OPERATIONAL COSTS

<table>
<thead>
<tr>
<th>Total ($N$)</th>
<th>Total ($US$)</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
<th>Five year total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Administration</td>
<td>182,300</td>
<td>30,383</td>
<td>182,300</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>182,300</td>
</tr>
<tr>
<td>2. Infrastructure Development</td>
<td>190,000</td>
<td>32,500</td>
<td>190,000</td>
<td>149,250</td>
<td>149,250</td>
<td>149,250</td>
<td>896,250</td>
</tr>
<tr>
<td>3. Protection</td>
<td>30,500</td>
<td>5,083</td>
<td>30,500</td>
<td>30,500</td>
<td>30,500</td>
<td>30,500</td>
<td>152,500</td>
</tr>
<tr>
<td>5. Support Zone Programme</td>
<td>131,850</td>
<td>21,975</td>
<td>131,850</td>
<td>131,850</td>
<td>131,850</td>
<td>131,850</td>
<td>659,250</td>
</tr>
<tr>
<td>6. Education/Communication/PRO</td>
<td>244,300</td>
<td>40,717</td>
<td>244,300</td>
<td>131,400</td>
<td>131,400</td>
<td>131,400</td>
<td>500,000</td>
</tr>
<tr>
<td>7. Tourism and Visitor</td>
<td>62,500</td>
<td>10,417</td>
<td>62,500</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>62,500</td>
</tr>
<tr>
<td>8. Research and Monitoring</td>
<td>131,850</td>
<td>21,975</td>
<td>131,850</td>
<td>131,850</td>
<td>131,850</td>
<td>131,850</td>
<td>659,250</td>
</tr>
<tr>
<td>Contingency (10% of Total Costs)</td>
<td>119,548</td>
<td>19,925</td>
<td>119,548</td>
<td>50,000</td>
<td>50,000</td>
<td>50,000</td>
<td>296,963</td>
</tr>
<tr>
<td>Total</td>
<td>1,165,778</td>
<td>194,296</td>
<td>782,771</td>
<td>699,305</td>
<td>593,742</td>
<td>491,379</td>
<td>3,076,398</td>
</tr>
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</table>

## OVERALL COSTS OF IDP

<table>
<thead>
<tr>
<th>Total ($N$)</th>
<th>Total ($US$)</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
<th>Five year total</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1,068,908</td>
<td>2,934,850</td>
<td>2,620,475</td>
<td>1,225,625</td>
<td>715,000</td>
<td>585,850</td>
<td>8,006,800</td>
</tr>
<tr>
<td>BASIC RECURRENT COSTS</td>
<td>2,230,701</td>
<td>371,784</td>
<td>2,095,181</td>
<td>2,215,191</td>
<td>2,095,181</td>
<td>2,122,901</td>
<td>10,608,125</td>
</tr>
<tr>
<td>OPERATIONAL COSTS</td>
<td>1,165,778</td>
<td>194,296</td>
<td>787,771</td>
<td>699,305</td>
<td>593,742</td>
<td>491,379</td>
<td>3,076,398</td>
</tr>
<tr>
<td>OVERALL TOTAL COST</td>
<td>8,471,489</td>
<td>1,634,988</td>
<td>5,817,802</td>
<td>5,534,971</td>
<td>3,914,548</td>
<td>3,286,050</td>
<td>3,212,953</td>
</tr>
</tbody>
</table>

## Management Costs ($N$)/km²

<table>
<thead>
<tr>
<th>Total ($N$)/km²</th>
<th>Total ($US$)/km²</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Costs ($N$)/km²</td>
<td>8,206</td>
<td>1,368</td>
<td>4,848</td>
<td>4,612</td>
<td>3,262</td>
<td>2,738</td>
</tr>
<tr>
<td>Costs ($US$)/km²</td>
<td>1,368</td>
<td>227</td>
<td>808</td>
<td>769</td>
<td>544</td>
<td>456</td>
</tr>
</tbody>
</table>

Kwando: Summary

Appendix II
APPENDIX II

SUMMARY OF CAPITAL AND RECURRENT COSTS

KWANDO INTEGRATED DEVELOPMENT PLAN
APPENDIX III

CHRONOGRAMME

KWANDO INTEGRATED DEVELOPMENT PLAN
APPENDIX IV

NORTH-EAST PARKS PROJECT

PROCEDURE GUIDELINES ON INFRASTRUCTURE DEVELOPMENT
PROCEDURE GUIDELINES FOR INFRASTRUCTURE DEVELOPMENT

Procedure guidelines on design, placement and construction of firebreaks:

*Fire-breaks on park boundaries* are to be at least eighteen metres in width (this is a double fire-break). Internal fire-breaks are to be at least nine metres in width. Internal fire-breaks should follow natural features or ecotones which may act as natural fire-breaks. Road locations should be considered in the context of roads also serving as fire breaks.

*Fire-breaks* should be cleared and/or burnt annually as early in the calendar year as possible but no later than July. For the maintenance and monitoring of fire-break condition see policies on roads, tracks, trails and paths.

Heavy machinery may be used to establish fire-breaks, but should not be used in fire-break maintenance.

A fire officer will be appointed from existing staff and a fire duty roster for co-ordinating operations maintained during the main fire season (April to October).

Park staff will initiate co-operative programmes and actions with other fire control authorities, adjacent communities and neighbouring landowners.

Conservation scientists will provide for the recording of fire history in the parks.

Procedure guidelines on buildings, temporary structures, power supplies and equipment:

All buildings will be designed and placed in line with the primary objectives of the park and the level of facility development shall be in accord with park plans.

All structures will be designed and placed as unobtrusively as possible so as to not detract from the natural landscape, scenic beauty or ecological integrity of the parks. Whenever possible, natural barriers will be used to screen facilities from general view.

All buildings will be assigned a registration number and a maintenance record kept by the Warden.

All buildings will be inspected annually by the Warden.

Annual maintenance priorities will be assigned, motivated and budgeted. Buildings will be prioritised as follows:

- Staff housing and accommodation
- Administrative buildings and stores
- Plant buildings and structures (*e.g.* pump house)
- Workshop and maintenance areas.

Where appropriate the Warden will consider annual service contracts to the private sector for building (and other capital items) maintenance. This will be done on the basis of an analysis of the most cost-effective options for maintenance.

Power supply infrastructure and development will be designed to cause minimal ecological, visual and/or aesthetic impact. Underground lines are to be utilised in preference to overhead lines where feasible.

Domestic power supplies will be separately metered and the costs borne by occupants.
The Warden will ensure that temporary structures are removed on completion of the task for which they were constructed. Additionally, he or she will ensure that the site is fully rehabilitated and cleaned after completion of assigned tasks.

The Warden will designate sites within the park (consistent with the park zonation scheme) to specific tasks which are repeated regularly (e.g. game capture). These sites, activities, or structures will not conflict with park goals and objectives.

Equipment will be issued to individuals who will be held responsible for the items and their maintenance and servicing.

Training in the use of sophisticated equipment is compulsory for all users.

Procedure guidelines on potable water for parks staff:

No toilets, ablution facilities or water-based service facilities are to be positioned within 100m of a borehole or other primary water source.

Game capture pens and bomas must not be placed within 100 m of a borehole or other primary water source.

Water quality testing is done by NamWater, Private Bag 13389, Windhoek. A one litre sample of the water to be tested must be delivered in a closed glass container.

Procedure guidelines on water supply management:

The Warden will ensure that all water abstraction infrastructure is unobtrusive and blends in with the surroundings as best possible. Every effort should be made to suppress exhaust noise at installations using diesel or petrol engines. Solar installations should be used where possible.

No water abstraction for non-park purposes is permitted.

The provision of artificial water points for wildlife within the parks must be preceded by an Environmental Assessment in which the ecological framework for that supply must be given the fullest consideration.

Artificial water points for wildlife must not be constructed near (<2 km) park boundaries where there is a potential for conflict with surrounding communities or land-uses.

No barriers or obstructions of any type may be built on drainage’s.

A monitoring programme must be developed at each artificial water point for wildlife. Wildlife species and numbers, seasonality of use and the effects on vegetation (at varying radii around the water point) are to be assessed in terms of whether the water point is achieving a stated management objective.

Adequate protection measures against damage and theft must be developed for installations.

Development of water sources for wildlife carries with it the responsibility to ensure that these sources do not fail the wildlife which becomes dependent upon them. All sources of water for wildlife will be inspected, and maintenance performed if necessary, at least weekly throughout the dry season (or year round during droughts).

Procedure guidelines on sewage disposal facilities:
Soak pits for waterborne sewerage should not be built within 100 m of a borehole or water source to avoid contamination. Developments on the river margin must ensure that pits do not cut through the permanent water table.

No chemical toilets will be allowed within the park. Concessionaires should be made aware of this restriction.

No direct discharge of human wastes into any of the parks’ perennial or seasonal rivers are allowed under any circumstances.

No open water, evaporation pan sewerage treatment systems are allowed within the parks.
NAMIBIA
Ministry of Environment and Tourism

NORTH-EAST PARKS PROJECT

VOLUME 2

MAMILI NATIONAL PARK

MANAGEMENT PLAN

Dated: 15th January, 1999

PRICEWATERHOUSECOOPERS
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II BACKGROUND AND INVENTORY - MAMILI NATIONAL PARK
III CONCEPTS OF PARK ZONATION
IV PROCEDURE GUIDELINES ON PERSONNEL ADMINISTRATION
V PROCEDURE GUIDELINES ON INFRASTRUCTURE DEVELOPMENT
VI PROCEDURE GUIDELINES ON NEIGHBOURING COMMUNITY RELATIONS
VII PROCEDURE GUIDELINES ON TOURISM, VISITOR AND CONCESSIONAIRES
1 INTRODUCTION

The management plan for Mamili National Park has been prepared under Phase Two of the Planning Phase: North East Parks Programme. This document forms Volume 2 of this planning process and summarises the management actions, staffing requirements and recurrent budgets required to manage the park. This document is supported by Volume 1: Background and Inventory, which contains information as regards the biophysical, ecological, legal, socio-economic and infrastructural characteristics of the North East Parks. Volume 3: Integrated Development Plan summarises the investment programme needed to develop the park, and the potential revenue earnings of the park.

Mamili National Park is at the southern tip of the Eastern Caprivi. Its location relative to the other North East National Parks, Conservancies and Support Zones that form the Kwando-Linyanti Conservation Area is illustrated in Figure 1.

Figure 1: Location of Mamili National Park relative to other protected areas in the Kwando - Linyanti Conservation Area."
1.1 Structure of the Management Plan

For ease of understanding, this management plan consists of six main components. These are as follows:

**Vision statement:** The vision statement for Mamili National Park captures the overall goals of the Ministry of Environment and Tourism (MET) with respect to the management and development of the Park.

**Situation analysis and needs assessment:** Using eight pre-defined management programmes, the situation analysis and needs assessment provides a summary of the issues and problems facing the park that need to be addressed by the management plan. The management programmes are prioritised, and the activities to be conducted are evaluated and ranked to illustrate their level of importance.

**Goals and Objectives:** The goals and objectives of Mamili National Park are provided. These, together with the situation analysis and needs assessment, define the various activities to be undertaken under each management programme.

**Zonation:** This section describes the different management zones of the park that will facilitate its management and tourist use.

**Staffing Requirements:** The staffing requirements for Mamili National Park are determined based on the activities to be undertaken under each management programme.

**Management Programmes:** Eight management programmes are identified as being the core of the management plan. Using the information gathered during the situation analysis and needs assessment, various activities are identified that need to be undertaken under each management programme in order to deal with the various issues. Each management programme is prioritised and the activities ranked in order of importance. Each activity is dealt with under the following headings:

- Current problems and issues
- Proposed solutions
- Implementation
- Resources required

The management plan is also supported by a number of appendices that provide specific background data and information relevant to the planning process.
2 VISION STATEMENT FOR MAMILI NATIONAL PARK

The Vision Statement for Mamili National Park is tempered by the overall mission statement, policies and conservation goals of the Ministry of Environment and Tourism. These clearly define the criteria and goals for protected area management in Namibia (see Appendix I).

In terms of these overall statements, the government has established that the primary purpose of the North East Parks is to act as conservation areas. Secondary is the recognition that these parks can also serve to enhance local economies and increase the quality of life in neighbouring communities. In addition, they are a tourism product, playing a role in the national economy and serving as a window through which the world views Namibia's conservation ethic.

Within the context of these parameters, the vision statement for the Mamili National Park is defined as follows:

Mamili National Park shall protect the unique processes of the Kwando-Linyanti system, its ecologically important habitats and biodiversity. The park shall be managed as an integral part of the broader Kwando-Linyanti conservation area as a core area for local and migratory wildlife, tourism, and rural development. In particular, the park shall protect lechwe, buffalo, reedbuck, hippo, elephant and lion. Tourism shall be non-consumptive, low-volume and low-impact, with emphasis on a high-quality nature experience. Tourism concessions shall be allocated to neighbouring communities that have formed conservancies. Management shall include the establishment of mutually beneficial partnerships with communities.

2.1 Situation Analysis and Needs Assessment

The North East Parks Project was launched in 1995 with the objective of compiling management and development plans for the parks in the Caprivi and Okavango regions. On acceptance of the management plans, MET will establish a Joint Management Committee with stakeholders to implement these plans, as well as resolve any local problems, conflicts etc. Funding for implementation will be provided by the Government of Namibia and international donors.

However, the NEPP faces three major threats to its success. These are:

1 Political tension: The Caprivi is subject to various levels of political pressure that are beyond the capacity of MET to resolve. This makes it difficult for staff to operate in the field as they are constantly being accused of favouring one community over another. In addition there are marked political and racial divisions in the region that add to the complexity of the situation. It is essential therefore that MET maintains a transparent agenda, and that it secures the full co-operation of the
two governors in the respective regions, traditional leaders and all major stakeholders.

2 **Community support:** The historic establishment of the North East Parks has resulted in poor relations between MET and some of the communities to the point where the park boundaries are not respected, and the local communities want the parks to be reduced in size. Without the full support of the local communities, it will not be possible to implement any of the management and development plans.

3 **Ministry of Environment and Tourism status:** MET's track record in the Caprivi is poor. On the one hand they announce their desire to consult with communities, while on the other hand they appear to make unilateral decisions (e.g. awarding hunting concessions). An impression is created that MET is in control of the parks, but it does not even have senior staff based in the parks. All and sundry have virtually free access to these areas, and the parks are regularly burnt. Furthermore, MET staff is unable to respond to requests from local communities, particularly where this involves problem animal control.

A fourth issue concerns the erection of an electrified stock and game proof fence by Botswana along their border with the Caprivi. The purpose of this fence is to prevent cattle infected with Contagious Bovine Pleuroneumonia (CBPP or "lung sickness") from entering Botswana from Caprivi. Initially this fence ran along the entire length of the border westwards from the Kwando river. The net effect of this fence was that it disrupted the natural migration of wildlife back and forth from Botswana and the Caprivi Game Reserve (including the Kwando Core Area). However, following a re-appraisal of the fence by the Botswana authorities, sections of the fence have been removed, notably the first 30km westwards from the Kwando river. Although the remainder of the fence still has an impact on wildlife migrations into the Caprivi Game Reserve, the Kwando - Linyanti Core Conservation Area is no longer affected by this fence.

**MET Management Strategy**

The MET have defined eight management programmes that will form the basis of the management and development plans (Table 1).

**Table 1: Definition of the Eight Management Programmes for the North-East Parks Project**

<table>
<thead>
<tr>
<th>Management Programme</th>
<th>Brief Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Administration</td>
<td>The actions and activities taken by MET leadership to facilitate the attainment of the objectives of all management programmes.</td>
</tr>
<tr>
<td>2. Protection</td>
<td>The actions and activities aimed at preserving the physical and biological integrity of the parks.</td>
</tr>
<tr>
<td>3. Research and Monitoring</td>
<td>The actions and activities to determine the status and dynamics of park natural resources as well as the effects of management actions upon these resources.</td>
</tr>
</tbody>
</table>
4. Tourism and Visitor
The actions and activities to enhance visitor experiences in the parks as well as to minimise the impact of tourism on park natural resources.

5. Support Zone
The actions and activities aimed at encouraging compatible land uses in areas bordering the parks. In particular, the establishment and development of conservancies is to be encouraged, with MET providing technical advice on all aspects of wildlife management. The flow of benefits from the park to neighbouring communities will be facilitated.

6. Education, Communication and Public Relations
The actions and activities designed to increase knowledge and awareness of the parks and their role in the conservation of the nation's natural resources.

7. Infrastructure Development
The actions and activities relating to infrastructure development (roads, buildings, water development, fire breaks, disposal of liquid and solid waste).

8. Maintenance
The actions and activities designed to maintain, rehabilitate and/or enhance the parks bio-physical resources as well as infrastructure and equipment.

On the basis of these management programmes and taking into consideration the issues raised above, a situation analysis and needs assessment was conducted in Mamili National Park in late 1997 and early 1998. This exercise identified a wide range of issues that needed to be addressed in order to implement the management and development plans. These were analysed and the management programmes have been listed in order of priority, including a ranking of the various management activities to be address under each programme (Table 2).

Given the legal status and current development of the Park, the priority management programmes are:

1. Administration programme
2. Infrastructure Programme
3. Protection Programme
4. Maintenance Programme
5. Support Zone Programme
6. Education, Communication and PRO Programme
7. Tourism and Visitor Programme
8. Research and Monitoring Programme

Table 2 provides a summary of the prioritised management programmes and ranks the specific activities under each programme. The crucial issue here is the acceptance and proclamation of the Mamili National Park and its boundaries. Unless this is put in place, the management plan cannot be implemented. Thereafter, MET must appoint the staff and provide the necessary accommodation, equipment and operational budgets required to manage the park effectively.
Table 2: Priority of Management Programmes and Ranking of Situation Analysis and Needs Assessment for Mamili National Park. The indicative time scale illustrates the time frame to resolve the various issues.

<table>
<thead>
<tr>
<th>Priority of Management Programmes</th>
<th>Ranking of Situation Analysis and Needs Assessment for Mamili National Park</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Priority (1st to 3rd years)</td>
</tr>
<tr>
<td>1. Administration</td>
<td>1. Formalise and gazette Park boundaries and upgrade to National Park status</td>
</tr>
<tr>
<td></td>
<td>2. Appoint Warden and staff responsible for Park Management</td>
</tr>
<tr>
<td></td>
<td>3. Implement Park entry and fee structure</td>
</tr>
<tr>
<td>2. Infrastructure development</td>
<td>1. Staff accommodation at Shisinze Station needs to be upgraded</td>
</tr>
<tr>
<td></td>
<td>2. There are no entrance gates to the Park</td>
</tr>
<tr>
<td></td>
<td>3. Road maintenance is non-existent</td>
</tr>
<tr>
<td>3. Protection</td>
<td>1. Remove illegal settlements from within the Park</td>
</tr>
<tr>
<td></td>
<td>2. Organise and implement a comprehensive law enforcement programme</td>
</tr>
<tr>
<td></td>
<td>3. Control wild fires that enter the Park</td>
</tr>
<tr>
<td>4. Maintenance</td>
<td>1. There is no road maintenance</td>
</tr>
<tr>
<td></td>
<td>2. There are no firebreaks in the Park</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>3.</td>
<td>None of the infrastructure is maintained</td>
</tr>
<tr>
<td>4.</td>
<td>There is no recognised waste disposal site.</td>
</tr>
<tr>
<td>Priority of Management Programmes</td>
<td>Ranking of Situation Analysis and Needs Assessment for Mamili National Park</td>
</tr>
<tr>
<td>-----------------------------------</td>
<td>--------------------------------------------------------------------------------</td>
</tr>
<tr>
<td></td>
<td><strong>Priority (1st to 3rd years)</strong></td>
</tr>
</tbody>
</table>
| 5. Support Zone                  | 1. Local communities do not recognise park boundaries  
2. Park staff to not respond to problem animal complaints  
3. Communication with local communities is poor | 1. People and livestock encroach into the park on a regular basis | |
| 6. Education, Communication & PRO | 1. There is no communication, public relations or interpretative programme for the Park | 1. Mamili National Park is not promoted as a tourism destination | |
| 7. Tourism and Visitor           | 1. No fees are levied for the use of the Park  
2. Park does not have a tourism management plan | 1. There are no rules and regulations governing the use of the Park | |
| 8. Research and Monitoring       | 1. No research and monitoring programmes are in place.  
2. Local communities want to harvest natural resources from within the Park. No protocols are in place to deal with this issue. | 1. Wildlife populations have declined drastically in recent years. The reasons or the possible causes for this decline are not known. | 1. Long-term strategies for research both within and adjacent to the parks needs to be developed. |
2.2 Overall Goal and Objective for Mamili National Park

Given that MET regards Mamili National Park as an important conservation area that can make a positive contribution to the local economies of surrounding communities, the overall goal of Mamili National Park is defined as:

*Improved conservation status, biodiversity and sustainable economic development of Mamili National Park and adjacent Conservation Areas.*

The overall objective of the park is to:

*Secure the integrity of the park in order to protect the unique biodiversity of the Kwando-Linyanti wetland system.*
2.3 Zonation of Mamili National Park

Mamili National Park encompasses an area of 285 km² and much of the park consists of flooded wetlands (see Appendix II). However, zonation of the Park is complicated by the current low water regime. At present much of the fragile wetland areas are exposed with the result that it is predominantly a dryland park. The zonation of the park must therefore serve a dual purpose of meeting both the management objectives of the park and to cater for tourism use. The following zonation will therefore have to be re-evaluated should there be a return to previous water levels.

In view of current conditions, all of Mamili National Park south and west of the Sishika Channel is designated as a **Special Protection Zone** (see Appendix III for definitions of zone categories). This is to ensure that the remaining wetlands are not disturbed. At high water much of this area is inaccessible by vehicle and so will be naturally protected. The remainder of the park is to be designated as a **Natural Zone** with the exception of a **Development Zone** around the Shisinze Station that should not exceed ten hectares (Figure 2).

![Figure 2: Zonation for Mamili National Park](image-url)
### 2.3.1 Description of Mamili National Park Management Zones

<table>
<thead>
<tr>
<th>Zone</th>
<th>Description</th>
<th>Purpose</th>
<th>Permitted Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nkasa Special Protection Zone</td>
<td>The area to the south and west of the Shishika channel. Most of the area is open grassland with few wooded islands.</td>
<td>To protect the wetlands</td>
<td>• Access by MET for management and research purposes.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Access by approved external scientists.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• No tourist vehicles, but use of boats in riverine habitat permissible.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Walking safaris</td>
</tr>
<tr>
<td>Lupala Natural Zone</td>
<td>The area to the north and east of the Shishika channel, including Lupala and associated island. The Shisinze Development Zone is excluded.</td>
<td>To generate funds from non-consumptive, low-volume, low-impact tourism.</td>
<td>• All forms of non-consumptive tourism activities conducted either from vehicles or on foot.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Camping at designated sites</td>
</tr>
<tr>
<td>Shisinze Development Zone</td>
<td>An area of up to ten hectares around Shisinze station.</td>
<td>To allow the establishment of infrastructure needed to effectively manage the park.</td>
<td>• Infrastructure development (staff housing, tourist camp sites, waste disposal site <em>etc.</em>).</td>
</tr>
</tbody>
</table>
3 STAFFING REQUIREMENTS FOR MAMILI NATIONAL PARK

The staffing requirements for Mamili National Park have been determined based on the activities to be undertaken under each management programme. Furthermore, it is assumed that the staff will fill several roles (e.g. a Scout will also be trained as a driver as well as carrying out patrol duties).

The critical path determining the number of staff will depend on the number of Scouts employed to patrol the park. This figure is determined using the following parameters:

- The minimum Patrol Area/Scout shall not be less that 40km$^2$ and not greater than 80km$^2$.
- Scouts will be expected to patrol up to 25 days per month.
- Each patrol shall consist of a maximum of 5 men. Each patrol unit will therefore complete up to 125 patrol-days/month.
- It is assumed that 50% of the Scout force will not be available for a variety of reasons (sick, leave, assigned to other duties etc.).
- The number of labourers is not to exceed 50% of the number of Scouts.
- At least two Gate Guards will be assigned to man entrance gates on a rotational basis.
- The number of Rangers is set at 1 for every 10 Scouts.
- The number of Senior Rangers is set at 1 for every 20 Scouts or part thereof.
- The number of Principle Rangers is set at 1 for every 3 Senior Rangers.
- One Warden is appointed to be in charge of the park.
- One ecologist is employed for every 2 000 km$^2$.
- One Support Zone Co-ordinator is employed for every 5 000 km$^2$.
- One technician is employed to assist each ecologist with data collection.
- One technician is employed to assist each Support Zone Co-ordinator.
- One clerk is employed for every 50 Scouts.
- One typist is employed for every 50 Scouts.

On the basis of the above assumptions, the staffing requirements for Mamili National Park are provided in Table 3.
Table 3: Staff compliment for Mamili National Park as determined by the eight management programmes

<table>
<thead>
<tr>
<th>STAFF COMPLIMENT</th>
<th>Administration</th>
<th>Infrastructure</th>
<th>Protection</th>
<th>Maintenance</th>
<th>Support Zone</th>
<th>Tourism</th>
<th>Education</th>
<th>Research</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Warden</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Principle Ranger</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Senior Ranger</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>Ranger</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td>Scout</td>
<td>-</td>
<td>-</td>
<td>8</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>8</td>
</tr>
<tr>
<td>Gate Guard</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td>Labourer</td>
<td>-</td>
<td>-</td>
<td>4</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>6</td>
</tr>
<tr>
<td>Ecologist</td>
<td>-</td>
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<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Support Zone Co-ordinator</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Technicians</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Clark</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Typist</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Total Staff Compliment</strong></td>
<td><strong>1</strong></td>
<td><strong>10</strong></td>
<td><strong>4</strong></td>
<td><strong>4</strong></td>
<td><strong>-</strong></td>
<td><strong>-</strong></td>
<td><strong>-</strong></td>
<td><strong>19</strong></td>
<td></td>
</tr>
</tbody>
</table>

Mamili National Park is relatively flat and very open. Patrolling the park is therefore not difficult and the staff numbers have been reduced accordingly. No staff is allocated to the Infrastructure, Support Zone, Education or Research Programmes. These programmes are to be dealt with by staff appointed at the central headquarters of the Kwando-Linyanti Conservation Area based at Susuwe (for details, see Volume 2: Kwando Core Area Management Plan).

3.1 Organisational Structure

The organisational structure of the North-East Parks is illustrated below (Figure 3). This structure conforms to that applied elsewhere in MET with the Regional Warden answering to the Directorate of Resource Management in Windhock.

Three “Conservation Area” Warden’s will be appointed to administer, manage and develop the Kwando-Linyanti Conservation Area, Okavango Conservation Area and Kalahari Conservation Area respectively.

The Support Zone Co-ordinator will be attached to the Regional Office but carry a rank similar to that of a Warden and Senior Conservation Officer. The Support Zone Co-ordinator will be responsible for the entire North-East Parks. However, since the greatest emphasis is required in the Kwando-Linyanti Core Conservation Area, this officer will be based at Susuwe, but he/she is also expected to work in the other two Conservation Areas.
The three Wardens will be answerable to the Regional Warden who will be based at Rundu. A conventional staffing structure will apply at station level with the most senior officer being in overall command and answerable to the Warden. Rangers, Scouts, Gate Guards and labourers will be answerable to the Warden through their respective Senior Rangers and Principle Rangers.

Professional staff attached to the Division of Specialist Services will be based at Susuwe, Buffalo and Sikaretti respectively. These staff will be responsible for the respective Core Conservation Areas and will work closely with the Wardens and Regional Warden. They will, however, be answerable to the Division of Specialist Services based in Windhoek.

### 3.1.1 Staff Functions and Responsibilities

At the Conservation Area level, the Warden will be responsible for the overall administration and management of the Parks under his control. He/she will also be responsible for all disciplinary actions and will fulfil the role of co-ordinator between his junior staff and the Regional Warden. As a general rule all staff members will familiarise themselves with the *Public Service Act, 1995*, *the Regulations under the Public Service Act, 1995* and the rules, regulations and policies of the Ministry of Environment and Tourism. Procedure guidelines on personnel administration and law enforcement are given in Appendix IV.

### Responsibilities of the Warden

The Warden is the ultimate level of authority in the Park and thus assumes overall responsibility for the development and management of all management programmes with the exception of the Support Zone Programme and Research Programme. He/she will however represent the Kwando-Linyanti Conservation Area on all park/support zone related matters. His/her responsibilities shall include:

- Assuming overall responsibility for the administration and management of the Park, including all assets.
- Fulfilling the role of co-ordinator between the Directorate, Regional Warden and all staff in the Park.
- Liaise with other government agencies, non-government organisations, adjacent communities and the private sector.
- Co-ordinate the preparation of comprehensive staffing plans.
- Determine and recommend to the Regional Warden the in-service and other training requirements of staff.
- Prepare and implement Annual Work Plans, schedules and budgets following the approval of the Regional Warden.
- Prepare Staff Establishment list in accordance with the Management Plans for approval of the Regional Warden and Directorate.
- With permission of the Regional Warden recruits and dismisses Junior Staff in his/her Park.
- Allocates duties to all Junior Officers (patrol duty, gate duty, routine maintenance *etc.*).
- Ensures that all infrastructure development within the park is in accordance with Namibian’s laws, policies, regulations and health and safety standards.
Visits all parks under his/her control at least once a month, including visits to the field.
Submits periodic progress reports and liaises regularly with the Regional Warden to ensure that this office is informed regarding progress and problems in the development and management of the parks.
Periodically communicates and co-ordinates with government organisations, non-government organisations, neighbouring communities and the private sector regarding the development and management of the parks.
Overall in charge of co-ordinating and combating illegal activities.
Responsible for financial accountability through:

- Recording all monies receipted in the park
- Monthly cash returns to Regional Office
- Government recurrent and operational budgets under his/her control.

Carrying out stock takes at the end of each financial year and reporting on the findings to the Regional Warden.
Ensuring that all tourist facilities are clean and operational.
Attends to Scout force, parades and kit inspection.
Actively involving local Support Group in Park Management wherever possible.
Attends local authority meetings.
Responds to all problem animal reports and deals with the issues expeditiously.
Preparing contracts, terms of reference, reports and briefings as required by the exigencies of the position.
Procuring all necessary materials required to develop and manage the park (fuel, building material, hire or equipment etc.).
Carrying out regular spot-checks on how work plans are being implemented.
Providing the Regional Warden with confidential reports on all his/her staff.
Calling regular staff meetings.
Recording any ecological or other data related to biophysical characteristics of the Park (climate, river flow, animal trends, deaths, fire etc.).
Ensures proper maintenance of equipment and facilities.
Maintains discipline in the Park.
Carries out any other duties assigned to him/her from time to time by the Regional Warden and Directorate.

Responsibilities of the Senior Conservation Officer

The Senior Conservation Officer will hold the same rank as the Warden and will be responsible for the staff under his control. He/she will work closely with the Warden to ensure the smooth running of the administration, development and management of the park. He/she will assume overall responsibility for the Research and Monitoring Programme for the Kwando-Linyanti Core Conservation Area. His/her responsibilities shall include:

- Develop a comprehensive plan for the management and staffing of the Research and Monitoring Programme for the Kwando-Linyanti Core Conservation Area.
- Prepare and implements budget and work plans following approval of the Directorate of Specialist Services.
- Supervise research and monitoring activities.
- Compile, process and interpret baseline data.
• Assist in the production of information materials for the Education, Communication and Public Relations programme.
• Assist the Support Zone Co-ordinator in the development of Conservancies.
• Prepare contracts, terms of reference and agreements with scientists and research institutions.
• Organise and supervise the research and monitoring functions within the individual parks.
• Ensure that clearly defined and appropriate duties are described in individual job descriptions for all research and monitoring staff.
• Determine and recommend to the Regional Warden and Directorate of Specialist Services the in-service training requirements for research and monitoring staff.
• Appraise the level of performance of research and monitoring staff, and make recommendations to the Regional Warden and Directorate of Specialist Services regarding staff transfers, discipline, promotion and general welfare.
• Formulates and proposes to the Directorate of Specialist Services and Regional Warden, through a mechanism of annual submission of a budget and work plan, specific tasks and activities for research and monitoring that are consistent with the 5-year Management Plan.
• Oversees the implementation of research projects and work plans, and provides guidance to all ongoing research and monitoring within the Kwando-Linyanti Core Conservation Area.
• Evaluates and recommends to the Division of Specialist Services the relevance of proposed independent research projects as they relate to the Management Plans.
• Determines and directs the appropriate timing and methods employed to assess the abundance and distribution of natural resources in the individual parks and adjacent Support Zones, using such information to determine and recommend to the Regional Warden appropriate ways of managing and utilising these resources.
• Monitors the efficacy of the tourism industry in the area, and compiles a database of occupancy, rates and economics of the various operations.
• Assists the Regional Warden and Directorate of Specialist Services in vetting applications for recruitment of research and monitoring staff.
• Compiles and submits such reports and briefings as may be required by the Regional Warden and Directorate of Specialist Services.
• Undertakes any other related duties as assigned by the Regional Warden and/or Directorate of Specialist Services.

Responsibilities of the Support Zone Co-ordinator

The principle functions and responsibilities of this position are to assume overall responsibility for all activities related to the Support Zone Programme in the North East Parks. He/she will also provide input into the Education, Communication and Public Relations programme to ensure that information regarding the development and management of Conservancies is accurately reflected. His/her specific responsibilities will include:

• Develop a 5-year comprehensive plan for the management and staffing of the Support Zone Programme that is consistent with the Management Plans for the North East Parks.
• Develop and implement annual work plans and operational budgets in accordance with the Integrated Development Plans.
• Establish protocol and working relationships with governmental organisations, non-government organisations, support zone communities and private sector.
• To be the liaison between the park and support zone communities, NGOs and private sector.
• Closely co-ordinate and co-operate with all park personnel and provide in-service training of all staff in communication and community liaison skills.
• Organise support zone functions for the individual Conservation Areas and supervise the effective discharge of these functions.
• Determine and recommend to the Regional Warden the required number and grade of Support Zone Personnel and their duty station placement.
• Ensure that clearly defined and appropriate duties are described in individual job descriptions.
• Determine and recommend the in-service training requirements for Support Zone staff.
• Appraise the level of performance of Support Zone staff and make recommendations to the Regional Warden regarding staff transfers, discipline, promotion and general welfare.
• Formulate and propose to the Regional Warden, through a mechanism of annual submission of a budget and work plan, specific tasks and activities for Support Zone development that are consistent with the 5-year Management Plans.
• Oversee the implementation of Support Zone projects and work plans, and provide guidance to all Support Zone personnel within the North East Parks.
• Liase with local non-government organisations in the creation of conservancies within Support Zones.
• Liase with the individual Wardens to develop methods and schedules for Community Game Guard participation in patrolling of the Conservation Areas.
• Liase with the Senior Conservation Scientist and Warden to develop protocols and procedures whereby neighbouring communities may be allowed access to the parks for the sustainable utilisation of natural resources consistent with the primary conservation purposes of the parks.
• Co-ordinates the compilation of financial estimates relating to the Support Zone programme and supervises the disbursement and expenditure of allocated funds.
• Assists the Regional Warden in vetting applications for recruitment of Support Zone staff.
• Evaluates and recommends to the Regional Warden and/or MET the relevance of proposed independent research projects as they relate to the Management Plans.
• Compiles and submits such reports and briefings as may be required by the Regional Warden and/or Ministry of Environment and Tourism.
• Undertakes any other related duties as assigned by the Regional Warden.
Figure 3: Proposed Organisational Structure of the North-East Parks

- Regional Warden will be located at Rundu
- The Support Zone Co-ordinator will be attached to the Regional Office, but based at Susuwe. He/she will be responsible for co-ordinating all Support Zone activities in the North East Parks Project area.
- Three Wardens will be in overall control of the three Conservation Areas
- All staff will be based in the respective parks

*Kwando-Linyanti Conservation Area
4 MANAGEMENT PLAN FOR MAMILI NATIONAL PARK

A summary of Mamili National Park’s background and inventory is provided in Appendix II. The management of the Park will conform to eight pre-defined management programmes described in Table 1. The situation analysis and needs assessment has identified various problems and issues that need to be addressed under each management programme (Table 2). These are transformed into specific activities that are to be undertaken by the park management authorities in order to achieve the goals and objectives of the park as outlined in the Vision Statement. The resources and operational budgets to undertake these activities are identified here and summarised in a Planning Matrix that adopts the logframe approach.

4.1 Management Framework

This is the first five-year plan for Mamili National Park starting 1st January 2000. Its purpose is to guide the MET, and particularly the Regional Headquarters and Conservation Area Wardens in the allocation of resources to develop and operate the Park. The priorities for action have been identified in the situation and needs assessment. Furthermore, this management plan has been developed within a framework of parameters that have been dictated by the realities on ground coupled with the mission and goals of the Ministry of Environment and Tourism, and the Vision Statement of Mamili National Park.

In summary, these are:

1. Mamili National Park is too small to accommodate extensive tourism infrastructure development without compromising its conservation goals. Therefore no permanent facilities for overnight visitor accommodation should be developed within the park, but short duration camping at selected sites will be permitted.

2. To promote economic benefits of surrounding communities, permanent visitor accommodation (lodges, tented camps, camping sites) should be developed outside the Mamili National Park and within the Wuparo Conservancy.

3. Hunting and photographic tourism are not compatible within the very limited areas of Mamili National Park. Therefore no hunting is to be allowed within the park.

4. Sport hunting should take place only outside Mamili National Park and in the Wuparo Conservancy in terms of quotas approved by MET.

5. No artificial waterholes are to be developed in Mamili National Park owing to the potential for vegetation damage by elephants in the small areas of woodland in the Park.

6. Mamili National Park is too small to accommodate unlimited tourism access. The initial recommended daily limit is 18 vehicles based on 90 kilometres of available road and a sight distance of five kilometres.

7. Reservations, permits and entry fees will be required of all visitors using the park. Entry fees to be shared with the Wuparo Conservancy once established.

8. No persons should reside in Mamili National Park except within the Shisinze Development Zone and only then if specifically permitted by the Permanent Secretary of the Ministry of Environment and Tourism. This restriction applies to all persons, including MET personnel.
9. All staff assigned to Mamili National Park should reside within it (subject to the provisions of #8 above).
4.2 Management Programme Activities

The activities identified here are designed to serve the objective of the park, and allocate the responsibilities for the required actions. Recurrent and operational budgets to carry out these actions are provided here, while capital budgets needed to undertake the necessary infrastructure developments are summarised in Volume 3: Integrated Development Plan for Mamili National Park.

4.2.1 Administration Programme

The administration programme seeks to ensure that enabling legislation is passed to facilitate protection of Mamili National Park, and to identify the staff requirements and responsibilities. It also sets in place certain administrative procedures, such as the collection of entry fees and visitor control. In order to achieve its objectives the following activities are to be

Activity 1: Survey the boundary of Mamili National Park and prepare legal description to be incorporated in the legislation.

Current problem and issues

The current legal status of Mamili National Park is unclear. The legislation refers to a boundary that is several hundred metres north of a physical cutline on the ground that is accepted by local communities as being the boundary of the park. In addition, the area is a proclaimed “nature reserve” but the legislation states that it should be referred to as a "National Park". Without a clearly defined boundary, law enforcement is extremely difficult.

Proposed solutions

Formalising the park boundaries of Mamili National Park will be difficult given that there is settlement pressure on the "official" northern boundary, and people have settled south of the cutline and are thus inside the "park". No matter what boundary is finally accepted, it will still be necessary to resettle people out of the area, and this is likely to meet with resistance. It is recommended therefore that the legislation is re-drafted to reflect the locally accepted boundaries on the ground. In addition, the area should be accorded National Park status once this is possible under Namibian law.

Implementation

This activity is to be implemented by the Ministry of Environment and Tourism in Windhoek in conjunction with the local staff and communities. The boundary is to be surveyed, and extended at its eastern end through the reedbeds to the Linyanti river (if this area is not flooded). Once the surveyed boundaries have been agreed to with the local communities, concrete cairns are to be erected at 250 metre intervals (or more where practical) such that at least 0.5 metres are above the ground. The cutline is to be widened where necessary so as to act as a firebreak, and cleared annually either manually or through the use of a motorised grader. Appropriate drains are to be installed to avoid erosion.
The description of the park boundary is then to be gazetted.

**Resources required**

- Surveyor to physically map and mark the boundary
- Legal advice to draft the appropriate legislation
- Boundary clearing where necessary
- Boundary marker cairns
- Casual labour

**Activity 2:** Appoint the staff responsible for the management and development of the Park.

**Current problem and issues**

The staff compliment for Mamili National Parks consists of a Principle Ranger, 3 Labourers and 2 Workhands. The Warden resides in Katima Mulilo, and is responsible for both Mamili and Mudumu National Parks. This staff compliment cannot manage the Park effectively. Furthermore, staff recruited from local tribes is often viewed with suspicion by rival tribes while various stakeholders are under the impression that the current staff is unable to do their job.

**Proposed solutions**

MET is to recruit a Warden responsible for the Kwando – Linyanti Conservation Area who will be in control of Mamili, Mudumu and Kwando National Parks. Preferably this person should not have any affiliations to any of the local tribes and have at least 5 years experience at this level. Similarly other senior staff (Principle Rangers, Senior Rangers etc.) should not be drawn from the region if possible. Scouts and Gate Guards may be recruited locally, but preference is to be given to persons originating from outside the region. Once identified, local staff are to be assigned to the Mamili National Park under the command of the Warden.

**Implementation**

This activity is to be implemented by the Ministry of Environment and Tourism in conjunction with the Regional Warden. The staff is to be based in the Park as soon as possible. The Warden will be responsible for developing the annual work programme.

**Resources required**

No specific resources are required for this activity. Staff is to be recruited from within MET wherever possible.

**Activity 3:** Park entry system and fee structure to be developed and implemented.

**Current problem and issues**
No fees are currently levied for the use of any of the North East Parks in the Kwando-Linyanti Conservation Area. Furthermore, no systems have been developed regarding the fee structure or how local communities can benefit from the proceeds.

**Proposed solutions**

In conjunction with the local communities, MET is to set standardised park entry fees for all parks in the Kwando-Linyanti Conservation Area. These fees are to conform to the legislation. Mechanisms to collect and account for all park entry fees are to be established at Shisinze.

**Implementation**

A fee structure should be developed, taking into consideration comparable fees charged in Botswana and Zimbabwe. The proposed fee structures are then to be discussed with the management committee of the Wuparo Conservancy. Local staff is to be trained to collect and account for all park entry fees.

**Resources required**

If the data are not available in Windhoek, a short consultancy is to be undertaken to gather the necessary information on comparable park entry fees. Appropriate permit systems and receipts to be developed. Staff training to account for entry fees.

**Activity 4: Design and implement training programme for all levels of staff**

**Current problem and issues**

It will be necessary to recruit staff for the park. The experience and level of competency of the staff will vary depending on where the staff originates. Senior staff are likely to have some experience, either gained at other stations as a result of in-house training or following graduation from a wildlife training institute. The junior staff (Rangers, Scouts etc.) is not likely to have a broad range of skills.

The net result will be that there will be a wide range of skills and experience amongst all levels of staff, and all will need some form of training in practical wildlife management and ecology. Some of this training can be accomplished in house, however, since there are no local wildlife training institutions, it may be necessary to send recruits to national and regional training programmes in wildlife management.

**Proposed solution**

A simple training needs assessment will be conducted of all the staff on the station to determine their level of skills and what level of training is required. As a guide, the following table illustrates the type of skills that various levels of staff should acquire.

<table>
<thead>
<tr>
<th>Senior staff</th>
<th>Junior Staff</th>
<th>Scouts</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Accounting and budget control</td>
<td>• Arc welding and gas cutting</td>
<td>• Basic Scout Training</td>
</tr>
<tr>
<td>• MET Accounting systems</td>
<td>• Artisan skills (bricklaying, carpentry,</td>
<td>• Basic bird and mammal</td>
</tr>
<tr>
<td>• Man management</td>
<td>plumbing, painting etc.)</td>
<td>identification</td>
</tr>
<tr>
<td>• Leadership and supervisory course</td>
<td>• Leadership and supervisory course</td>
<td>• Basic report writing</td>
</tr>
<tr>
<td>• Advanced vegetation, bird and</td>
<td>• Advanced vegetation, bird and</td>
<td>• Defensive driving</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Implementation

Training is the long-term key to attaining the Ministry's mission. In-service training is essential if management professionals are to perform at peak levels. However, natural resource management is a highly skilled and technical profession, and it is no longer possible to rely on training in ecology, forestry, wildlife conservation *etc.* Modern professional wildlife managers must also acquire skills in communications and public relations, sociology, economics, leadership, administrative management, new technologies *etc.* It is beyond the scope of this management plan to design a specific Career Path Training Plan for professional staff. This is the responsibility of MET.

Nonetheless, it will be necessary for staff to acquire the range of skills necessary to manage the park. It will be the responsibility of the Regional Warden to identify appropriate training courses and to ensure that all staff undergo a structured training programme that will improve their management skills.

### Resources required

In house assessment of training needs.
Funds to support staff on training courses
Funds to bring in specialist trainers to undertake in-house training programmes.
4.2.2 Infrastructure Development Programme

**Introduction**

All capital investment requirements to develop the Park’s infrastructure (housing, roads, boreholes, entrance gates *etc.*) are dealt with under the Infrastructure Development Programme in Volume 3: Integrated Development Plan for Mamili National Park.

Please refer to this document for the details of this programme together with the estimated budgets.
4.2.3 Protection Programme

Introduction

The objective of the Protection Programme is to maintain the integrity of the park both in terms of law enforcement and from biophysical effects such as fire. Although the current staff is deployed on anti-poaching patrols, illegal activities are widespread. Furthermore, there is no fire protection system to prevent wild fires from entering the park. To address these issues, the following activities are proposed:

Activity 1: Develop law enforcement programme for Mamili National Park

Current problems and issues

Enforcement of the law in Mamili National Park is poor and Shisinze station is often deserted. Poaching has had a serious negative effect on the wildlife. Several villages have been established south of the current park boundary cutline, and livestock often encroach into the park. In addition the staff are called upon to deal with tourist and cross-border contraventions.

Proposed solutions

The protection programme must be based on the permanent presence of staff in the park who are equipped to undertake regular patrols. The following activities are to be undertaken:

1. All park borders are to be patrolled at least once weekly on a random basis. Follow-up will be conducted on all evidence relating to unauthorised incursions of people and/or livestock into the park. Contravention of any park rules and regulations will be noted, enforced and reported. Reports of each incident must be submitted to the Warden and kept on record.

2. All park roads will be patrolled at least twice weekly on a random basis. Contravention to park rules and regulations will be noted, enforced and reported. Reports of each incident will be submitted to the Warden and kept on record.

3. Maintain rapid response capabilities and procedures for following up on reported incidents from other law enforcement officers, concessionaires and/or members of the general public.

4. Maintain a reporting structure for incidents. Reports are to be filed, maintained and analysed by the Warden. All incident reports will, at a minimum, contain information on the area(s) affected, animals or products involved, rules/regulations contravened, names of individuals involved (if known), arresting or investigating officer, recommendations for further actions, etc. The Warden will ensure that a comprehensive file of this information is kept, analysed and utilised to assess priority areas for patrols, arrest performances of individual officers, trends in illegal activities, etc.

5. Provide a list of park regulations to all visitors as they enter the park and encourage them to report any illegal incidents they may observe.
6. The Warden will maintain liaison with the Namibian Defence Force and the Namibian Police and utilise their capabilities to deal with cross-border violations and co-operative patrolling of the borders with Botswana.

7. The Warden will maintain liaison with Botswana authorities in matters relating to the prosecution of cross-border violations.

Implementation

This activity will be implemented by the Warden responsible for the Kwando – Linyanti Conservation Area using a compliment of Scouts based in the Mamili National Park. Using the local knowledge of the Park, the Warden will plan regular patrols varying from one to five days. The Warden will also be required to liaise with the NDF and Police. When necessary the Scout force can be augmented with Scouts and Community Game Guards from neighbouring protected areas.

Resources required

Uniforms, transport, weapons, radios
Patrol equipment (backpacks, water bottles, sleeping bags, tents, mosquito nets etc.)
Logistic support

Activity 2: Fire Management Programme Developed and Implemented

Current problem and issues

As much as 60% of the eastern Caprivi is burnt annually and Mamili National Park does not escape this. It is suspected that most of the fires originate outside the park, yet there are no firebreaks installed to curtail or stop wild fires from entering the park. Furthermore, the staff based in the park is not equipped to deal with wild fires should they occur.

With the dry conditions, a perennial peat fire burns in the east of the park, and this has caused the death of animals, notably buffalo.

Proposed solutions

This activity will concentrate on preventing wild fires from entering the park. It will also be responsible for controlling and extinguishing fires that occur within the park. A basic fire management programme is to be established using the following guidelines:

1. The northern park boundary is to be cleared to a width of at least 18 metres.

2. The internal road network is to be used as firebreaks, particularly those roads that are at right angles to the prevailing wind. The roads are to be cleared to a width of not less than 9 metres.

3. Both internal and external firebreaks are to be cleared annually as early as possible after the end of the rainy season but not later than July. Heavy machinery may be used to establish the firebreaks but should not be used for firebreak maintenance on an annual basis. Hand tools and limited back burning should be used instead.
4. The boundary firebreaks will be reinforced by burning narrow strip approximately 5 metres wide adjacent to the road. These strips will be burnt on alternate sides of the road each year to avoid damage to the tree and shrub layer.

5. To avoid control fires escaping, all control burns of fire breaks or block burns conducted as part of an early burning programme are to be conducted during the late afternoon and/or at night. No control burns are to be attempted on windy days.

6. A fire officer will be appointed from existing staff and a fire duty roster for co-ordinating operations is to be maintained during the main fire season (April to November) who will be responsible for keeping a fire register.

7. All fires inside or adjacent to the park will be investigated and action taken if necessary (or feasible). Backburning will be the preferred method of controlling wild fires.

8. Local staff will initiate co-operative programmes and actions with other fire control authorities, adjacent communities and neighbouring landowners.

9. Conservation scientists will provide for the recording of fire history in the parks. Where feasible, NOAA satellite data should be accessed to assist in this task.

Management of the peat fire

The occurrence of the underground peat fire in the east of the park represents a special case. This is a natural phenomenon and no attempts should be made to extinguish this fire. The extent and severity of the area burning is to be established and checked at regular intervals (at least every three months). Appropriate signs are to be erected to warn the public of this hazard.

Implementation

This activity is to be implemented in conjunction with similar programmes in Mudumu and Kwando National Parks. The Warden for the Kwando-Linyanti Conservation Area will be responsible for holding a joint workshop with key staff, including selected members from the local communities, to plan the annual fire management programme. This workshop will review the previous fire season, analyse the lessons learnt, identify problems and propose solutions to reducing the incidence of wild fires in the Conservation Areas.

The Warden and park staff is responsible for the implementation of the programme.

Resources required

- Annual fire management workshop with key stakeholders and local staff
- Heavy machinery to establish initial firebreaks.
- Tools for firebreak maintenance (shovels, fire beaters)
- Staff and casual labour to be used for clearing, maintenance and fire fighting.
- Transport to move staff to scene of wild fires
4.2.4 Maintenance Programme

Introduction

The Maintenance Programme enables the Warden to rehabilitate and/or enhance key infrastructure developments that are necessary to manage the park. This includes the regular maintenance of the park boundary, fire breaks, buildings and roads. It also includes regular maintenance of all vehicles and associated equipment, including stationary equipment such as water pumps/engines, solar power equipment, radios etc.

Mamili National Park will not carry a large inventory of equipment, nonetheless, the Warden will be responsible for developing annual work programmes under this management programme to carried out the following routine maintenance:

1. Annual border clearance
2. Annual road clearance
3. Installation of annual fire breaks
4. Waste removal from tourist camps as well as Shisinze Camp
5. Inspection and maintenance of tourist facilities
6. Vehicle maintenance
7. Inspection and maintenance Shisinze Camp

Activity 1: Maintenance of the bio-physical resources and park infrastructure

Current problem and issues

The Vision Statement emphasises that Mamili National Park will be managed to provide the visiting tourists with a high-quality nature experience. To achieve this goal, Mamili National Park will need to be managed to the highest standard. This will require that the park is accessible at all times, it is not regularly burnt out, camp sites are kept clean and tidy and staff morale is maintained at a high level through proper supervision, support, communications and good accommodation. It will also be necessary to ensure that the vehicle fleet and communication network is well maintained so that staff is able to carry out their duties efficiently.

Proposed solution

The Warden is to be provided with the necessary financial budget and equipment to undertake routine maintenance in the park. In situations where it is necessary to use heavy equipment (motorised grader, tipper lorry etc.), the Warden will approach the Regional Warden to access this equipment from within the region or through private contract. Generally, the park management will use local contract labour wherever possible to clear boundary lines, prepare firebreaks, maintain roads etc. Where masonry work is required to maintain buildings, plumbing, carpentry etc., the Warden shall have the flexibility of hiring local contractors or using in-house expertise.

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2 As a guide, the recurrent budget to effectively manage a park is approximately US$300/km².
The station workshop will also be equipped to undertake minor vehicle repairs and services. This will include the establishment of a fuel depot capable of storing a minimum of 2 000 litres of diesel fuel. Major repairs to vehicles and plant equipment will be outsourced.

All waste material recovered from the park will be separated into combustible and hard waste. Hard waste is to be removed to an approved waste disposal site (preferably outside the park) while combustible litter will be incinerated.

The procedure guidelines on waste disposal site will consist of:

- Adequate structures for waste collection will be placed at the entrance gate. Structures should be designed to exclude baboons, monkeys and any other potential problem animal.
- Notices will be posted at appropriate places throughout the park instructing visitors to take their waste out of the park themselves.
- All waste is to be collected at least weekly and more often if necessary.
- If the solid waste disposal site is located in the park, it should be enclosed with a five-metre mesh fencing to contain any windblown loss of refuse and should be electrified if deemed necessary. The top should also be covered if possible (i.e. to form a cage). Heavy soils should be avoided as these may impede drainage and so pose a health risk during the wet season.
- Where possible, all tin cans etc. should be crushed to reduce their size and burnt before being disposed. The contents of the site should be set alight regularly to reduce the volume.
- The disposal site should be at least three metres deep and should not be filled beyond 2.5m. Once full, the site is to be filled and the topsoil compacted.
- All hazardous substances (e.g. engine oil, used batteries, poisons, caustic chemicals etc.) will be collected, stored in leak proof containers and taken to collection centres in the nearest municipality.

Implementation

The Warden is responsible for developing the maintenance budget to be included in the annual work programme. Specific tasks will be overseen by junior staff in the field (road maintenance, camp clearance, firebreaks etc.). This work programme will identify the sub-tasks that need to be undertaken during the course of the year.

Resources required

Contract labour
Hire of heavy equipment (grader, lorries etc.)
Tools
Incinerator
Fuel to run generators
Vehicle repairs and maintenance
Pump-generator repairs and maintenance
Diesel supply to camp

Activity 2: Maintenance of game viewing roads, access roads and firebreaks.
Current problem and issues

The current road network in Mamili National Park is adequate for both current tourism levels and management purposes. No additional roads are to be constructed however all the roads within the Special Protection Zone south-west of the Sishika Channel are to be closed to tourism traffic.

Proposed solutions

The level of maintenance of the current road network is to be maintained according to the management classification. Prime Game Viewing Roads (i.e. Class 1) are to be inspected twice annually (May and October) to assess whether the levels of tourism traffic are causing any environmental damage. Compulsory inspections will be conducted after the rainy season, and all roads will be closed to traffic during heavy or persistent rains. Rehabilitation and road maintenance will consist of replacing road surface material. This material is to be recovered from designated borrow pits, preferably located outside the park.

Class 2 roads (i.e. transit roads and single traffic tracks) used primarily by park staff for management purposes are only to be established outside the prime game viewing areas. These roads are not to be used regularly, and are to be closed if they exhibit signs of deterioration.

No new roads should be opened during this planning period (i.e. over the next five years).

All roads on the south bank of the Sishika Channel within the Special Protection Zone are to be closed to tourism traffic, and only used by park staff in emergency situations. Access to this area by tourists is to be restricted to walking trails. These need not adhere to any fixed route, and can vary from year to year depending on the level of inundation.

Implementation

Implementation of this activity will be the responsibility of the Warden. The road maintenance and rehabilitation programme will be catered for in the Annual Work Programme. During routine patrols, all trees that have fallen across the road are to be removed to pre-empt off road travel. Roads requiring major rehabilitation involving heavy machinery will be evaluated by the Regional Warden in conjunction with the Warden. This evaluation will consider the option of road closure, rehabilitation or construction of an alternative route. Where necessary, professional advice is to be sought regarding the most cost-effective option.

Resources required

Tractor/trailer to transport road surface material
Tools (shovels, picks)
Funds to hire contract labour
Tyre drag for low level road maintenance
4.2.5 Support Zone Programme

**Introduction**

The support zone programme is effectively a liaison programme between the MET and the Conservancies and is the method by which MET will implement its "Parks and Neighbours" policy (see Appendix VI). This policy involves all levels of staff and its success heavily depends on the establishment of the Conservancies.

Given that the Conservancies are still in the formative stage and have yet to be gazetted, it is premature to identify specific activities under this management programme that will address the issues identified by the situation analysis and needs assessment. There is still a great deal to be accomplished at a regional level, particularly concerning the *modus operandi* of the support groups. This task will be the responsibility of the Support Zone Co-ordinator who will be appointed at the regional level.

Nonetheless, it will be necessary for the Mamili National Park management staff to establish a good relationship with local communities that will facilitate

<table>
<thead>
<tr>
<th>Activity 1: Implementation of the &quot;Parks and Neighbours&quot; Policy developed at the regional level</th>
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</table>

**Current problems and issues**

The present staffing arrangements, infrastructure developments and equipment at Mamili National Park are not conducive to becoming actively involved in the Support Zone Programme. The staff does not have the capacity or the capability to meet this mandate. However, local communities adjacent to the park expect the park staff to deal with issues such as problem animal control, and facilitate access to the park in order to harvest various products (reeds, thatching grass *etc.*).

**Proposed solution**

A "Support Zone Co-ordinator" is to be appointed at the regional level to co-ordinate the implementation of the "Parks and Neighbours" policy in the Kwando-Linyanti Conservation Area. Briefly the post would have the following responsibilities:

- Promote the establishment and development of new conservancies, and assist with the management of existing ones.
- Develop a comprehensive understanding of the conditions within the support zones
- Identify and promote a range of economic activities that can be associated with parks
- Develop mechanisms to improve and formalise communications between parks and stakeholders regarding policies, objectives and processes
- Establish a protocol for problem animal control in support zones
- Assist local Wardens in dealing with local communities
However, at the park level, the Warden will facilitate the implementation of the "Parks and Neighbours" policy by:

- Establishing a "Parks and Neighbours" committee that will meet on a regular basis to discuss mutual problems and resolve areas of conflict
- Reacting to problem animal reports

This will require the Warden to establish lines of communication with the local support group. With regard to problem animal control, there is a need to establish the magnitude of this problem, frequency and species involved.

**Implementation**

The overall support zone programme will be co-ordinated by the Support Zone Co-ordinator (SZC) based at Susuwe. At the local level, the Warden will co-ordinate and arrange regular meetings with the local Support Group in conjunction with the Support Zone Co-ordinator. The purpose of these meetings will be to discuss mutual problems and attempt to find amicable solutions. These meetings will also establish the lines of communication to deal with problem animals, and any other issues affecting the park/community relations.

Unless the information is already available, a short-term consultancy will be commissioned to assess the magnitude of the "problem animal" problem. This study will provide recommendations to deal with this issue, including the appropriate responses required by the Warden.

**Resources required**

- Short term consultancy
- Transport for Support Group members to attend meetings
- Logistic support to undertake PAC
4.2.6 Education, Communication, Public Relations and Tourism Programme

Introduction

The education, communication and public relations programme is responsible for increasing public knowledge and awareness of the Park and its role in conserving the Kwando-Linyanti wetlands. It is also responsible for ensuring that any published material is accurate and up-to-date, and that it reaches as wide an audience as possible. Outreach activities, such as school visits, are also facilitated under this programme. In addition, this programme is closely linked to activities undertaken by the Support Zone Programme.

This management programme is important at the present stage of the development of Mamili National Park for two main reasons. The legal status of the park itself is not yet secure, and will require that the park authorities develops strong lines of communication with the local communities. Secondly, there is an urgent need to attract more tourists to the park, and this can be achieved by raising the tourism profile of the park.

Activity 1: Develop an education, communication and public relations programme

Current problem and issues

MET do not have a structured programme that can disseminate its goals and objectives concerning the development of Mamili National Park to the local communities and the general public. Furthermore, there are no educational materials or handouts available for the general public. Added to this, MET are not in a position to promote or support many activities under this programme.

Proposed solution

A comprehensive Education, Communication and Public Relations Programme is to be developed in collaboration with other government agencies, non-governmental organisations and private sector interests. The development of this programme will be done in close co-operation with similar activities in the other North East Parks. The programme will include, but not be limited to, the following:

- The reasons for the creation of the parks and Support Zones and the unique features therein.
- Rationale for park zoning.
- Importance of the Kwando-Linyanti wetlands.
- Tourism opportunities.
- The history of human use of the parks and Support Zones.
- Soil conservation problems and the ways in which visitors may minimise their impact.
- Native plant and animal species and communities, including historical and present conditions of these resources.
- The control of introduced plants and animals within the park and Support Zones and the management strategies adopted to deal with them.
- The traditional role of fire in the ecosystems of the area and present fire management policy and practice.
• The development of curriculum packages on the above subjects for schools within the Support Zones.
• Contracting the development of tourist guidebooks for the area.
• Production of materials for tourists, which include rules, regulations, park use protocols and suitable behaviour within conservation areas.

**Implementation**

Implementation of this activity is beyond the capacity of MET field staff. This activity will therefore be developed and implemented using donor funded technical assistance in co-operation with the Support Zone Co-ordinator, NGOs and the private sector. Associated government agencies, such as the Namibia Tourism Board, will also play a significant role in this activity.

**Resources required**

Donor funded technical assistance
Logistical support
Short term consultancy to produce educational and tourism promotional material
Production of educational and promotional material

**Activity 2: Promote the tourism potential of Mamili National Park**

**Current problem and issues**

Mamili National Park is located in a remote part of the Eastern Caprivi Strip. Although the park has been in existence for several years, it is not frequently visited either by passing tourists or tour operators. To justify the investment in infrastructure development, and to meet the overall objectives of improving the rural economy of the area, it is essential that the park be visited by tourists.

**Proposed solution**

With the assistance of the Namibia Tourist Board and relevant tour operators, a strategy will be developed to promote the North East Parks in general and the Mamili National Park in particular. This strategy will consider the publication of feature articles in travel magazines, production of brochures and marketing at international tourism fairs attended by the Namibian Tourism Board. The National Tourism Development Plan will provide valuable input in this regard.

**Implementation**

Implementation of this activity will be co-ordinated by the Regional Warden in conjunction with the Directorate of Tourism and Resorts using donor funded technical assistance. The activity will be developed in parallel to similar initiatives in Mudumu and Kwando National Parks.

**Resources required**

Donor funded technical assistance
Production of promotional material
Logistic support
4.2.7 Tourism and Visitor Programme

Introduction

The purpose of this management programme is to control and manage all tourism and visitor activities in the park. It is also the purpose of this programme to ensure that the park receives the maximum financial benefit from tourism, and that tourists adhere to any rules or regulations regarding the use of the park. Currently, there are no mechanisms in place that ensures the smooth running of tourist activities nor is there any reliable information available about the park. To address these issues, the

Activity 1: Develop and implement a tourism management programme

Current problem and issues

At present there is a very rudimentary tourism programme in place but it has many weaknesses. The more important of these are:

- No entry fees are paid.
- Entry permits are issued at Katima Mulilo or at Shisinze gate but control is poor and it is possible to enter the park without permits.
- There are no reliable records of the number of tourists visiting the park.
- Availability of information for visitors to the park is sporadic and of poor quality.
- Visitors are not made aware of the Park rules and regulations.
- There are no restrictions on the numbers and types of vehicles allowed in the Park.
- Liadura and Mpumara Camping sites currently used by tourists have no facilities.
- Waste management from the tourist sites is non-existent.
- There is indiscriminate use of firewood by tourists.
- There are no guidelines for general use of the park (e.g. commercial filming, commercial tour operators, walking safaris etc.).

Proposed solution

A tourism management programme for Mamili National Park is to be developed. This programme will conform to similar tourism management programmes developed for the other North East Parks. Issues to be addressed in the management programme will include (but not be restricted to) the following:

1. Gazettement and collection of fees.

2. Control of access:
   - Designated entry/exit point
   - Vehicle limitations (e.g. no vehicles with double rear wheels permitted)
   - Speed limit of 40km per hour
   - No caravans permitted
   - No motorboats permitted
     - Maximum number of vehicles in the park limited to 18 tourist vehicles at any one time
   - Only one commercial operator license to be granted for the park at any one time
3. Control of use:
   - No firewood to be collected inside the park.
   - Behaviour that is disturbing to wildlife not permitted.
   - Commercial filmmakers and photographers need special permits.
   - Walking safaris encouraged, preferably accompanied by a qualified guide.
   - Camping only permitted at designated campsites.

Implementation

The overall tourism management programme will be developed at a regional level, and modified to suit the conditions of Mamili National Park. Draft procedure guidelines on tourism, visitors and concessionaires have been developed (Appendix VII). These should be modified where necessary. The Warden and other park staff will be responsible for enforcing the programme.

Resources required

Entrance gate
Receipt books
Information materials
Signs at park entrances and on the main Sangwali road and in Katima Mulilo
4.2.8 Research and Monitoring Programme

Introduction

The primary aim of the research and monitoring programme is to provide practical solutions to management problems affecting the park. It also seeks to establish baseline data sets to monitor trends such as population numbers, climate, flood regimes, vegetation, fire, visitor usage, poaching and other illegal activities etc. In addition specific research projects will be promoted where practical. In the case of Mamili National Park, the presence of a full time research ecologist is not justified however there is a need to undertake specific research and monitoring activities.

Activity 1: Develop a strategic research and monitoring plan for Mamili National Park

Current problem and issue

There is no structured research programme for the Mamili National Park. Sporadic research projects such as invertebrate, fish and bird inventories have been carried out in the past, while aerial surveys to monitor large mammal population trends have been irregular. These have been done by both the Namibian and Botswana Governments. There are no active ecological baseline monitoring programmes.

Proposed solution

A structured plan for research and monitoring is to be developed. This plan will focus on addressing management problems affecting the park, and be regularly updated. Baseline inventories are to be established and designed to address management specific problems. The following monitoring programmes identify some of the options to be considered.

a Fire: The park is regularly burnt out by wild fires. Little is known about the source of these fires or who causes them (honey gatherers? hunters?). Furthermore, fire-fighting techniques do not exist nor are there any records of previous fire history. The monitoring programme should examine the source of fires and where best to concentrate the mitigating efforts. Using the data gathered each year, this monitoring programme should lead to the establishment of a fire break system that could incorporate an early controlled burning programme.

b Climate: Records of rainfall and temperature could be monitored in the park.

c River levels: Monthly records of the Kwando river are to be recorded, together with the extent of flooding.

d Monitoring population numbers: Although a regional aerial survey is planned, local staff can keep a record of the number and location of key species. These data can be analysed to provide an index of whether the populations are increasing or decreasing.
e. Collation of incidents of illegal activity with patrol effort: The success of the protection programme can be measured by keep a record of the number of patrol nights relative to the number of illegal incidences recorded.

Where possible, local staff will be responsible for data collection. Large mammal surveys will be conducted as part of the regional aerial survey programme of the Kwando-Linyanti Conservation Area and co-ordinated by the Regional Warden.

Research into problems specific to Mamili (i.e. elephant damage to vegetation, the perennial peat fire in the north-east of the park) are to be developed as projects that can be carried out using existing staff. Research personnel from academic institutions will be encouraged to carry out in-depth studies identified under the strategic plan.

**Implementation**

The North East Parks Scientist (currently based in Katima Mulilo) will be responsible for formulating research plans for the Kwando-Linyanti Conservation Area and for the individual parks within the area. In doing so, he will liase with the Warden responsible for Mamili National Park to identify research and monitoring projects that specifically address management issues in Mamili. Research proposals developed as a result are to include equipment and manpower needs, and cost estimates.

The aerial surveys are to be implemented by qualified staff from the Regional and Head offices in Rundu and Windhoek. Local parks staff are to be involved wherever possible.

**Resources required**

Input from Warden and Conservation Scientist
Logistical support

**Activity 2: Develop protocols for consumptive use of natural resources in Mamili National Park**

**Current problem and issues**

There is pressure from local residents to harvest various resources in the Mamili National Park. This is at two levels: local and nationally. Locally, residents wish to cut reeds, catch fish and kill animals, and nationally safari hunters wish to shoot trophies in the Park.

**Proposed solution**

Protocols regarding consumptive use of the Parks resources must be developed. No hunting is permitted in the park (either commercial or subsistence; see Management Framework; Section 4.1). Grass and reed cutting should be allowed under supervision. Fishing, using rod and line only, is to be permitted in the Kwando and Linyanti. In allowing this activity, the Warden must be fully aware of any political implications and should remain in close contact with the NDF, Namibia Police and Regional Warden. Local communities are to be kept informed of any adverse developments.

**Implementation**
Implementation will be at two levels. First, a regional policy governing the use of selected natural resources in the North East Parks is to be developed. This will be the responsibility of the Regional Warden.

Secondly, the level of usage, products involved and time of year is to be determined for Mamili National Park. This exercise will be carried out in conjunction with the local communities and an agreed strategy developed. The Warden will be responsible for developing this strategy in conjunction with the local communities. He/she will also be responsible for monitoring the harvesting activities, and determining the time of year and quantities involved. These may change annually so as to fit the prevailing conditions in Mamili National Park.

**Resources required**

- Short term consultancy to develop broad policy guidelines
- Short term consultancy to determine demands for products in Mamili National Park
- Logistic support to monitor harvesting

**Activity 3: Investigate probable causes for the declining wildlife populations in Mamili National Park**

**Current problem and issues**

Mamili National Park was once famous for its lechwe population, estimated at almost 10 000 animals in 1980. By 1994, this population had declined to less than 600 and many of the other larger mammals did not occur in great numbers. This situation still exists, and many theories have been advanced as to the likely reasons for the decline. Amongst these are poaching, habitat change, low water, fire and overgrazing (by hippo and domestic livestock).

The lack of substantial wildlife populations will adversely affect the tourism potential of the park. There is, therefore, a need to investigate the probable causes of the low populations of the wildlife in the park, and suggest ways that this situation can be reversed.

**Proposed Solution**

There is only limited documented background data that can assist the park manager to interpret the historical record of this park. This activity will therefore investigate the probable causes of the decline of wildlife, and recommend to MET how the situation can be addressed, including the feasibility of re-introducing various species (lechwe and impala for example).

**Implementation**

This is a specific activity for Mamili National Park and will be implemented through contracting a research student reading for a Masters Degree or higher. The selected student will be based in the park and will work closely with the Warden and his staff.

**Resources required**

- Salary for research student
Logistic support
Camping and field equipment
## 5 PLANNING MATRIX FOR MAMILI NATIONAL PARK

### OVERALL GOAL

Improved conservation status, biodiversity and sustainable economic development of Mamili National Park and adjacent Conservation Areas.

### OVERALL OBJECTIVE

Secure the integrity of the park in order to protect the unique biodiversity of the Kwando-Linyanti wetland system.

<table>
<thead>
<tr>
<th>INDICATOR</th>
<th>MEANS OF VERIFICATION</th>
<th>ASSUMPTIONS</th>
</tr>
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<tbody>
<tr>
<td>National Park gazetted</td>
<td>Statutory instrument</td>
<td>• Park accepted politically</td>
</tr>
<tr>
<td>No illegal resettlement</td>
<td>Villages resettled</td>
<td>• Wuparo Conservancy established</td>
</tr>
<tr>
<td>Boundary of park respected</td>
<td>Record of incursions from patrol reports</td>
<td>• No natural catastrophes (droughts, fire).</td>
</tr>
<tr>
<td>Wildlife numbers increase</td>
<td>Ground and aerial survey reports</td>
<td></td>
</tr>
<tr>
<td>Benefits to Wuparo Conservancy</td>
<td>Support Zone annual reports</td>
<td></td>
</tr>
</tbody>
</table>

### RESULTS

1. Legal integrity of Mamili National Park established

   - Public notification of proclamation
   - Legal instruments
   - Political support for park at local level

2. Staff permanently based in the Park with the necessary infrastructure, equipment and budgets to carry out their mandate

   - Staff permanently resident in the park
   - Staff housing in place
   - Support infrastructure in place
   - Competent staff in place
   - Physical inspection of infrastructure
   - Vehicles maintained, equipment functional
   - MET able to recruit staff
   - Adequate recurrent budgets provided

3. Level of illegal activity reduced.

   - Patrol reports indicate 80% reduction in poaching in Year 3 compared with Year 1
   - Annual reports
   - Park boundary gazetted
   - Appropriate records kept by Warden


   - Disposal of funds to Wuparo Conservancy
   - Responding to PAC
   - Annual reports
   - Record of PAC reports
   - Conservancy proclaimed

5. Incidence of wild fires reduced.

   - Firebreaks in place
   - Annual reports indicating extent of area burnt each year
   - Staff adequately equipped and trained to deal with wild fires

### 1. ADMINISTRATION PROGRAMME ACTIVITIES

<table>
<thead>
<tr>
<th>ACTIVITIES</th>
<th>MEANS</th>
<th>RESOURCES</th>
<th>ASSUMPTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1 Survey the boundary of Mamili National Park and prepare legal description to be incorporated in the legislation.</td>
<td>Boundary surveyed, cleared and marked with concrete cairns.</td>
<td>Surveyor</td>
<td>• New boundary uncontested by local communities</td>
</tr>
<tr>
<td>1.2 Appoint Warden and staff responsible for the management and development of the Park.</td>
<td>Staff recruited by MET</td>
<td>No specific resources</td>
<td>• Sui...</td>
</tr>
<tr>
<td>1.3 Park entry system and fee structure to be developed and implemented.</td>
<td>Review of fee structure</td>
<td>Short term consultancy</td>
<td>• Sui...</td>
</tr>
<tr>
<td>1.4 Design and implement training programme for all levels of staff</td>
<td>Training needs assessment</td>
<td>Stationary</td>
<td>• Sui...</td>
</tr>
<tr>
<td></td>
<td>Identification of suitable training programmes</td>
<td>Training</td>
<td>• Sui...</td>
</tr>
</tbody>
</table>
### 2. INFRASTRUCTURE DEVELOPMENT PROGRAMME ACTIVITIES

<table>
<thead>
<tr>
<th>ACTIVITIES</th>
<th>MEANS</th>
<th>RESOURCES</th>
<th>ASSUMPTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>• See Volume 3: Integrated Development Plan for Mamili National Park for Details</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 3. PROTECTION PROGRAMME ACTIVITIES

<table>
<thead>
<tr>
<th>ACTIVITIES</th>
<th>MEANS</th>
<th>RESOURCES</th>
<th>ASSUMPTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1 Develop law enforcement programme for Mamili National Park</td>
<td>Boundary patrols</td>
<td>Game scouts</td>
<td>• Local staff permitted to outsource specific tasks</td>
</tr>
<tr>
<td></td>
<td>Road patrols</td>
<td>Patrol equipment</td>
<td>• Government meets recurrent budget</td>
</tr>
<tr>
<td></td>
<td>Rapid response</td>
<td>Weapons</td>
<td>• Capacity of staff</td>
</tr>
<tr>
<td></td>
<td>Reporting structures</td>
<td>Transport</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Liaison</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Training of game scouts</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.2 Fire Management Programme developed and implemented</td>
<td>Prepare annual fire management programme</td>
<td>Planning workshop</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Prepare boundary fireguards</td>
<td>Grader</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Prepare internal firebreaks</td>
<td>Contract labour</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Investigate and deal with wild fires</td>
<td>Transport</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Record fire history</td>
<td>Tools</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Monitor peat fire</td>
<td>Warning signs for peat fire</td>
<td></td>
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</tbody>
</table>

### 4. MAINTENANCE PROGRAMME ACTIVITIES

<table>
<thead>
<tr>
<th>ACTIVITIES</th>
<th>MEANS</th>
<th>RESOURCES</th>
<th>ASSUMPTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.1 Maintenance of the bio-physical resources and park infrastructure</td>
<td>Financial budget to undertake maintenance</td>
<td>Vehicles</td>
<td>• Local staff permitted to outsource specific tasks</td>
</tr>
<tr>
<td></td>
<td>Procurements of equipment (vehicles, tractor, trailer)</td>
<td>Contract labour</td>
<td>• Government meets recurrent budget</td>
</tr>
<tr>
<td></td>
<td>Hire of heavy equipment</td>
<td>Contract specialist staff</td>
<td>• Capacity of staff</td>
</tr>
<tr>
<td></td>
<td>Contracting specialist skills (builders, plumbers, electricians, mechanics)</td>
<td>Incinerator</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Waste removal</td>
<td>Basic workshop tools</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Equipped workshop</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Boundary/firebreak clearance</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Inspection of tourist facilities</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Basic vehicle maintenance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.2 Maintenance of game viewing roads, access roads and fire breaks</td>
<td>Hire of heavy machinery</td>
<td>Tractor/trailer</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Hire of contract labour</td>
<td>Contract labour</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Tools</td>
<td>Field equipment (tents etc)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Transport for road construction material</td>
<td>Ration allowances</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Implements (shovels, picks)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Heavy machinery available locally</td>
<td></td>
</tr>
</tbody>
</table>

### 5. SUPPORT ZONE PROGRAMME ACTIVITIES

<table>
<thead>
<tr>
<th>ACTIVITIES</th>
<th>MEANS</th>
<th>RESOURCES</th>
<th>ASSUMPTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.1 Implementation of the “Parks and Neighbours” Policy developed at the regional level</td>
<td>Warden to communicate with local Support Group</td>
<td>Short term consultancy (PAC)</td>
<td>• Conservancies move towards legalisation</td>
</tr>
<tr>
<td></td>
<td>Respond to Problem Animal Reports</td>
<td>Logistic support for PAC</td>
<td>• Support Group established</td>
</tr>
<tr>
<td></td>
<td>Liaise with Support Zone Co-ordinator</td>
<td>Transport for Support Group members</td>
<td>• Effective Problem Animal Reporting system established</td>
</tr>
</tbody>
</table>

### 6. EDUCATION, COMMUNICATION AND PUBLIC RELATIONS PROGRAMME ACTIVITIES

<table>
<thead>
<tr>
<th>ACTIVITIES</th>
<th>MEANS</th>
<th>RESOURCES</th>
<th>ASSUMPTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.1 Develop an education, communication and public relations programme</td>
<td>Technical assistance to develop programme</td>
<td>Donor funded technical assistance</td>
<td>• Promotion of Mamili National Park justified</td>
</tr>
<tr>
<td></td>
<td>Production of educational material</td>
<td>Logistic support</td>
<td>• Donors support</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PRO material</td>
<td></td>
</tr>
<tr>
<td>6.2 Develop and promote the tourism potential of Mamili National Park</td>
<td>Develop promotional strategy</td>
<td>Donor funded technical assistance</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Production of brochures and other materials (maps etc.)</td>
<td></td>
<td></td>
</tr>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 7. TOURISM AND VISITOR PROGRAMME ACTIVITIES
### 7. TOURISM AND VISITOR PROGRAMME ACTIVITIES

<table>
<thead>
<tr>
<th>ACTIVITIES</th>
<th>MEANS</th>
<th>RESOURCES</th>
<th>ASSUMPTIONS</th>
</tr>
</thead>
</table>
| 7.1 Develop and implement a tourism development and management programme | • Entry gate manned  
• Tourist information provided  
• Fee structure gazetted  
• Campsites prepared | • Entrance gate  
• Stationary (permits, receipt books)  
• Tourism information  
• Training for staff  
• Radio communications | • Tourist levels increase |

### 8. RESEARCH AND MONITORING PROGRAMME ACTIVITIES

<table>
<thead>
<tr>
<th>ACTIVITIES</th>
<th>MEANS</th>
<th>RESOURCES</th>
<th>ASSUMPTIONS</th>
</tr>
</thead>
</table>
| 8.1 Develop a strategic research and monitoring plan for Mamili National Park | • Formulate research and monitoring programme  
• Develop research proposals | • Logistic support to Conservation Scientist | • Availability of research staff |
| 8.2 Develop protocols for consumptive use of natural resources in Mamili National Park | • Regional policy developed  
• Determine local level of demand for natural resource products  
• Monitor harvesting | • Facilitated workshop  
• Short term consultancy  
• Logistic support | • Protocols accepted by local communities  
• Local communities adhere to harvest quotas |
| 8.3 Investigate probable causes for the declining wildlife populations in Mamili National Park. | • Engage research student | • Research grant  
• Vehicle  
• Field accommodation | • Suitable candidate identified |
6. RECURRENT AND OPERATIONAL BUDGETS

The recurrent and operational budgets for Mamili National Park have been derived based on the staffing structure of the park and the individual management programmes. These costs are usually met under the recurrent expenditure of government funding. The assumptions used to derive these costs are provided, together with the costs of the various inputs.

The **Basic Recurrent Costs** consider:

- Staff salaries
- Field allowance
- Equipment (uniforms, camping, radios etc)
- Mileage
- Training

The **Operational Costs** required to implement the individual management programmes are identified, including the assumptions used to derive these budgets.

These data are then summarised in Volume 3: Integrated Development Plan for Mamili National Park to indicate the overall cost of developing and managing the park over a five-year period.

6.2 Recurrent Costs for the Management of Mamili National Park

The assumptions used to develop the recurrent costs for Mamili National Park are:

- Field scouts are expected to be on patrol for up to 25 days per month. Labourers may accompany them. A field allowance is to be paid as an incentive to ensure proper patrolling.
- Officers are expected to spend up to 10 days per month in the field. Junior officers are to lead patrols. Both are entitled to the field allowance.
- All staff is to be provided with patrol rations. This is calculated at N$360/man month.
- Uniforms are treated as consumables because they are generally worn out after one year.
- Camping equipment is written off after two years.
- One VHF radio is to be provided for every five scouts, and each officer should have a radio. Radio handsets to be replaced every four years.
- A lump sum is provided for base station and repeater links.
- Every scout and every officer should be armed.
- A lump sum is provided to cover costs for implements for labourers (picks, shovels etc.).
- An allowance of 2 500km per month for each 4 x 4 vehicle will provide for all necessary travel within the park and allow one trip to a major centre per month.
- The mileage allowance for the 5-tonne lorry will be limited to 1 000km per month. This includes one trip per month to a major centre to collect materials.
- The provision for the tractor assumes it will be used on average 100 hours per month.

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3 Depending on the terrain and siting, one repeater could service Mamili, Mudumu and Kwando National Parks.
• The mileage provision for reporting to the Regional and Head Office will be shared amongst senior officers, including travelling for training.
• A lump sum is allocated for vehicle repairs/maintenance.
• The cost/kilometre includes depreciation.
• The running cost for diesel-powered borehole pumps and generators assumes that this equipment will operate 6 hours per day.
• Each station will receive a bulk fuel supply (up to 10 000 litres). Frequency and volume of supply will depend on number of vehicles on station.
• A lump sum provision is provided for all routine house maintenance (painting, plumbing, electrical repairs etc.).
• Provision is made for all scouts to undergo 14 days training either in service or elsewhere in Namibia once annually.
• Provision is made for senior officers to undergo 28 days training annually. This could involve travel to outside of Namibia but within the southern African region.

**Maintenance of firebreaks, road construction and rehabilitation**

The total length of road in Mamili National Park will not be increased over the next five years. The boundary cutline will double as the major external firebreak for the park. A five-metre strip will be burnt on alternate sides of the boundary each year.

• All tourist roads will be maintained to a standard which most tourists are prepared to endure in a vehicle exceeding 1800cc capacity, and which allow staff to carry out their daily duties. No major mechanical equipment inputs are envisaged, nor construction of major earth works, culverts, bridges etc.
• Such roads will be maintained by a labour gang using normal implements (pick, shovel, grass cutter) and aided by a tractor/trailer/tow grader.
• Firebreaks will be cleared sufficiently to allow easy travel by 4 x 4 vehicle.
• The cost of road maintenance is based on the assumption that a contract labour gang of 15 people can clear one kilometre of road in one day. The cost for a year of operation is as follows:

<table>
<thead>
<tr>
<th>Description</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wages: 15 labourers @ N$200/month</td>
<td>N$ 36 000</td>
</tr>
<tr>
<td>Field allowance: N$6/day x 15 labourers x 365</td>
<td>N$ 32 850</td>
</tr>
<tr>
<td>Ration allowance: N$6/day x 15 labourers x 365</td>
<td>N$ 32 850</td>
</tr>
<tr>
<td>Implements: 15 labourers @ N$200 each</td>
<td>N$ 3 000</td>
</tr>
<tr>
<td>Tentage: 3 x 5-man tents @ N$3 000 each</td>
<td>N$ 9 000</td>
</tr>
<tr>
<td>Total (365 days)</td>
<td>N$113 700</td>
</tr>
</tbody>
</table>

Cost/km of road in Mamili National Park (90km) N$ 1 260

**Adjusted for 15% down time**

N$ 1 500

• The cost of installing firebreaks assumes that a contract labour gang can prepare 10km of roads/firebreaks per day. The cost/km is therefore calculated at N$150/km.
• Mileage is provided to transport labourers, and for use of tractor.
• Provision is made for the hire of a grader or bulldozer for those portions of the road/firebreak which are beyond the capacity of hand labour.
A summary of the basic recurrent costs and operational costs per management programme are provided in Table 4 and 5. The basic recurrent costs are estimated at approximately N$600 000 per year. A further N$350 000 to N$600 000 will be required to implement the overall management programme, giving total Recurrent and Operational Budget of approximately N$1.0 – N$1.3 million per year.

This translates to an overall cost/km² of approximately N$3 500 to N$4 500/km² (or US$585 – US$760¹). This is almost double the accepted rate of US$300/km² used as a guide by park authorities in southern Africa, and is a reflection of the impact of the economies of scale on the cost of managing small protected areas in southern Africa.

¹ Assumes an exchange rate of US$1 : N$6.00
INSERT TABLE 4 AND 5 HERE (SPREADSHEET OF RECURRENT AND OPERATIONAL COSTS).
APPENDIX I

NORTH-EAST PARKS PROJECT

MINISTRY OF ENVIRONMENT AND TOURISM

MISSION STATEMENT AND CONSERVATION GOALS
Ministry of Environment and Tourism - Mission Statement and Conservation Goals

The mission and conservation goals of the Ministry of Environment and Tourism are as follows:

It is the mission of the Ministry of Environment and Tourism:

“To maintain and rehabilitate essential ecological processes and life support systems, to conserve biological diversity and to ensure that the utilisation of natural resources is sustainable for the benefit of all Namibians, both present and future, as well as for the international community.”

— Mission Statement and Mandate of the Ministry of Environment and Tourism, May 1994 —

Further to this mission...

“it is the policy of the Ministry of Environment and Tourism to ensure adequate protection of all species and subspecies, of ecosystems and of natural life support processes, by means of:

1. inventories, monitoring and appropriate research,
2. education and extension,
3. managing, and assisting and advising in the management of land and natural resources in Namibia,
4. legislation,
5. co-operation with local, national, regional and international organisations working for biotic diversity and habitat protection.”

— Conservation of Biotic Diversity and Habitat Protection, May 1994 —

Additionally, the Government of the Republic of Namibia recognises

“the key role that protected areas play in the conservation of ecosystems, essential ecological processes and biological diversity. The Government also recognises that these are the primary objectives for the establishment and management of protected areas,”

and within this context it is the policy of the Government to:

“Manage protected areas in ways which are sensitive to the needs and aspirations of people whose lives are impacted or affected by these areas, giving particular attention to promoting their socio-economic development, promoting communication and consultation and providing preferential opportunities in order to meet obligations for the establishment of mutually compatible land uses on an equitable basis particularly with regard to people removed from their land or denied access to key resources through the establishment of a protected area.”

— Parks and Neighbours: A policy for linking Namibian protected areas with neighbouring people and sharing protected areas with resident communities, January 1998 —
With the promulgation of this mission and clarifying policies the Government has defined the criteria for protected area management in Namibia and set the stage for the establishment and prioritisation of the goals for the development and management of the North-East Parks.

Through the promulgation of its mission and policies the government has established that the primary purpose of the North-East Parks is to act as conservation areas. Secondary is the recognition that these parks can also serve to enhance local economies and increase the quality of life in neighbouring communities. In addition, they are a tourism product, playing a role in the national economy and serving as a window through which the world views Namibia’s conservation ethic (Table 1).

Table 1: Primary and secondary conservation goals for Namibian National Parks.

<table>
<thead>
<tr>
<th>Primary Goals</th>
<th>Secondary Goals</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. To maintain and, where necessary, rehabilitate areas or features essential to the functioning of ecological processes.</td>
<td>1. To provide opportunities that increase awareness, appreciation, positive relations, economic benefits and compatible land uses in neighbouring communities.</td>
</tr>
<tr>
<td>2. To conserve biological diversity.</td>
<td>2. To facilitate, promote, develop, administer, co-ordinate and/or manage a range of opportunities to enhance visitor experiences with Namibia’s natural environments and optimise economic returns from these resources.</td>
</tr>
<tr>
<td>3. To conserve and manage renewable natural resources for sustainable production.</td>
<td>3. To provide Namibian citizens the opportunity for aesthetic, educational and recreational experiences at affordable cost.</td>
</tr>
<tr>
<td>4. To provide opportunities for expanding understanding of biological diversity, ecological processes and the effects of management actions.</td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX II

NORTH-EAST PARKS PROJECT

BACKGROUND AND INVENTORY

MAMILI NATIONAL PARK
MAMILI NATIONAL PARK

Mamili National Park was gazetted in 1990 (Official Gazette of South West Africa, No. 5904, 1st March, 1990) and at that time encompassed an area of 320 km². Subsequent discussions with neighbouring people led to the size of the park being decreased. The current boundary cutline now follows a new alignment (Figure 1). Functionally, therefore, the park covers an area of only 285 km². However, the official boundaries are those in the 1990 gazette as the area has never been re-proclaimed.

The people of Sangwali village on the northern border of the park oppose the name “Mamili” because of an inter-ethnic dispute. These people have severed political ties with Chief Mamili and feel the park should be called “Kwadumu” National Park.

Environmental Baseline

Mamili National Park was proclaimed to protect the permanent swamp and seasonally flooded areas of the Kwando River. Recent climatic events have led to reduced flows in the river with the effect that this area is now largely dry land.

Topography and Hydrology
Mamili National Park is traversed by a series of eastward flowing channels (Figure 2). During periods of high flow these channels carry water from the Kwando to the Linyanti portions of the river and large areas are flooded when they overspill their banks. The Mamili floodplains have been dry since 1994.

**Figure 2: Major channels in Mamili National Park. All flow west to east. Larger islands are shaded areas**

Vegetation

There are four basic types of grassland within the park with the wetter types occurring in the western portion (Table 1; Figure 3). All of these grasslands have wooded islands on the higher ground which vary from small termitaria with single trees such as *Lonchocarpus capassa* and *Phoenix reclinata* to the large islands of Lupala and Nkasa. At present the former floodplains are largely devoid of vegetation (due in part to fire) and there is extensive wind erosion.
### Table 1: Broad vegetation types for Mamili National Park
(from Hines, 1997)

<table>
<thead>
<tr>
<th>VEGETATION TYPE</th>
<th>COMMENTS</th>
</tr>
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<tbody>
<tr>
<td>Kwando-Linyanti Grassland</td>
<td>Tall flooded grasslands in seasonally inundated areas with several distinct sub-units. Generally, <em>Miscanthus junceus</em> forms dense stands together with <em>Vetiveria nigritana</em> on the drier areas. <em>Echinochloa stagnina</em> forms floating mats on extensively flooded areas in association with <em>Vossia cuspidata</em> and <em>E. pyramidalis</em>. <em>Phragmites australis</em> forms extensive dense reedbeds in this vegetation type.</td>
</tr>
<tr>
<td>Liambezi-Linyanti Grassland</td>
<td>The unit describes the largely un-wooded grasslands of the Liambezi basin and the fringe of grasslands north of the Linyanti river. Soils are peat rich organic forms or loamy clays and are sought after for agricultural purposes. The distribution of the grass species is patchy and related to the wetness of the soil. Characteristic species include <em>Eragrostis cf. Lappula, Imperata cylindrica, Loudetia simplex, Hemarthria altissima</em> and <em>Cynodon dactylon</em> (which can form extensive “lawns”).</td>
</tr>
<tr>
<td>Wet Mamili Grassland</td>
<td>These grasslands are periodically subjected to extended periods of flooding. The soils are variously clay-loams or peat-rich organic deposits both of which remain wet after the floods recede. Grasses are predominantly water tolerant with <em>Imperata cylindrica</em> being the most common. <em>Hemarthria altissima</em> dominates the wetter habitats. Wet channels are vegetated by a variety of sedges and <em>Phragmites australis</em>. Other common species are <em>Eragrostis cf. lappula, Digitaria brazzae, Hyparrhenia rufa, Loudetia simplex</em> and <em>Tristachya superba</em>. Islands are common and support large trees such as <em>Acacia nigrescens, Garcinia livingstonei, Lonchocarpus capassa</em> and <em>Diospyros mespiliformis</em>. The understorey contains <em>Euclea divinorum, Diospyros lycioides</em> and <em>Combretum hereroense</em>.</td>
</tr>
<tr>
<td>Dry Mamili Grassland</td>
<td>This area is subject to less flooding than the previous type and the area is predominantly grassland with few islands. Tree cover is largely restricted to small isolated <em>Combretum imberbe</em> and <em>Terminalia sericea</em> trees. The grass cover is a mosaic of coarse tall species such as <em>Hyparrhenia hirta, Cymbopogen excavatus, Andropogon schirensis</em> and <em>Setaria sphacelata</em>. In addition there are extensive patches of <em>Cynodon dactylon</em> lawns.</td>
</tr>
</tbody>
</table>
Fauna

Mamili National Park was once famous for its lechwe population, estimated at almost 10,000 individuals in 1980. A 1994 survey indicated fewer than 600 animals (Table 2) and it is believed this number has further declined. Poaching is cited as the likely reason. However, habitat changes as a result of recent low river flows may also have contributed to the decline.

Elephant and buffalo are present seasonally and for relatively short periods. In 1996 nearly 200 buffalo had to be shot in the park when they went through the overburden into a subsurface peat fire. This fire was still burning in 1998.

Hippo are relatively numerous in the main river channels. Lions occasionally move through the area but there are no resident prides. Other large mammals are present but not in great numbers. The only water during the dry season is in the main channels along which wildlife congregates.

\[4 \text{ Faunal lists are not included with this document as comprehensive listings applicable to the entire North-East Region were prepared for the proposed Okavango National Park (Management and Development Plans for the Okavango National Park held by the MET).}\]
Table 2: Mamili National Park surveys - 1980 to 1994  
(Data from Rodwell et al, 1995)  

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</tr>
</thead>
<tbody>
<tr>
<td>Elephant</td>
<td>32</td>
<td>135</td>
<td>100</td>
<td>57</td>
<td>72</td>
<td>136</td>
<td>169</td>
<td>179</td>
<td>491</td>
<td>187</td>
<td>625</td>
</tr>
<tr>
<td>Buffalo</td>
<td>0</td>
<td>217</td>
<td>0</td>
<td>8</td>
<td>228</td>
<td>132</td>
<td>515</td>
<td>634</td>
<td>766</td>
<td>625</td>
<td>1173</td>
</tr>
<tr>
<td>Hippo</td>
<td>182</td>
<td>123</td>
<td>98</td>
<td>182</td>
<td>139</td>
<td>24</td>
<td>227</td>
<td>181</td>
<td>159</td>
<td>136</td>
<td>245</td>
</tr>
<tr>
<td>Kudu</td>
<td>6</td>
<td>0</td>
<td>0</td>
<td>16</td>
<td>48</td>
<td>0</td>
<td>18</td>
<td>27</td>
<td>19</td>
<td>2</td>
<td>17</td>
</tr>
<tr>
<td>Lechwe</td>
<td>9470</td>
<td>7074</td>
<td>4494</td>
<td>5173</td>
<td>4249</td>
<td>2672</td>
<td>1630</td>
<td>1887</td>
<td>1224</td>
<td>340</td>
<td>571</td>
</tr>
<tr>
<td>Impala</td>
<td>0</td>
<td>0</td>
<td>5</td>
<td>0</td>
<td>0</td>
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<td>1</td>
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<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Zebra</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
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<td>0</td>
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</tr>
<tr>
<td>Tsessebe</td>
<td>0</td>
<td>3</td>
<td>0</td>
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<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Reedbuck</td>
<td>15</td>
<td>15</td>
<td>0</td>
<td>27</td>
<td>6</td>
<td>16</td>
<td>10</td>
<td>19</td>
<td>5</td>
<td>0</td>
<td>29</td>
</tr>
</tbody>
</table>

Socio-economic Baseline  

It is estimated that there are 3,500 people now residing in villages along the northern border of the park (Lianshulu, Sauzuo, Mbambazi, Sangwali, Samudono, Menglengela, Mbilajwe and Batubaja). With the drying of the swamp people have started moving southwards. There are now a number of relatively new villages along the northern boundary and some are within the park (since 1994). Maize is now being grown on the beds of some of the dry channels and lagoons. Lions are a problem in the area with a number of cattle and goats being taken from Menglengela village.

Administration and Infrastructure  

Shisinze Station is located on the northern boundary. The station has three Bavaria huts, a borehole and a water reticulation system. However, the pump is out of service and a bowser must bring in water from Nakatwa Station in Mudumu National Park.

The Menglengela community is in the process of constructing a fence (approximately five kilometres long) to reduce wildlife movement into the immediate village area on the Mamili boundary cutline. This fence will be centred on the point where the east-west cutline turns south towards the Linyanti River.

Staffing  

There are five field staff at Shisinze Station. The Warden is based in Katima Mulilo.

Monitoring and Enforcement  

There is one 4X4 vehicle for the station that is often out of service. The radio relies on a vehicle being present as there is no recharging system for the battery. Patrols are usually sent out from Shisinze Station but there are field camps within the park at Nkasa and Shivumu.
Communications

There is approximately 90 km of road within the park (Figure 4). These have been named and categorised in two classes for management purposes (Table 3):

Class 1  **Prime Game Viewing Road** – roads located in wildlife concentration areas and suitable for tourist traffic.

Class 2  **Management/Transit Road** – roads located outside wildlife concentration areas and/or unsuitable for tourist traffic.

**Figure 4: Roads in Mamili National Park**

**Table 3: Roads in the Mamili National Park.**

<table>
<thead>
<tr>
<th>NAME</th>
<th>DESCRIPTION</th>
<th>KM</th>
</tr>
</thead>
<tbody>
<tr>
<td>East Cutline Road</td>
<td>Boundary east of the entrance.</td>
<td>14.0</td>
</tr>
<tr>
<td>West Cutline Road</td>
<td>Boundary west of the entrance.</td>
<td>10.0</td>
</tr>
<tr>
<td>Lupala East Road</td>
<td>Between the East Cutline Road and Mparamure Campsite.</td>
<td>12.0</td>
</tr>
<tr>
<td>Mlengalenge Road</td>
<td>Between Lupala East Road and the park boundary near Mlengalenge village.</td>
<td>6.5</td>
</tr>
<tr>
<td>Nkasa Road</td>
<td>Between Shizinse Station and the old Nkasa Station.</td>
<td>10.5</td>
</tr>
<tr>
<td>Lupala West Road</td>
<td>Between the Nkasa Road and the Liadura Campsite.</td>
<td>13.0</td>
</tr>
</tbody>
</table>
Lupala South Road | Between the Lupala West Road and Mparamure Campsite. | 7.0
Linyanti Road | Between Liadura and the Lupala South Road. | 5.5
Cross Road | Between Nkasa Road and the Lupala West Road. | 7.0
Shivumu Road | Between old Nkasa Station and Shivumu Pool. | 4.0

All of the 90 km of existing road is considered Class 1 (Prime Game Viewing Road). This area is extremely flat and mostly treeless. On average vehicles must be 5 km apart in order to be out of sight of each other. Utilising this “sight distance” as a basis for calculation of allowable vehicle density results in a recommendation of 18 vehicles in the park at any one time (90 km of road divided by 5 km sight distance = 18 vehicles).

**Tourism**

There are camping sites within the park but none have any facilities (Table 4).

**Table 4: Tourism sites within the Mamili National Park**

<table>
<thead>
<tr>
<th>SITE</th>
<th>COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shivumu Pool</td>
<td>Poor site under <em>Kigelia</em> trees. Pool dry for the first time in living memory.</td>
</tr>
<tr>
<td>Mparamure</td>
<td>Small island with limited shade. Baboon roost.</td>
</tr>
<tr>
<td>Liadura</td>
<td>Small island opposite Kings Pool Camp in Botswana. Conflict of tourism use with Kings Pool Camp in Botswana as the channel is approximately 10 metres wide.</td>
</tr>
</tbody>
</table>

**Tourism Potential**

The tourism potential of the Mamili National Park is limited. Presently there is little game, large areas of bare soil and, in the dry season, a great deal of wind borne dust. Should high water return the situation would be markedly different.

**Hunting**

The 1998/1999 hunting rights to the Mamili National Park were sold for N$ 440 000, split between two bidders. On offer are four elephant, four buffalo, two lion and four hyena.
APPENDIX III

NORTH-EAST PARKS PROJECT

CONCEPTS OF PARK ZONATION
GENERAL CONCEPTS OF ZONATION

The purpose of subdividing a protected area into "zones" is to facilitate the management objectives of the park. It also defines the type of activities that can or cannot take place in the "zone". Zonation is therefore a double process:

a. A park is zoned for management purposes. This could apply to factors such as fire management, removal of animals, protection of sensitive habitats etc. These zones would therefore define what management actions are required to achieve the objectives. For example, an objective may be to prevent wild fires from entering a particular zone.

b. A park is zoned for visitor use. This implies that the park management will allow access to different zones of the protected area based on set criteria. For example, a zone may feature a popular tourist attraction, and will be managed to accommodate large numbers of tourists. Alternatively, the park management may not want large numbers of tourists to enter a particular area thus conserving its "wilderness" or "wild" ambience. Access to such areas will therefore be limited to relatively few tourists.

The net result of the above approach is that two "zonation maps" are produced which overlay each other to define the various zones. These zones are then used to develop the management strategies of the park. The number of zones identified will depend on the complexities of the protected area. Ideally, a number of variables are used to determine the characteristics of the zone. These would include:

- Rating of the area as a tourist attraction
- Habitat sensitivity
- Dispersal capacity of the area
- Tourist behaviour
- Location of support staff
- Management capability of staff
- Financial status of management authority
- Visitor satisfaction

The present degree of management capability and data gathering sophistication that exists in the MET in the North East Parks does not warrant a complex zonation process. For this reason, only three "zonation" categories were identified under the Phase I planning process. These appear in the Okavango National Park Management Plan as:

- Special Protection Zone
- Natural Zone
- Development Zone

With time, and as the capacity of the North East Parks management increases, it will be possible to define additional management zones that meet the objectives of the protected areas.
For the purpose of this planning process, the zonation criteria will follow that adopted under Phase I. The description, restrictions, goals and objectives of the three categories are provided in the following table.
### Description of the three zonation categories used in the planning process

<table>
<thead>
<tr>
<th>ZONE</th>
<th>DESCRIPTION</th>
<th>RESTRICTIONS</th>
<th>GOALS AND OBJECTIVES</th>
</tr>
</thead>
</table>
| Special Protection Zone     | This zone comprises the unique, valuable and sensitive features that are either of high ecological sensitivity and/or high conservation value. Location is independent of distance from the park boundaries and permanent constructions. No infrastructural development may take place within these zones. Restrictions relating to these areas may be permanent, seasonal, intermittent or incidental. Access to this zone is severely restricted. | • The areas may only be accessed by MET staff for management purposes, for purposes of research and monitoring (registered projects only) and for educational purposes subject to the approval of the Regional Head.  
  • Outside research scientists may only access these areas if they are working on approved research and monitoring programmes.  
  • No vehicle access may take place. Access to riverine habitats by boat is permissible. Only essential management of these areas is envisaged and the priority for park staff would be the restriction of access and the collection of monitoring data.  
  • Management for the sake of tourism is not permissible and controlled tourism access may be permitted but should be minimal. | • Maintain essential ecological processes and life support systems, conserve biodiversity and genetic diversity;  
  • Maintain and preserve areas or features essential for ecological processes intrinsic to the functioning of the parks;  
  • Protect unique habitats, species, aquatic systems and ecological processes associated with the parks; and  
  • Provide opportunities for research and monitoring to further understand processes within the parks. |
### Description of the three zonation categories used in the planning process

<table>
<thead>
<tr>
<th>ZONE</th>
<th>DESCRIPTION</th>
<th>RESTRICTIONS</th>
<th>GOALS AND OBJECTIVES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural Zone</td>
<td>This zone is characterised by being essentially unmodified, except through natural processes. No infrastructure development will be allowed, except for limited management and tourism facilities and access roads. Any infrastructural developments in this area will be subject to the EA procedure (at an appropriate level) as laid out in the National Policy on Environmental Assessment.</td>
<td>• No camps/lodges permitted&lt;br&gt;• Off-road driving not permitted&lt;br&gt;• Walking not permitted unless accompanied by a registered guide</td>
<td>• Conserve a representative sample of the bioclimatic region in a state relatively unaltered by man and to use the area as a benchmark;&lt;br&gt;• Provide a tourism environment which is less restrictive and which allows for the broadest possible base of potential users; and&lt;br&gt;• Generate economic benefits and opportunities, while not compromising the conservation and ecological objectives of the North-East Parks.</td>
</tr>
</tbody>
</table>
### Description of the three zonation categories used in the planning process

<table>
<thead>
<tr>
<th>ZONE</th>
<th>DESCRIPTION</th>
<th>RESTRICTIONS</th>
<th>GOALS AND OBJECTIVES</th>
</tr>
</thead>
</table>
| Development Zone   | This zone comprises all areas of infrastructure development, roads, staff   | Permission required to live in this zone | • Generate economic benefits and opportunities, while not compromising the conservation and ecological objectives of the parks;  
• Provide an environment in which innovative tourism opportunities and tourism experiences can be optimised through a combination of activities;  
• Provide the infrastructural framework for research and monitoring to take place in an effective and efficient manner, such that processes within the park are better understood; and  
• Provide an enabling management infrastructure through which the park staff will be able to carry out their duties. |
|                    | accommodation, fire-breaks, entrance control facilities, airfields, tourism  |                                                       |                                                                                                                                                                                                                     |
|                    | facilities, private camps and management facilities (e.g. game-capture       |                                                       |                                                                                                                                                                                                                     |
|                    | holding pens). All future developments within this zone are required to be  |                                                       |                                                                                                                                                                                                                     |
|                    | approved by the Planning Committee after submission of a full motivation. An   |                                                       |                                                                                                                                                                                                                     |
|                    | EA (as laid out in the National policy on EA) may have to be done before such  |                                                       |                                                                                                                                                                                                                     |
|                    | a development takes place. Large areas cannot be classified as Development   |                                                       |                                                                                                                                                                                                                     |
|                    | Zones as this would compromise the primary conservation and ecological       |                                                       |                                                                                                                                                                                                                     |
|                    | objectives of the parks.                                                    |                                                       |                                                                                                                                                                                                                     |
APPENDIX IV

PROCEDURE GUIDELINES ON PERSONNEL ADMINISTRATION

MAMILI INTEGRATED DEVELOPMENT PLAN
Procedure Guidelines on Personnel Administration

All staff engaged by MET and stationed in a National Park are expected to maintain the highest standard of conduct, efficiency and personal behaviour. They are also expected to be courteous, helpful and attentive in their dealings with the general public.

The following guidelines are provided on personnel administration

a  **Conduct of staff members:**

No staff member shall perform or engage himself or herself to perform remunerative work at any time outside his or her employment with the government unless granted permission to do so by the permanent secretary.

b  **Dress code:**

It is the responsibility of supervisors to ensure that all staff members who are required to wear a uniform on duty do so, and that they comply with instructions issued in that respect.

c  **Acceptance of gifts or benefits:**

A staff member shall not accept any gift or benefit, pecuniary or otherwise, offered to him or her by any person by reason of him or her occupying a particular office or post in the MET.

d  **Use of government vehicles:**

No staff member shall drive a government vehicle unless he or she is in possession of a valid driver’s license, and has permission from a competent staff member to make the journey concerned. A staff member who has been granted permission to drive a government vehicle shall not:

- Deviate from the authorised route,
- Take the vehicle to his or her place of residence unless he or she has permission in writing from the appropriate authority to do so,
- While undertaking any journey with such vehicle;
  - allow any unauthorised person to travel; or
  - convey any unauthorised goods.
- Use such vehicle for any purpose other than official purposes,
- Drive such vehicle while under the influence of intoxicating liquor or stupefying drugs;
- Commence a journey until the appropriate entry has been made in the log book of such vehicle.

e  **Official hours of attendance:**

The Warden is responsible for the observance by staff members under his or her supervision of the official hours of attendance as established. A staff member shall at all
times during his or her official hours of attendance be present for duty at his or her place of
work and give his or her full attention to the duties entrusted to him or her.

A staff member shall not, without the consent of his or her supervisor, be absent from his
or her place of work during his or her official hours of attendance.

Duties of a supervisor:

It is the duty of every supervisor to supervise his or her subordinates and to take
appropriate action in every case of breach of any of the provisions of the Public Service
Act, 1995, the Regulations under the Public Service Act, 1995 and/or staff rules as adopted
by MET. A supervisor who fails to comply with this duty shall be deemed to have been
negligent in the performance of his or her duties.

Misconduct:

Any staff member shall be guilty of misconduct if he or she;

- Disobeys, disregards or makes wilful default in carrying out any lawful order given to
  him or her by any person authorised to do so, or by word or conduct shows
  insubordination,
- Is negligent or indolent in the performance of his or her duties,
- Operates or undertakes, without the approval of the Prime Minister, any private agency
  or private work in regard to any matter directly or indirectly related to the performance
  of his or her official functions or any matter directly or indirectly related to the field of
  operations of the office, ministry or agency in which he or she is employed or fails to
declare that any member of his or her household operates or undertakes any such
private agency or private work,
- Uses his or her position in the Public Service or utilises any property of the State to
  promote or prejudice the interests of any political party,
- Uses his or her position in the Public Service or utilises any property of the State to
  promote or prejudice the interests of any private business or private agency, except in
  the performance of his or her official duties,
- Conducts himself or herself in a disgraceful, improper or unbecoming manner causing
  embarrassment to the MET or to the Public Service or, while on duty, is grossly
discourteous to any person,
- Uses intoxicating liquor excessively or uses stupefying drugs without a prescription of
  a medical practitioner resulting in his or her incapacity to perform his or her duties
  efficiently,
- Uses or is under the influence of intoxicating liquor or stupefying drugs during the
  prescribed official hours of attendance without a prescription of a medical practitioner,
- Accepts or demands in respect of the performance of or the failure to perform his or her
duties any commission, fee or reward, pecuniary of otherwise, to which he or she is not
entitled by virtue of his or her office, or fails to report forthwith to the permanent
secretary the offer of any such commission, fee or reward,
- Misappropriates or improperly uses any property of the State,
- Absents himself or herself from his or her office or official duties without leave or
valid cause,
- With a view to obtain any privilege or advantage in relation to his or her official
position or his or her duties, or to cause prejudice or injury to the government or any
• office, ministry or agency or any member of the Public Service, makes a false or incorrect statement, knowing it to be false or incorrect,

• Contravenes or fails to comply with any provision relating to his or her employment or conditions of service, or contravenes of fails to comply with any provision of a prescribed code of conduct.
Procedure Guidelines on Law Enforcement

Parks staff will ensure the provisions of *Nature Conservation Ordinance 4 of 1975* and all subsequent amendments as well as all Ministry of Environment and Tourism rules and regulations are effectively applied. Toward this end:

a  **With regard to control of illegal activities by tourists:**

- Provide a list of all the most applicable (and contravened) park regulations to all visitors as they enter the park. Point these regulations out to visitors on handing them their park entry permit, guidebook and map and encourage them to report illegal incidents they observe.
- Maintain a reporting structure for incidents. Reports are to be filed, maintained and analysed by the Warden.

b  **With regard to contractual contravention’s by concessionaires:**

- Exclusions from any regulations and sections of the *Nature Conservation Ordinance 4 of 1975* and subsequent amendments must clearly and unambiguously be stated in any concessionary agreement or contract.
- Contravention of park rules and regulations will not be tolerated. Three written warnings (together with the appropriate fine) for minor contravention’s, such as driving off designated roads, are to be given before going to review of a concessionaire’s agreement. Major contravention’s, such as illegal hunting in a park, will result in immediate loss of concession.

c  **With regard to poaching and other illegal activities:**

- All park borders are to be patrolled at least once weekly on a random basis. Follow-up will be conducted on all evidence relating to unauthorised incursions of people and/or livestock into the park. Contravention’s of any and all park rules and regulations will be noted, enforced and reported. Reports of each incident will be filed with the Warden.
- All park roads will be patrolled at least twice weekly on a random basis. Contravention’s to park rules and regulations will be noted, enforced and reported. Reports of each incident will be filed with the Warden.
- Maintain rapid response capabilities and procedures for following up on reported incidents from other law enforcement officers, concessionaires and/or members of the general public.
- All incident reports will, at a minimum, contain information on the area(s) affected, animals or products involved, rules/regulations contravened, names and addresses of individuals involved (if known), arresting officer, recommendations for further actions, etc. The Warden will ensure a comprehensive file of this information is kept, analysed and utilised to assess priority areas for patrols, arrest performances of individual officers, trends in illegal activities, *etc.*

d  **With regard to cross-border contravention’s:**
• The Warden will maintain liaison with the Namibian Defence Force and the Namibian Police and utilise their capabilities to deal with cross-border violations and cooperative patrolling of the borders with Botswana and/or Angola.

• The Warden will maintain liaison with Botswana and/or Angola authorities in matters relating to the prosecution of cross-border violations.
PROCEDURE GUIDELINES FOR INFRASTRUCTURE DEVELOPMENT

Procedure guidelines on design, placement and construction of firebreaks:

Fire-breaks on park boundaries are to be at least eighteen metres in width (this is a double fire-break). Internal fire-breaks are to be at least nine metres in width. Internal fire-breaks should follow natural features or ecotones which may act as natural fire-breaks. Road locations should be considered in the context of roads also serving as fire breaks.

Fire-breaks should be cleared and/or burnt annually as early in the calendar year as possible but no later than July. For the maintenance and monitoring of fire-break condition see policies on roads, tracks, trails and paths.

Heavy machinery may be used to establish fire-breaks, but should not be used in fire-break maintenance.

A fire officer will be appointed from existing staff and a fire duty roster for co-ordinating operations maintained during the main fire season (April to October).

Park staff will initiate co-operative programmes and actions with other fire control authorities, adjacent communities and neighbouring landowners.

Conservation scientists will provide for the recording of fire history in the parks.

Procedure guidelines on buildings, temporary structures, power supplies and equipment:

All buildings will be designed and placed in line with the primary objectives of the park and the level of facility development shall be in accord with park plans.

All structures will be designed and placed as unobtrusively as possible so as to not detract from the natural landscape, scenic beauty or ecological integrity of the parks. Whenever possible, natural barriers will be used to screen facilities from general view.

All buildings will be assigned a registration number and a maintenance record kept by the Warden.

All buildings will be inspected annually by the Warden.

Annual maintenance priorities will be assigned, motivated and budgeted. Buildings will be prioritised as follows:

- Staff housing and accommodation
- Administrative buildings and stores
- Plant buildings and structures (e.g. pump house)
- Workshop and maintenance areas

Where appropriate the Warden will consider annual service contracts to the private sector for building (and other capital items) maintenance. This will be done on the basis of an analysis of the most cost-effective options for maintenance.
Power supply infrastructure and development will be designed to cause minimal ecological, visual and/or aesthetic impact. Underground lines are to be utilised in preference to overhead lines where feasible.

Domestic power supplies will be separately metered and the costs borne by occupants.

The Warden will ensure that temporary structures are removed on completion of the task for which they were constructed. Additionally, he or she will ensure that the site is fully rehabilitated and cleaned after completion of assigned tasks.

The Warden will designate sites within the park (consistent with the park zonation scheme) to specific tasks which are repeated regularly (e.g. game capture). These sites, activities, or structures will not conflict with park goals and objectives.

Equipment will be issued to individuals who will be held responsible for the items and their maintenance and servicing.

Training in the use of sophisticated equipment is compulsory for all users.

**Procedure guidelines on potable water for parks staff:**

No toilets, ablution facilities or water-based service facilities are to be positioned within 100m of a borehole or other primary water source.

Game capture pens and bomas must not be placed within 100 m of a borehole or other primary water source.

Water quality testing is done by NamWater, Private Bag 13389, Windhoek. A one litre sample of the water to be tested must be delivered in a closed glass container.

**Procedure guidelines on water supply management:**

The Warden will ensure that all water abstraction infrastructure is unobtrusive and blends in with the surroundings as best possible. Every effort should be made to suppress exhaust noise at installations using diesel or petrol engines. Solar installations should be used where possible.

No water abstraction for non-park purposes is permitted.

The provision of artificial water points for wildlife within the parks must be preceded by an Environmental Assessment in which the ecological framework for that supply must be given the fullest consideration.

Artificial water points for wildlife must not be constructed near (<2 km) park boundaries where there is a potential for conflict with surrounding communities or land-uses.

No barriers or obstructions of any type may be built on drainage's.

A monitoring programme must be developed at each artificial water point for wildlife. Wildlife species and numbers, seasonality of use and the effects on vegetation (at varying
radii around the water point) are to be assessed in terms of whether the water point is achieving a stated management objective.

Adequate protection measures against damage and theft must be developed for installations.

Development of water sources for wildlife carries with it the responsibility to ensure that these sources do not fail the wildlife which becomes dependent upon them. All sources of water for wildlife will be inspected, and maintenance performed if necessary, at least weekly throughout the dry season (or year round during droughts).

**Procedure guidelines on sewage disposal facilities:**

Soak pits for waterborne sewerage should not be built within 100 m of a borehole or water source to avoid contamination. Developments on the river margin must ensure that pits do not cut through the permanent water table.

No chemical toilets will be allowed within the park. Concessionaires should be made aware of this restriction.

No direct discharge of human wastes into any of the parks’ perennial or seasonal rivers are allowed under any circumstances.

No open water, evaporation pan sewerage treatment systems are allowed within the parks.
APPENDIX V

NORTH-EAST PARKS PROJECT

PROCEDURE GUIDELINES ON NEIGHBOURING COMMUNITY RELATIONS
PROCEDURE GUIDELINES ON NEIGHBOURING COMMUNITY RELATIONS

*The Warden* in conjunction with the Support Zone Co-ordinator and other park staff will promote the establishment and development of conservancies by providing assistance to communities within Support Zones by:

- Providing information to emerging Conservancy Committees with regard to the process and procedure for formation
- Forwarding applications through the appropriate channels
- Providing information to Conservancy Committees with regard to economic opportunities related to wildlife and the conservation of the park.
- Providing technical support to Conservancy Committees to assist in management issues such as problem animal control, identifying potential lodge sites, etc.
- Providing technical support for the development of long term management plans for Conservancies including land use plans.
- Supporting non-governmental organisations in assisting communities with the establishment and development of Conservancies.
- Training Conservancy members in modern techniques for natural resource management.

*The Support Zone Co-ordinator* will develop a comprehensive understanding of the conditions within the Support Zones and the environments in which they exist by:

- Documenting available socio-economic information particularly with regard to local livelihood strategies and traditional social structures.
- Documenting existence of non-governmental organisations (if any) and other conservation and development organisations operating within Support Zones to the parks.
- Documenting historical claims to the land on which parks are located.
- In conjunction with the Conservation Scientist, conducting joint research and establishing an information sharing system which combines indigenous knowledge and modern science in order to establish sustainable levels of resource use and harvest within Support Zones.
- Identifying and documenting the different natural resource user groups operating within the conservation area.
- Identifying how other government departments can assist communities with the development of Conservancies and conservation activities.
- Identifying and documenting current and probable conflict points between the management of the parks and neighbours.

*The Support Zone Co-ordinator* will, in conjunction with appropriate park staff, private interests and non-governmental organisations, identify and promote a range of economic opportunities that can be associated with the parks. This will include:

- Providing technical support to link tourist development between the park and Conservancies to diversify the tourist products available to local communities.
• Identifying sites to establish community operated craft and curio shops at park entrance gates and/or visitor centres.

• Exploring opportunities for Community Game Guard walking safaris within the parks.

The Support Zone Co-ordinator will, in conjunction with the appropriate park staff will develop mechanisms to improve and formalise communications between parks and stakeholders regarding policies, objectives and processes. This will be accomplished by:

• Maintaining close liaison with Support Zones and Conservancies.

• Developing guidelines and procedures to enable Support Zone residents to use selected natural resources, where sustainable use levels have been determined by the Conservation Scientist and the park and neighbouring Conservancy Committees have established and agreed a set of rules governing the use of these resources. These rules will establish:
  • Who can harvest,
  • How much material can be harvested by each person,
  • When it can be harvested,
  • Where it can be harvested,
  • What techniques and instruments can be used,
  • Who will be responsible for checking on use,
  • What will be the procedures for dealing with those who abuse this privilege.

• Promoting labour intensive maintenance programmes (roads, construction, etc.) so as to maximise local employment opportunities.

• Presenting changes in park plans, policies or management strategies for comment and contributions from Conservancy Committees.

• Establish a protocol for problem animal control in Support Zones by:
  • Providing support to Community Game Guard programmes operating within Support Zones.
  • Supporting Conservancies and Support Zones in establishing, where necessary, electrified fencing around vulnerable fields.
  • Investigating cattle keeping practices and providing support for improved techniques for kraal building.
  • Developing a rapid response procedure for dealing with problem animal complaints.
APPENDIX VII

NORTH-EAST PARKS PROJECT

PROCEDURE GUIDELINES ON TOURISM, VISITOR AND CONCESSIONAIRES
PROCEDURE GUIDELINES FOR TOURISM, VISITORS AND CONCESSIONAIRES

Tourism will be encouraged in the parks where it is not in conflict with the purposes for which the parks were established and the goals and objectives thereof. Emphasis will be placed on low density and high quality tourism.

Visitor access will be controlled, or if necessary restricted, by Special Protection Zone designation of any areas where there are unique, valuable and sensitive features that are either of high ecological sensitivity and/or high conservation value and may be impacted by visitor use.

Visitor activities and numbers will be monitored in the parks and carrying capacities assessed. If deemed necessary, the numbers of individuals and/or vehicles will be regulated. At such time as this becomes necessary, it is essential that a centralised booking system be established for all North-East Parks.

Commercial, promotional or documentary filming will be allowed in the parks subject to proper permitting and the approval of the Warden.

The use of private boats will be monitored and controls introduced where it is established that such use is resulting in accelerated bank erosion, pollution and/or significant conflict with wildlife or other park user groups. A maximum speed of 10 km per hour will apply to all private watercraft used within the parks.

Any commercial operation utilising the parks is subject to the provisions of the Nature Conservation Ordinance and its regulations. A limited number of commercial operators that can offer high quality services consistent with the mission, goals and objectives of the parks will be permitted to operate therein. Such operations will be conducted within terms and conditions defined by the Warden.

Once granted, the terms and conditions applicable to the concessionaire will be made available to all staff members within the park as well as affected Conservancies, such that the management of the concession agreement can be carried out with the minimum conflict between parties.

Ministry of Environment and Tourism personnel will consult with outside tourism interests in the areas involved to ensure development of tourism which is appropriate to and in harmony with park goals and objectives.

Commercial operations within the parks will be monitored to ensure that permit conditions are be adhered to and to assess the relevance and quality of the services provided. The information collected will be used to evaluate any application for lease and/or permit renewal.

Commercial operators utilising the parks must ensure their customers are aware of possible dangers and the rules of proper behaviour.

Firewood for use within any campground or picnic site must be from sources outside the parks.
**Park Entrance.** The Warden will ensure those officials at all park entrance and registration facilities are aware of and charge current park tariff structures and that the current tariff structures are clearly displayed at entrance gates and reception facilities.

The Warden will ensure that all visitors to the park are provided with a list of park regulations as well as pertinent information about the park and its natural resources.

The Warden will ensure that rules and regulations are posted in prominent places at visitor reception facilities. **Walking safaris** will be encouraged in the North-East Parks if visitors are accompanied by a qualified guide.

Guides undertaking walking safaris in the North-East Parks need to be holders of a “Big Game” Professional Hunters Licence as stipulated in the Nature Conservation Ordinance.

**Visitor densities** will be regulated by the approved management plan for each protected area.
NAMIBIA
Ministry of Environment and Tourism

NORTH-EAST PARKS PROJECT
VOLUME 3
MAMILI NATIONAL PARK
INTEGRATED DEVELOPMENT PLAN

Dated: 15th January, 1999
### POTENTIAL INCOME OF MANGETTI GAME CAMP

#### Area
- **480**

<table>
<thead>
<tr>
<th>Park Activity</th>
<th>Fee Schedule (N$)</th>
<th>Best Case Scenario</th>
<th>Worst Case Scenario</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>45%</td>
<td>25%</td>
<td>10%</td>
</tr>
<tr>
<td><strong>Entry fee in addition to camping fees</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No visitors</td>
<td>493</td>
<td>274</td>
<td>110</td>
</tr>
<tr>
<td><strong>Overnight camping (for overland parties)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 days x 73</td>
<td>73</td>
<td>55</td>
<td>37</td>
</tr>
<tr>
<td>15 people</td>
<td>65,700</td>
<td>49,275</td>
<td>32,850</td>
</tr>
<tr>
<td><strong>Mobile Tour Operators</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 per year</td>
<td>5,000</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Hunting Concession</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 per year</td>
<td>95,000</td>
<td>76,000</td>
<td>61,750</td>
</tr>
<tr>
<td><strong>Potential Income (N$)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>180,483</td>
<td>133,488</td>
<td>97,885</td>
</tr>
</tbody>
</table>

#### Maximum Assumptions:
- Visitors: 1,095
- Max Occupancy: Assumes area used by Overland parties
- Vehicles: 73
- One vehicle every 5 days
- People/vehicle: 15
- Average number of people/vehicle
- Days: 365
- Operational all year

2. **Overnight camping:**
- Flat rate/overland vehicle/night
  - No days: 2
  - Party stays minimum of one night
  - No people: 15
  - Average number of people/vehicle
  - Cost/person: 30
  - Equivalent to US$5/day/person
  - No days: 365
  - Open all year
  - No camps: 1
  - Max No camping days: 365
  - Max No parties: 365

<table>
<thead>
<tr>
<th>%</th>
<th>Max No parties</th>
</tr>
</thead>
<tbody>
<tr>
<td>5%</td>
<td>18</td>
</tr>
<tr>
<td>10%</td>
<td>37</td>
</tr>
<tr>
<td>15%</td>
<td>55</td>
</tr>
<tr>
<td>20%</td>
<td>73</td>
</tr>
</tbody>
</table>

#### Potential Income (US$)
- 30,080
- 22,248
- 16,314
- 4,174

#### Income/km² (N$)
- 376
- 278
- 204
- 52

#### Income/km² (US$)
- 63
- 46
- 34
- 9
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1 INTRODUCTION

Development of the North-East Parks is a priority of the Ministry of Environment and Tourism. They are important for a number of reasons, including biological diversity protection, maintenance of ecological systems, income generation and rural development. The north-east region is currently underdeveloped, with limited agricultural potential and virtually no mineral or industrial potential, yet strategically located in terms of tourism. Development of these parks is therefore one of the few options for economic expansion.

Under Phase II of the Planning Phase: North-East Parks Programme, management plans have be prepared for Mamili National Park, Mudumu National Park, Kwando National Park, Khaudum Game Reserve and Mangetti Game Camp.

The background information regarding the biophysical, ecological, legal, socio-economic and infrastructure characteristics of these North-East Parks is provide in Volume 1. The Management Plans detailing the management of the specific parks is given in Volume 2. This document, Volume 3: Mamili National Park Integrated Development Plan, uses Volume 1 and Volume 2 to develop the investment programme for Mamili National Park, and assess its potential income from tourism.

A Master Integrated Development Plan summarises all the IDPs for the individual parks to indicate the elements required for the planning of a larger scale management and development programme for the North-East Parks.

1.1 Structure of this document

The objective of the Integrated Development Plan is to elaborate on:

1 An investment programme for actions that are required to develop the parks' potential in an economically viable and sustainable way.

2 Summarise the capital budgets, including revenue potentials.

3 Present a chronogramme (or schedule) for implementing the development programme.

The development programme itself is summarised in a planning matrix that adopts a log frame format. The capital budgets are presented using a spreadsheet format, and consider the costs for infrastructure development over a 5-year period. These are presented in the Appendices together with a summary of capital and recurrent costs, and a schedule of implementation.
2 BUDGET REQUIREMENTS FOR MAMILI NATIONAL PARK

In terms of the management plan, a Warden is to be appointed for the Kwando-Linyanti Conservation Area who will be responsible for the administration and management of the Mamili, Mudumu and Kwando National Parks. However, all field staff responsible for Mamili National Park will reside in the park and be based at Shisinze Camp, and be answerable to the Warden. At present, the staff compliment consists of a Principle Ranger, Senior Ranger and five labourers/workhands. The Warden post is shared with Mudumu National Park, but this officer resides in Katima Mulimo. Furthermore, infrastructure development is poor and the staff does not have the necessary equipment to carry out their mandate.

The operational budgets needed in protected areas in southern Africa are determined by the number of men required for effective patrolling\(^1\) to deter illegal activities, and undertake routine management. Despite the establishment of effective community wildlife programmes in areas adjacent to national parks, there is still the ever-present threat from illegal hunters who may come from further afield in search of meat and other natural resource products. As a general rule the number of men required is related to the size of the park as follows (after Martin, 1997):

\[
N_S = \sqrt{A}
\]

- where \(A\) is expressed in square kilometres.

The number of men also determines the annual running costs (made up of salaries, field allowances, equipment, transport, maintenance costs \textit{etc.}). Allowing for variations in salaries and other costs from country to country in the region, the operational costs are approximately given by the formula:

\[
C_R = \text{US$}50 \left(1 + \frac{2}{A} + \frac{3}{\sqrt{A}}\right)
\]

Similarly, capital requirements are also dependent on the total staff complement in the park but vary depending on building costs across the region. The required capital per unit area is approximately given by the formula:

\[
C_C = \text{US$}500 \left(1 + \frac{1}{A} + \frac{1}{\sqrt{A}}\right)
\]

Where \(A\) = thousands of square kilometres (\textit{i.e.} \(A = 1 = 1000\text{km}^2\)).

These formula suggest the recurrent and capital expenditure required to manage and develop a park of \(1\ 000\text{km}^2\) will require \text{US$300/km}^2\) and \text{US$1 500/km}^2\) respectively.

The table below illustrates these relationships.

<table>
<thead>
<tr>
<th>Park size (km(^2))</th>
<th>50</th>
<th>150</th>
<th>500</th>
<th>1000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of men</td>
<td>7</td>
<td>12</td>
<td>22</td>
<td>32</td>
</tr>
<tr>
<td>Total Recurrent Cost (US$)</td>
<td>136 041</td>
<td>165 595</td>
<td>231 066</td>
<td>300 000</td>
</tr>
</tbody>
</table>

\(^1\) "Effective" patrolling is defined by the requirement that illegal activities are detected in less than two days.
Total Capital Cost (US$) | 636 803 | 768 649 | 1 103 553 | 1 500 000

These budgets represent a threshold: where the state provides annual operating budgets equal to or greater than the amounts given in the table, there can be some certainty that the protected area will be adequately managed and conserved. Where budgets are lower than the amounts given, it is almost certain that the park management authority will not be able to protect the resources of the park.

Furthermore, these data illustrate the very high cost of developing and managing relatively small-protected areas. The cost of equipping and manning small protected areas cannot escape from the economies of scale associated with large protected areas. The general rule of thumb is that recurrent and capital costs should be in the order of magnitude of US$300/km² and US$1 500/km² respectively.

However, in reality, protected agencies are very rarely provided with “optimal” budgets, and very often have to compromise. The approach adopted here is to present the “optimal” budgets required to develop and manage Mamili National Park. The budgets thus derived will therefore serve as an indication to government (and donors) of the level of funding required to management Mamili National Park so as to achieve its objectives.
3 INTEGRATED DEVELOPMENT PLAN FOR MAMILI NATIONAL PARK

The Integrated Development Plan for Mamili National Park is to be implemented over a five-year period. The estimated capital costs take into consideration expenditures such as:

- Staff housing
- Other buildings (workshop, entrance gates etc)
- Expansion of tourist facilities
- Road construction
- Vehicles
- Firearms
- Workshop/office equipment
- Water supplies
- Power/fuel supplies
- Wildlife introductions (or removals)

3.1 Capital Costs for the Development of Mamili National Park

The following assumptions are used to derive the capital costs for the infrastructure development programme.

- Two Scouts will share a house with two bedrooms, central mess area and an external kitchen.
- Four labourers will be housed in one "barrack" unit.
- Principle Rangers have a two-bedroomed house with sitting room/dining room, shower and toilet.
- Gate Guards have the same style of house as Senior Rangers.
- Ablution blocks consist of three showers and three toilets and are intended to be shared by up to 25 people.
- The office space provides space for the Warden, Ecologist, Support Zone Co-ordinator and Principle Ranger. Senior Rangers would not necessarily enjoy a room to themselves. Clerks and Typists to have separate offices.
- The basic design of the entrance gate will include a lockable office, reception area and toilet facilities. Solar power will be optional.
- Provision is made for nominal office furnishing for each office.
- The number of 4 x 4 vehicles is calculated in the basis of 1 vehicle per 5 scouts. All vehicles will be diesel powered.
- Each park and will be allocated at least one 5-tonne lorry. Parks greater than 500km² will be provided with an additional vehicle for every 500km² (i.e. a 1000km² park will be allocated two lorries).
- Each park will be allocated one tractor, trailer and tow grader. Mowers and disc ploughs are optional. Parks greater than 500km² will be provided with an additional tractor/trailer combination for every 500km² or part thereof (i.e. a 1000km² park will be allocated two tractor/trailers).
- The size of the workshop/storeroom complex has been made proportional to number of field staff scouts on station.
- A flat allowance is made to kit the workshop out with tools.

2 Recurrent and operational costs for the Management Programmes are provided in Volume 2, and summarised in Appendix II
• Provision is made for game water supplies for a number of boreholes plus pumps calculated on the basis of one unit to 500km² (this implies a radius of approximately 10km for each water point)
• Provision is made for one 50kva generator per station.
• A lump sum is provided to translocate wild animals to or from the park.

The capital costs are provided in Appendix I, and summarised together with the Recurrent and Operational Costs in Appendix II. Assuming that the entire programme is implemented, it is estimated that approximately N$2.6 million will have to be invested in the park over the 5-year period. Most of these investments will occur in the first three years (85%). Construction of staff housing and associated infrastructure will form the bulk of this investment. The overall cost/km² varies from N$200 to N$4350/km² (or US$30 – US$725¹).

When these costs are combined with the estimated recurrent and operational costs (Appendix II), it is estimated that N$7.7 million will be required to develop and manage Mamili National Park over the 5-year period. The bulk of the expenditure (approximately N$5.4 million) required in the first three years of this plan.

¹ Assumes an exchange rate of US$1 : N$6.00
3.1.1 Infrastructure Development Programme

Introduction

All infrastructure development in Mamili National Park will be co-ordinated under this management programme. This includes construction of any buildings, staff accommodation, entry gates, signs, water (both domestic and game water supplies), power (including fuel supply), sewerage, fire breaks etc. Procedure guidelines on design, placement and construction of infrastructure developments are provided in Appendix VI. Where possible, the implementation of any major construction programmes will be out-sourced following an analysis of the most cost-effective options.

An Environmental Impact Assessment will be done prior to any infrastructure development.

Infrastructure development in Mamili National Park is poor. Staff accommodation is inadequate and facilities to deal with tourists are non-existent. The fact that few facilities exist in the park affects all other management programmes, particularly the protection programme. The objective of the Infrastructure and Development Programme is therefore to address this problem.

Activity 1: Upgrade Shisinze base camp and provide the necessary equipment (vehicles, radios, firearms, uniforms etc.)

Current problem and issues

The accommodation facilities at Shisinze camp are inadequate. The camp relied on deliveries of potable water by bowser from Mudumu National Park as the borehole is not functioning (although the water reticulation system was being repaired in 1998). The "Bavaria" huts used for staff housing are unsuitable for the climate and not conducive to an efficient work force. No electrical power is available for the HF radio system (or any other equipment), and there is no basic workshop facilities capable of undertaking even the most rudimentary maintenance or repairs. Furthermore, the staff do not have the necessary equipment to carry out their mandate to protect and manage the park.

Proposed solution

Shisinze Camp is to be rehabilitated, including the removal of all unnecessary structures.

Construction of staff housing is to be commissioned taking the following points into consideration:

- The area’s main climatic characteristics are heat and dryness. The area has a high intensity of direct solar radiation plus an added factor of high levels of reflected radiation from the ground. High diurnal and annual temperature ranges are prevalent.
- Low humidity levels and generally low precipitation are features of the local climate. The area has low average wind speeds contrasting with occasional violent windstorms. A large portion of the area has a sandy environment.
• Uncomfortable living and working conditions is created by the extreme heat and dryness. Flies, sand and dust storms need to be counteracted. All building must therefore be adapted to summer conditions i.e. protected from intense radiation from the sun, ground and surrounding buildings.
• Buildings are to be designed where reduction of heat takes precedence over air circulation during the daytime. Measures are to be taken to reduce glare and to prevent dust and insect penetration.
• Buildings are to be designed to take advantage of the prevailing weather conditions (i.e. have courtyards, wide patios and large roof overhangs. No mechanical ventilation systems will be required.
• The largest dimensions and windows should face south. West faces of buildings should have no openings or windows. Eastern faces may have openings, but must be kept to a minimum. Non-inhabitable rooms (e.g. storerooms) should be located on the western side of the buildings to form a thermal barrier.
• Rooms are to be rectangular, with the narrow width as the external wall. They are to have high ceilings and ideally open on to a patio of indoor courtyard. Heat producing areas, such as kitchens, should be isolated and separately ventilated.
• Outdoor areas should contain plants and be shaded most of the day. Paved surfaces should be avoided wherever possible. Provision is to be made for outdoor sleeping (a patio screened with gauze is ideal).
• Windows are to be relatively small, particularly on outside walls and must be shielded from direct radiation and glare. Ventilation during daytime must be kept to a minimum, but designed for good ventilation at night.
• Direct sunlight on workspaces is to be avoided.
• Walls facing north and west (i.e. exposed to direct sunlight) must be thick and solid. They are to be shielded by large eaves and by vegetation. Generally walls of 600mm thickness is sufficient to provide heat sink capabilities.
• The exterior is to be painted white to make them as reflective as possible
• Roof should be thatched where possible. The ceiling space is to be open to allow for maximum ventilation.

**Housing Specifications**

The following specifications are provided as a guide for the construction of a purpose build 1-bedroom or 2-bedroom house.

**a Construction**

- Bricks or blockwork walls
- Floors – Cement screed
- Walls – Woodfloat cement plaster
- Steel frame windows and doors, and plasterboard ceiling.
- Limited electrical installation is to be installed to facilitate solar powered lighting.
- Kitchen installation to include a stainless steel sink, wooden shelving, one steel cabinet unit.

**b Room sizes**

- One-bedroom (with built in cupboard)  16m²
- Two-bedroom (with built in cupboard)  13m²
- Bathroom (possibly with shower only)  5m$^2$
- Toilet (with washbasin)  2m$^2$
- Living room (lounge/dining)  30m$^2$
- Kitchen (including pantry/storeroom)  12m$^2$
- Circulation/cupboards  6m$^2$
- **Total**  **84m$^2$**

Verandah (optional)  18m$^2$

c  **Sewerage and water reticulation**

- Sewerage disposal is to consist of septic tanks. A reliable water reticulation system is to be installed.

The complex is to be provided with a power generator (staff housing is to be equipped with solar power), and basic workshop facilities incorporating a storeroom and overhead fuel tanks are to be constructed.

**Implementation**

The rehabilitation of Shisinze Camp is to be co-ordinated by the Regional Warden in conjunction with the Warden and officials from the Ministry of Works. Siting of the various facilities will be the responsibility of the Warden, using the guidelines provided in Appendix V. Construction will be out-sourced wherever possible.

**Resources required**

Building materials
Funding to engage contractors
Solar powers and associated equipment
Borehole pump and motor
Electric generator
Basic workshop tools
Radio communication system

**Activity 2:**  **Construct entry gate for Mamili National Park**

**Current problem and issues**

The boundary of Mamili National Park is marked by a defaced signboard and facilities to deal with tourist arrivals and departures are rudimentary. Shisinze Camp is also located several hundred metres from the main road. The road will therefore have to be re-aligned so that the entry is at Shisinze. In addition, there are no facilities that enables staff to collect entry fees or distribute promotional information.

**Proposed solution**

An entrance gate is to be constructed at the entrance to the park. The gate is to conform to a standard design applicable for all North East Parks that consists of a reception area and lockable weatherproof office. The office will be equipped with a radio to communicate
with other stations in the Kwando-Linyanti Conservation Area. Logbooks, tourist receipts and tourist information is to be available at all times.

**Implementation**

This activity will be co-ordinated by the Regional Warden in conjunction with the Warden. Construction of the entrance gate will be out-sourced.

**Resources required**

Building materials
Funding to engage building contractor
Radio equipment, including solar power system
Safe

**Activity 3: Manufacture and erect appropriate signs in the park**

**Current problem and issues**

Mamili National Park is extremely flat and almost treeless. The road network is fairly extensive, consisting of several inter-linked loop roads (see Figure 1). However, signs directing tourism traffic consist of inappropriate concrete tablets, and it is easy for visitors to get lost.

**Proposed solution**

The design and construction of signs for Mamili National Park will conform to the standards agreed to at the regional level. The design of the signs is to be sufficiently robust to withstand elephant damage, yet not obtrusive. These are to be erected at the intersection of all roads, indicating destination, distances, directional arrows, right of access as appropriate. Information notice boards are to be provided at the entrance gates and visitor reception areas.

**Figure 1: The inter-linked game viewing road network in Mamili National Park**

![Figure 1: The inter-linked game viewing road network in Mamili National Park](image)
**Implementation**

The Warden will be responsible for co-ordinating the implementation of this activity, including the installation of the signs.

**Resources required**

Materials to fabricate signs (Sheet metal, paint, iron bars, concrete)

**Activity 4: Upgrade of tourism facilities (campsites, game viewing hides etc.)**

**Current problem and issues**

There are only a limited number of sites where tourists are able to camp. These are at Liadura, Mparamure and Shivumu Pool (although this pool dried up for the first time in living memory in 1998). Facilities do not exist at these sites to deal with refuge, nor are there any ablution facilities to cater for overnight camping. This latter problem is compounded by the fact that most of the area surrounding these sites may be inundated annually, which makes water borne sewage disposal impractical.

**Proposed solution**

In keeping with the management framework no permanent structures are to be erected at any of these sites. To cater for short duration self contained camping (up to three days), long-drop toilet facilities are to be constructed to an approved design. No water reticulation system is to be installed (tourists will be expected to carry their own water). Animal proof bins are to be provided for litter and these must be emptied at regular intervals. Firewood is to be brought in from outside the park - firewood collection within the park is prohibited.

**Implementation**

This activity is to be implemented by the Warden who will inspect the sites on a regular basis. A labour crew will be used to ensure that the sites are kept clean and tidy. Toilet facilities will be inspected regularly to ensure that these do not become a health hazard. A schedule will be installed to clear litter bins on a weekly basis (and more frequently during peak usage times).

**Resources required**

Construction of toilet facilities
Animal proof refuse bins
Logistic support (waste collection, inspection)
4  PLANNING MATRIX FOR MAMILI NATIONAL PARK

<table>
<thead>
<tr>
<th>OVERALL GOAL</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Improved conservation status, biodiversity and sustainable economic development of Mamili National Park and adjacent Conservation Areas.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>OVERALL OBJECTIVE</th>
<th>INDICATOR</th>
<th>MEANS OF VERIFICATION</th>
<th>ASSUMPTIONS</th>
</tr>
</thead>
</table>
| Secure the integrity of the park in order to protect the unique biodiversity of the Kwando-Linyanti wetland system. | • National Park gazetted  
• No illegal resettlement  
• Boundary of park respected  
• Wildlife numbers increase  
• Benefits to Wuparo Conservancy | • Statutory instrument  
• Villages resettled  
• Record of incursions from patrol reports  
• Ground and aerial survey reports  
• Support Zone annual reports | • Park accepted politically  
• Wuparo Conservancy established  
• No natural catastrophes (droughts, fires). |

<table>
<thead>
<tr>
<th>RESULTS</th>
<th>INDICATORS</th>
<th>MEANS OF VERIFICATION</th>
<th>ASSUMPTIONS</th>
</tr>
</thead>
</table>
| 1.      | Legal integrity of Mamili National Park established                       | • Public notification of proclamation                                                   | • Legal instruments  
• Political support for park at local level |                                                                 |                                                                 |
| 2.      | Staff permanently based in the Park with the necessary infrastructure, equipment and budgets to carry out their mandate | • Staff permanently resident in the park  
• Annual budgets  
• Staff housing in place  
• Support infrastructure in place | • Competent staff in place  
• Annual reports  
• Physical inspection of infrastructure  
• Vehicles maintained, equipment functional | • MET able to recruit staff  
• Adequate recurrent budgets provided |                                                                 |
| 3.      | Level of illegal activity reduced.                                        | • Patrol reports indicate 80% reduction in poaching in Year 3 compared with Year 1      | • Annual reports | • Park boundary gazetted  
• Appropriate records kept by Warden |                                                                 |
| 4.      | Co-operation with Wuparo Support Group improved.                          | • Disposal of funds to Wuparo Conservancy  
• Responding to PAC                                                                   | • Annual reports  
• Record of PAC reports | • Conservancy proclaimed |                                                                 |
| 5.      | Incidence of wild fires reduced.                                          | • Firebreaks in place                                                                    | • Annual reports indicating extent of area burnt each year | • Staff adequately equipped and trained to deal with wild fires |                                                                 |

2. INFRASTRUCTURE DEVELOPMENT PROGRAMME ACTIVITIES

<table>
<thead>
<tr>
<th>ACTIVITIES</th>
<th>MEANS</th>
<th>RESOURCES</th>
<th>ASSUMPTIONS</th>
</tr>
</thead>
</table>
| 2.1 Upgrade Shisinze base camp                                          | • Construction of staff housing  
• Installation of water reticulation system  
• Construction of sewerage system  
• Construction of workshop/storeroom  
• Installation of power generator  
• Installation of solar system  
• Installation of fuel storage | • Design of buildings  
• Building contractor  
• Borehole/pump  
• Electrical equipment (generator, solar)  
• Fuel storage tanks | • Mamili awarded National Park status  
• Shisinze camp is staffed to “Warden level” |                                                                 |                                                                 |
| 2.2 Construct entry gate for Mamili National Park                        | • Construction of entrance gate to approved design  
• Install radio equipment                                                                 | • Design of building  
• Building contractor  
• Radio and solar power equipment | • Relocation of road is approved |                                                                 |                                                                 |
| 2.3 Construction and maintenance of game viewing roads                   | • Hire of heavy machinery  
• Hire of contract labour  
• Tools  
• Transport for road construction material | • Tractor/trailer  
• Contract labour  
• Field equipment (tents etc)  
• Ration allowances  
• Implements (shovels, picks) | • Heavy machinery available locally |                                                                 |                                                                 |
| 2.4 Manufacture and erect appropriate signs in the park                  | • Design and construct robust signs  
• Erect signs at key road junctions  
• Erect information board at entrance | • Materials to fabricate signs                                                                 |                                                                 |                                                                 |                                                                 |
| 2.5 Upgrade of tourism facilities (camp sites, game viewing hides etc)   | • Identify campsites  
• Provide animal proof refuse bins  
• Construct toilet facilities  
• Transport for refuse collection | • Animal proof bins  
• Contract labour  
• Logistic support | • Selected sites not flooded |                                                                 |                                                                 |
<table>
<thead>
<tr>
<th></th>
<th>ADMINISTRATION PROGRAMME ACTIVITIES</th>
<th>See Volume 2: Mamili National Park Management Plan for details</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>PROTECTION PROGRAMME ACTIVITIES</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>MAINTENANCE PROGRAMME ACTIVITIES</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>SUPPORT ZONE PROGRAMME ACTIVITIES</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>EDUCATION, COMMUNICATION AND PUBLIC RELATIONS PROGRAMME ACTIVITIES</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>TOURISM AND VISITOR PROGRAMME ACTIVITIES</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>RESEARCH AND MONITORING PROGRAMME ACTIVITIES</td>
<td></td>
</tr>
</tbody>
</table>
5 ESTIMATE OF POTENTIAL REVENUE

Total gross expenditure on tourism generated in the North-East Region is estimated at approximately N$ 25 million (N$1996). This represents the total value of tourism in the region to the country as a whole (see: *Tourism Development Planning Framework for the Caprivi Region, 1996*). Only a portion of this money stays in the region with the bulk, estimated at about 80%, moving out of the region as a result of "leakage's" into other areas of the country.

Expenditures remaining within the region can be viewed at two different levels (see: *The Value of Non-Agricultural Land Use in Some Namibian Communal Areas: A Data Base for Planning, 1995*). One is the net contribution of resource use activities to the regional economy (resulting in additional economic benefit and induced employment through the multiplier effect) and the second is the contribution of these activities to local community income.

Table 1 shows the estimated current and potential aggregate net economic contribution to the regional for the Caprivi and Northern Kalahari Regions.

Table 1: Comparison of estimates of the current and potential contributions of non-agricultural land use to regional income in the Caprivi and Northern Kalahari Regions  
(N$ 1994)

<table>
<thead>
<tr>
<th>Item</th>
<th>Caprivi Region 1</th>
<th>Northern Kalahari Region 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extent (sq. km.)</td>
<td>18,800</td>
<td>21,718</td>
</tr>
<tr>
<td>Estimated current contribution</td>
<td>4,886,466</td>
<td>260,616</td>
</tr>
<tr>
<td>Estimated potential contribution</td>
<td>8,274,234</td>
<td>1,541,978</td>
</tr>
<tr>
<td>Potential magnitude of increase</td>
<td>1.7</td>
<td>5.9</td>
</tr>
</tbody>
</table>

1entire Caprivi District; 2former Bushmanland plus Khaudum N.P.; 3extrapolation based upon N$12 per km² for Bushmanland alone (Barnes, 1995); 4extrapolation based upon N$ 71 per km² for Bushmanland alone (Barnes, 1995).

Assuming that in future the economic potential of the Caprivi and Northern Kalahari regions is realised it would total approximately N$ 10 million. Applying the 80% "leakage" figure discussed above to this amount suggests that the overall potential to the national economy is approximately N$ 50 million (N$1996).

The economic values discussed above are measures of the value of tourism to the region and the nation. These are impressive amounts of obvious importance to national and regional economies. They do not, however, reflect direct benefits to neighbouring communities. This is best measured by the contribution of these activities to local community income. Table 2 shows estimated current and potential income to communities (conservancies) from non-agricultural, natural resource land use inside and outside protected areas within the Kwando-Linyanti, Okavango and Kalahari Conservation Areas.
Table 2. Comparison of estimates of current and potential community income from non-agricultural natural resource use in land inside and outside protected areas in the North-East Region (N$ 1994).

<table>
<thead>
<tr>
<th>Item</th>
<th>Kwando-Linyanti C.A.</th>
<th>Okavango C.A.</th>
<th>Kalahari C.A.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Protected¹</td>
<td>non-protected²</td>
<td>protected³</td>
</tr>
<tr>
<td>Extent (sq. km.)</td>
<td>2,640</td>
<td>3,665</td>
<td>1,200</td>
</tr>
<tr>
<td>Estimated current Community income</td>
<td>92,400</td>
<td>505,770</td>
<td>42,000</td>
</tr>
<tr>
<td>Estimated potential Community income</td>
<td>683,760</td>
<td>967,560</td>
<td>310,800</td>
</tr>
<tr>
<td>Potential magnitude Of increase</td>
<td>74</td>
<td>1.9</td>
<td>7.4</td>
</tr>
</tbody>
</table>

¹Mamili, Mudumu and proposed Kwando N.P.; ²proposed/potential adjacent conservancy areas; ³proposed Okavango N.P.; ⁴potential conservancy area north of the Trans-Caprivi Highway; ⁵Khaudum N.P.; ⁶Nyae Nyae Conservancy; ⁷assumes same ratio between inside and outside protected areas as in Caprivi.

Information contained in Table 2 illustrates that these areas generate income to communities which, although moderate at present, has significant growth potential if natural resources are properly managed. Additionally, such things as locating tourist lodges and campgrounds just outside the parks would provide for joint venture partnerships between conservancies and the private sector. Also, issuing trophy hunting quotas to conservancies rather than within parks would enhance conservancy revenue earning potential. Yet another possibility for increasing revenues and improving neighbour relations is the sharing of gate receipts between the Ministry and conservancies.

5.1 Potential Income from Mamili National Park

Whilst the potential to generate income at the regional level is significant, this is not the case for Mamili National Park. The primary reason for this is the size of the park, its remote location and the current status of the wildlife populations. In addition, the fact that the wetland has dried out significantly in recent years means that the park is not attractive to the general tourist, particularly at the height of the dry season. No reliable data are available regarding tourist visitors to the park, but it is unlikely that they exceed 500 per year.

The following table illustrates the magnitude of tourism revenue under a best case and worst case scenario (Table 3). These data suggest that under the best case scenario or 45% occupancy (approximately 12 000 visitors/year, see Table 3 for assumptions used to derive these figures), Mamili National Park is only likely to generate N$293 560/year (or N$1 030/km²). Even for the park to achieve a 5% occupancy would require doubling the current level of visitors to the park. This level of utilisation would generate approximately N$38 040 per annum assuming a basic entry of N$20/person/day and overnight camping occurs.

Two factors must be taken into consideration when assessing the income potential of Mamili National Park. First, in the unlikely event that the park receives 12 000 visitors per year, this level of utilisation would have a serious impact on the park facilities, particularly the road network. This level of utilisation would require a minimum of 9 vehicles per day visiting the park on a year round basis.

Secondly, there are currently approximately 90km of roads in the park. Should the wet conditions return in the future, up to 75% of this road network will be inundated. This will further reduce the carrying capacity of the park, and thus negatively impact on its earning potential.
Table 3: The potential income from Mamili Park using best case and worst case scenarios.

<table>
<thead>
<tr>
<th>Park Activity</th>
<th>Fee Schedule</th>
<th>Occupancy</th>
<th>Occupancy</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Best case scenario</td>
<td>Worst case scenario</td>
</tr>
<tr>
<td></td>
<td></td>
<td>45% (11 826)</td>
<td>25% (6 570)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NS236 520</td>
<td>NS131 400</td>
</tr>
<tr>
<td>Park entry</td>
<td>N$20/day/person (No people)</td>
<td>No 3-day Parties</td>
<td>No 3-day Parties</td>
</tr>
<tr>
<td></td>
<td></td>
<td>42</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NS50 400</td>
<td>NS30 000</td>
</tr>
<tr>
<td>Overnight camping</td>
<td>$1 200/3 days X 4 persons</td>
<td>Mobile Tour Operators</td>
<td>NS5 000/year</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No operators</td>
<td>No operators</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NS15 000</td>
<td>NS10 000</td>
</tr>
<tr>
<td>Concession</td>
<td>NS15 000/year</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Potential Income (N$)</td>
<td>N$301 920</td>
<td>N$171 400</td>
<td>N$87 560</td>
</tr>
<tr>
<td>Income/km²</td>
<td>N$1 059</td>
<td>N$601</td>
<td>N$307</td>
</tr>
<tr>
<td>Income US$/km²</td>
<td>US$177</td>
<td>US$100</td>
<td>US$51</td>
</tr>
</tbody>
</table>

Assumptions used to derive these data are as follows:

- Occupancy: Maximum of 18 vehicles/day with 4 people/vehicle for 365 days = 18 x 4 x 365 = 26 280 visitors to the park. Therefore, 45% occupancy = 11 826 people.

- Overnight camping: One camp occupied for a maximum of 3 days by 4 people = 3 days x N$100 x 4 people = N$1 200/camp. Three camps are occupied between March and September. This represents 28 weeks or a maximum of 196 days/camp = 588 camping days. Therefore, the maximum number of parties = 588/3 camps = 196. Occupancy set at 20%, 15%, 10% and 5% respectively.

- Tour operators: concessions will be given to mobile commercial tour operators.

- Concession: Annual concession fee paid by resident concessionaires.

5.2 Financing of the Development and Management Programme

The projected potential income for Mamili National Park will not be sufficient to meet the running costs of the Park, nor will this money meet any of the capital costs. This situation is exacerbated by the fact that it is MET’s intention to “share” the income from the park with neighbouring communities.

The gap between potential income and recurrent expenditure will therefore have to be met from Government allocations, and it must be accepted that it is unlikely that Mamili National Park will ever be financially self sustainable.
6 SCHEDULE OF IMPLEMENTATION

A schedule of implementation is provided in Appendix III, and assumes a 5-year period. Some of the tasks are "once off" activities while others will occur throughout the implementation phase.

6.1 Notes on the Implementation Programme

The following considerations are to be taken into account regarding the timing of the implementation programme.

- The project year will run from January to December
- The duration of each activity is indicative.
- A project startup period is envisaged. During this time, an Inception Report is to be prepared, together with the first Annual Work Programme that includes the annual budget.
- The formalisation of the park boundary is on the critical path, and is to be completed before any of the other project tasks are implemented.
- All staff housing and related infrastructure development is to take place within the first three years of the project.
- Law enforcement and fire management programmes recur each year throughout the project.
- Routine maintenance is conducted throughout the period of the project on an "as required basis".
- Specific research and monitoring activities are to begin in the second quarter of the second year.
- Similarly, all activities associated with the Tourism and Visitor programme and the Education, Communication and PRO programme are to commence in the second year once the basic infrastructure is complete.

The overall implementation programme is to be re-appraised annually and adjusted according to the previous years' progress and changing priorities.

This schedule is designed to facilitate the low input required to manage Mamili National Park to achieve four objectives. These are:

- Improve law enforcement
- Facilitate an increasing tourist use.
- Maintain and improve relations with adjacent communities.
- Reduce the incidence of fire in the park.

Other activities will focus on routine maintenance of infrastructure, particularly the road network, and implementation of basic monitoring programmes.

6.2 Project Start-up Phase

The implementation of this Integrated Development Plan will be preceded by a Project Start-up Phase. The purpose of this phase is to appoint a Project Co-ordinator who will be responsible for implementing the IDP. The Project Co-ordinator can be appointed either from within MET or provided by a donor.
He/she will be responsible for:

- Setting up the Project Accounts
- Preparing an Inception Report
- Procuring the necessary equipment (vehicles etc)
- Procuring building contractors
- Preparing the Annual Work Programme for Year 2
- Fulfilling the role of co-ordinator between MET, Regional Office and Field Staff
APPENDIX I

CAPITAL COSTS

MAMILI INTEGRATED DEVELOPMENT PLAN
## SUMMARY OF CAPITAL, RECURRENT AND OPERATIONAL COSTS OF THE MAMILI INTEGRATED DEVELOPMENT PLAN

### Area (km²)

| 285 |

### CAPITAL COSTS

<table>
<thead>
<tr>
<th>Area</th>
<th>(km²)</th>
<th>Total (N$)</th>
<th>Total (US$)</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
<th>Five year total</th>
</tr>
</thead>
<tbody>
<tr>
<td>B. Transport</td>
<td>630,000</td>
<td>105,000</td>
<td>630,000</td>
<td>-</td>
<td>150,000</td>
<td>260,000</td>
<td>1,040,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C. Other Buildings</td>
<td>370,000</td>
<td>61,667</td>
<td>155,000</td>
<td>105,000</td>
<td>145,000</td>
<td>-</td>
<td>390,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>D. Workshop/Office Equipment</td>
<td>78,000</td>
<td>13,000</td>
<td>-</td>
<td>28,000</td>
<td>50,000</td>
<td>-</td>
<td>78,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>E. Water supplies</td>
<td>15,000</td>
<td>2,500</td>
<td>15,000</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>15,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>F. Power/Fuel Supply</td>
<td>120,000</td>
<td>20,000</td>
<td>60,000</td>
<td>60,000</td>
<td>-</td>
<td>-</td>
<td>120,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>G. Road Construction</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>H. Wildlife Introduction</td>
<td>100,000</td>
<td>16,667</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>100,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contingency (10% of Total Costs)</td>
<td>195,800</td>
<td>32,633</td>
<td>112,667</td>
<td>41,967</td>
<td>49,667</td>
<td>31,000</td>
<td>50,000</td>
<td>238,800</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>2,153,800</td>
<td>358,967</td>
<td>1,239,333</td>
<td>461,633</td>
<td>546,333</td>
<td>341,000</td>
<td>55,000</td>
<td>2,626,800</td>
<td></td>
</tr>
</tbody>
</table>

### BASIC RECURRENT COSTS

<table>
<thead>
<tr>
<th>Area</th>
<th>(km²)</th>
<th>Total (N$)</th>
<th>Total (US$)</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
<th>Five year total</th>
</tr>
</thead>
<tbody>
<tr>
<td>B. Field Allowance</td>
<td>45,720</td>
<td>7,620</td>
<td>45,720</td>
<td>45,720</td>
<td>45,720</td>
<td>45,720</td>
<td>45,720</td>
<td>228,600</td>
<td></td>
</tr>
<tr>
<td>C. Equipment</td>
<td>68,850</td>
<td>11,475</td>
<td>19,950</td>
<td>68,850</td>
<td>19,950</td>
<td>19,950</td>
<td>30,850</td>
<td>159,550</td>
<td></td>
</tr>
<tr>
<td>D. Mileage</td>
<td>294,000</td>
<td>49,000</td>
<td>294,000</td>
<td>294,000</td>
<td>294,000</td>
<td>294,000</td>
<td>294,000</td>
<td>1,470,000</td>
<td></td>
</tr>
<tr>
<td>E. Training and Development</td>
<td>38,560</td>
<td>6,427</td>
<td>38,560</td>
<td>38,560</td>
<td>38,560</td>
<td>38,560</td>
<td>38,560</td>
<td>192,800</td>
<td></td>
</tr>
<tr>
<td>Contingency (10% of Costs)</td>
<td>56,473</td>
<td>9,412</td>
<td>51,583</td>
<td>56,473</td>
<td>51,583</td>
<td>51,583</td>
<td>52,673</td>
<td>263,895</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>621,203</td>
<td>103,534</td>
<td>567,413</td>
<td>567,413</td>
<td>567,413</td>
<td>567,413</td>
<td>567,413</td>
<td>2,902,845</td>
<td></td>
</tr>
</tbody>
</table>

### OPERATIONAL COSTS

<table>
<thead>
<tr>
<th>Area</th>
<th>(km²)</th>
<th>Total (N$)</th>
<th>Total (US$)</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
<th>Five year total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administration</td>
<td>192,850</td>
<td>32,142</td>
<td>162,850</td>
<td>30,000</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>192,850</td>
<td></td>
</tr>
<tr>
<td>2. Infrastructure Development</td>
<td>125,000</td>
<td>20,833</td>
<td>125,000</td>
<td>20,833</td>
<td>20,833</td>
<td>20,833</td>
<td>20,833</td>
<td>125,000</td>
<td></td>
</tr>
<tr>
<td>3. Protection</td>
<td>70,000</td>
<td>11,667</td>
<td>70,000</td>
<td>62,500</td>
<td>70,000</td>
<td>62,500</td>
<td>70,000</td>
<td>335,000</td>
<td></td>
</tr>
<tr>
<td>4. Maintenance</td>
<td>95,500</td>
<td>15,917</td>
<td>95,500</td>
<td>15,917</td>
<td>15,917</td>
<td>15,917</td>
<td>15,917</td>
<td>359,000</td>
<td></td>
</tr>
<tr>
<td>5. Support Zone Programme</td>
<td>46,440</td>
<td>7,740</td>
<td>46,440</td>
<td>46,440</td>
<td>46,440</td>
<td>46,440</td>
<td>46,440</td>
<td>232,200</td>
<td></td>
</tr>
<tr>
<td>6. Education/Communication/PRO</td>
<td>184,300</td>
<td>30,717</td>
<td>131,400</td>
<td>131,400</td>
<td>131,400</td>
<td>131,400</td>
<td>131,400</td>
<td>359,000</td>
<td></td>
</tr>
<tr>
<td>7. Tourism and Visitor</td>
<td>25,000</td>
<td>4,167</td>
<td>25,000</td>
<td>25,000</td>
<td>25,000</td>
<td>25,000</td>
<td>25,000</td>
<td>25,000</td>
<td></td>
</tr>
<tr>
<td>Contingency (10% of Total Costs)</td>
<td>101,493</td>
<td>16,916</td>
<td>42,728</td>
<td>32,270</td>
<td>33,494</td>
<td>34,443</td>
<td>198,688</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>1,190,923</td>
<td>198,487</td>
<td>470,008</td>
<td>354,970</td>
<td>613,063</td>
<td>368,434</td>
<td>378,873</td>
<td>2,185,348</td>
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</tr>
</tbody>
</table>

### OVERALL COST OF IDP

<table>
<thead>
<tr>
<th>Area</th>
<th>(km²)</th>
<th>Total (N$)</th>
<th>Total (US$)</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
<th>Five year total</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAPITAL COSTS</td>
<td>2,153,800</td>
<td>358,967</td>
<td>1,239,333</td>
<td>461,633</td>
<td>546,333</td>
<td>341,000</td>
<td>55,000</td>
<td>2,626,800</td>
<td></td>
</tr>
<tr>
<td>BASIC RECURRENT COSTS</td>
<td>621,203</td>
<td>103,534</td>
<td>567,413</td>
<td>567,413</td>
<td>567,413</td>
<td>567,413</td>
<td>567,413</td>
<td>2,902,845</td>
<td></td>
</tr>
<tr>
<td>OPERATIONAL COSTS</td>
<td>1,190,923</td>
<td>198,487</td>
<td>470,008</td>
<td>354,970</td>
<td>613,063</td>
<td>368,434</td>
<td>378,873</td>
<td>2,185,348</td>
<td></td>
</tr>
<tr>
<td><strong>OVERALL TOTAL COST</strong></td>
<td>3,965,926</td>
<td>660,988</td>
<td>2,276,754</td>
<td>1,437,806</td>
<td>1,726,809</td>
<td>1,276,847</td>
<td>1,013,276</td>
<td>7,714,993</td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX II

SUMMARY OF DEVELOPMENT AND RECURRENT COSTS

MAMILI INTEGRATED DEVELOPMENT PLAN
APPENDIX III

CHRONOGRAMME

MAMILI INTEGRATED DEVELOPMENT PLAN
APPENDIX IV

NORTH-EAST PARKS PROJECT

PROCEDURE GUIDELINES ON INFRASTRUCTURE DEVELOPMENT

MAMILI INTEGRATED DEVELOPMENT PLAN
PROCEDURE GUIDELINES FOR INFRASTRUCTURE DEVELOPMENT

Procedure guidelines on design, placement and construction of firebreaks:

Fire-breaks on park boundaries are to be at least eighteen metres in width (this is a double fire-break). Internal fire-breaks are to be at least nine metres in width. Internal fire-breaks should follow natural features or ecotones which may act as natural fire-breaks. Road locations should be considered in the context of roads also serving as fire breaks.

Fire-breaks should be cleared and/or burnt annually as early in the calendar year as possible but no later than July. For the maintenance and monitoring of fire-break condition see policies on roads, tracks, trails and paths.

Heavy machinery may be used to establish fire-breaks, but should not be used in fire-break maintenance.

A fire officer will be appointed from existing staff and a fire duty roster for co-ordinating operations maintained during the main fire season (April to October).

Park staff will initiate co-operative programmes and actions with other fire control authorities, adjacent communities and neighbouring landowners.

Conservation scientists will provide for the recording of fire history in the parks.

Procedure guidelines on buildings, temporary structures, power supplies and equipment:

All buildings will be designed and placed in line with the primary objectives of the park and the level of facility development shall be in accord with park plans.

All structures will be designed and placed as unobtrusively as possible so as to not detract from the natural landscape, scenic beauty or ecological integrity of the parks. Whenever possible, natural barriers will be used to screen facilities from general view.

All buildings will be assigned a registration number and a maintenance record kept by the Warden.

All buildings will be inspected annually by the Warden.

Annual maintenance priorities will be assigned, motivated and budgeted. Buildings will be prioritised as follows:

- Staff housing and accommodation
- Administrative buildings and stores
- Plant buildings and structures (e.g. pump house)
- Workshop and maintenance areas.

Where appropriate the Warden will consider annual service contracts to the private sector for building (and other capital items) maintenance. This will be done on the basis of an analysis of the most cost-effective options for maintenance.
Power supply infrastructure and development will be designed to cause minimal ecological, visual and/or aesthetic impact. Underground lines are to be utilised in preference to overhead lines where feasible.

Domestic power supplies will be separately metered and the costs borne by occupants.

The Warden will ensure that temporary structures are removed on completion of the task for which they were constructed. Additionally, he or she will ensure that the site is fully rehabilitated and cleaned after completion of assigned tasks.

The Warden will designate sites within the park (consistent with the park zonation scheme) to specific tasks which are repeated regularly (e.g. game capture). These sites, activities, or structures will not conflict with park goals and objectives.

Equipment will be issued to individuals who will be held responsible for the items and their maintenance and servicing.

Training in the use of sophisticated equipment is compulsory for all users.

**Procedure guidelines on potable water for parks staff:**

No toilets, ablution facilities or water-based service facilities are to be positioned within 100m of a borehole or other primary water source.

Game capture pens and bomas must not be placed within 100 m of a borehole or other primary water source.

Water quality testing is done by NamWater, Private Bag 13389, Windhoek. A one litre sample of the water to be tested must be delivered in a closed glass container.

**Procedure guidelines on water supply management:**

The Warden will ensure that all water abstraction infrastructure is unobtrusive and blends in with the surroundings as best possible. Every effort should be made to suppress exhaust noise at installations using diesel or petrol engines. Solar installations should be used where possible.

No water abstraction for non-park purposes is permitted.

The provision of artificial water points for wildlife within the parks must be preceded by an Environmental Assessment in which the ecological framework for that supply must be given the fullest consideration.

Artificial water points for wildlife must not be constructed near (<2 km) park boundaries where there is a potential for conflict with surrounding communities or land-uses.

No barriers or obstructions of any type may be built on drainage's.

A monitoring programme must be developed at each artificial water point for wildlife. Wildlife species and numbers, seasonality of use and the effects on vegetation (at varying
radii around the water point) are to be assessed in terms of whether the water point is achieving a stated management objective.

Adequate protection measures against damage and theft must be developed for installations.

Development of water sources for wildlife carries with it the responsibility to ensure that these sources do not fail the wildlife which becomes dependent upon them. All sources of water for wildlife will be inspected, and maintenance performed if necessary, at least weekly throughout the dry season (or year round during droughts).

**Procedure guidelines on sewage disposal facilities:**

Soak pits for waterborne sewerage should not be built within 100 m of a borehole or water source to avoid contamination. Developments on the river margin must ensure that pits do not cut through the permanent water table.

No chemical toilets will be allowed within the park. Concessionaires should be made aware of this restriction.

No direct discharge of human wastes into any of the parks’ perennial or seasonal rivers are allowed under any circumstances.

No open water, evaporation pan sewerage treatment systems are allowed within the parks.
NAMIBIA
Ministry of Environment and Tourism

NORTH-EAST PARKS PROJECT

VOLUME 2

MANGETTI GAME CAMP

MANAGEMENT PLAN

Dated: May, 1999
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II **BACKGROUND AND INVENTORY – MANGETTI GAME CAMP**

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V **PROCEDURE GUIDELINES ON INFRASTRUCTURE DEVELOPMENT**

VI **PROCEDURE GUIDELINES ON NEIGHBOURING COMMUNITY RELATIONS**

VII **PROCEDURE GUIDELINES ON TOURISM, VISITOR AND CONCESSIONAIRES**
1 INTRODUCTION

This management plan for Mangetti Game Camp has been prepared under Phase Two of the Planning Phase: North East Parks Programme. This document is supported by Volume 1: Background and Inventory, which contains information as regards the biophysical, ecological, legal, socio-economic and infrastructural characteristics of the North East Parks. Volume 3: Integrated Development Plan for Mangetti Game Camp summaries the investment programme needed to develop the Game Camp, and its potential revenue earnings.

Mangetti Game Camp is located to the east of the main Rundu – Grootfontien Highway between Grootfontien and Rundu in the Kavango District. Adjacent land to the west is held under a PTO by Amalgamated Commercial Holdings (AMCOM), while to the north and east is un-assigned communal land. The veterinary “Red Line” fence forms the southern boundary with the commercial farming area (Figure 1).

Figure 1: Location of Mangetti Game Camp relative to other protected areas, communal land and commercial land in the Kalahari Conservation Area.

1.1 Structure of the Management Plan

For ease of understanding, this management plan consists of six main components. These are as follows:

**Vision statement:** The vision statement for Mangetti Game Camp captures the overall goals of the Ministry of Environment and Tourism (MET) with respect to its overall management and development.

**Situation analysis and needs assessment:** Using eight pre-defined management programmes, the situation analysis and needs assessment provides a summary
of the issues and problems facing Mangetti Game Camp that need to be addressed by the management plan. The management programmes are prioritised, and the activities to be conducted are evaluated and ranked to illustrate their level of importance.

**Goals and Objectives:** The goals and objectives of Mangetti Game Camp are provided. These, together with the situation analysis and needs assessment, define the various activities to be undertaken under each management programme.

**Zonation:** This section describes the different management zones of the Game Camp that will facilitate its management and tourist use.

**Staffing Requirements:** The staffing requirements for Mangetti Game Camp are determined based on the activities to be undertaken under each management programme.

**Management Programmes:** Eight management programmes are identified as being the core of the management plan. Using the information gathered during the situation analysis and needs assessment, various activities are identified that need to be undertaken under each management programme in order to deal with the various issues. Each management programme is prioritised and the activities ranked in order of importance. Each activity is dealt with under the following headings:

- Current problems and issues
- Proposed solutions
- Implementation
- Resources required

The management plan is also supported by a number of appendices that provide specific background data and information relevant to the planning process.
2 VISION STATEMENT FOR MANGETTI GAME CAMP

The overall mission statement, policies and conservation goals of the Ministry of Environment and Tourism that clearly define the criteria and goals for protected area management in Namibia are provided in Appendix I. With regard to Mangetti Game Camp, the situation is complicated by the fact that this area is being managed on behalf of a tribal authority, and not as part of Namibia’s protected area system.

The Vision Statement for Mangetti Game Camp recognises this fact and is defined as follows:

Mangetti Game Camp shall be managed by the community as a core area of a future conservancy. In partnership with the Ministry, the conservancy shall develop an appropriate management plan that adequately protects the area’s Kalahari sandveld woodland and wildlife.

2.1 Situation Analysis and Needs Assessment

The North East Parks Project was launched in 1995 with the objective of compiling management and development plans for the parks in the Caprivi and Kavango regions. On acceptance of the management plans, MET will establish a Joint Management Committee with stakeholders to implement these plans, as well as resolve any local problems, conflicts etc. Funding for implementation will be provided by the Government of Namibia and international donors.

Mangetti Game Camp represents a unique case within the North East Parks Project in that the Ministry of Environment and Tourism is the custodian of the area on behalf of the Kavango Administration. This situation arose after Chief Kahenge, through the Kwangali Tribal Authority, requested in 1987 that the then Directorate of Nature Conservation and Recreational Resorts develop the area for the benefit of the tribe, and that all funds generated from the use of the area be returned to the tribal authorities. The area therefore has not been set aside for any specific conservation purposes, but rather as a community-based wildlife management area. It is therefore unlikely that this area will be gazetted and incorporated into Namibia’s protected area system.

MET’s role in the development of Mangetti Game Camp

Since 1987, MET has developed Mangetti Game Camp through the construction of office and staff accommodation, construction of roads and installation of artificial game water supplies. A game fence has been erected around the periphery and the area has been restocked with animals such as black and white rhino, sable and eland. The objective here is to breed these rare and endangered species so that other protected areas can be restocked. However, although animals have been moved in and out of the Game Camp over the years, the overall breeding exercise has not been a success. Furthermore the tribal authorities have not received any substantial funds as a result of any income generating activities (e.g. through the sale of live animals, tourism or from commercial hunting).

In recent years, human settlements have become established along the main Grootfontein – Rundu Highway in the vicinity of Mangetti Game Camp. In addition a number of people
have settled close to the Omataka Omurumba to the east of Mangetti. Government has also embarked upon a borehole drilling exercise to facilitate settlement in this area. As a result, heterogeneous groups of people have settled in the area either illegally or as part of the government’s resettlement programme. These developments are likely to isolate Mangetti Game Camp in the future.

The issue here is that although the area is under the control of Chief Kahenge (who lives approximately 200km away), it is difficult to:

a. identify the “local community” who would normally have traditional access rights to the resources associated with Mangetti Game Camp, and

b. who would assume responsibility of managing the proposed future conservancy.

Meeting its responsibilities to develop the Mangetti Game Camp in terms of the agreement with the Kavango Administration and to meet the objectives of the Vision Statement is the challenge that faces the MET in the future.

Given that the area is unlikely to be incorporated into the protected area system, the options for its future management appear to hinge upon greater involvement of the private sector and the identification and co-operation of the “local community”. The future role of MET will therefore be to facilitate the management of the area in conjunction with the private sector and the tribal authorities.

**Ministry of Environment and Tourism’s Management Strategy**

The MET have defined eight management programmes that will form the basis of the management and development plans for the North East Parks (Table 1).

**Table 1: Definition of the Eight Management Programmes for the North-East Parks Project**

<table>
<thead>
<tr>
<th>Management Programme</th>
<th>Brief Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Administration</td>
<td>The actions and activities taken by MET leadership to facilitate the attainment of the objectives of all management programmes.</td>
</tr>
<tr>
<td>2. Protection</td>
<td>The actions and activities aimed at preserving the physical and biological integrity of the parks.</td>
</tr>
<tr>
<td>3. Research and Monitoring</td>
<td>The actions and activities to determine the status and dynamics of park natural resources as well as the effects of management actions upon these resources.</td>
</tr>
<tr>
<td>4. Tourism and Visitor</td>
<td>The actions and activities to enhance visitor experiences in the parks as well as to minimise the impact of tourism on park natural resources.</td>
</tr>
<tr>
<td>5. Support Zone</td>
<td>The actions and activities aimed at encouraging compatible land uses in areas bordering the parks. In particular, the establishment and development of conservancies is to be encouraged, with MET providing technical advice on all</td>
</tr>
</tbody>
</table>
aspects of wildlife management. The flow of benefits from the park to neighbouring communities will be facilitated.

<table>
<thead>
<tr>
<th>6. Education, Communication and Public Relations</th>
<th>The actions and activities designed to increase knowledge and awareness of the parks and their role in the conservation of the nation's natural resources.</th>
</tr>
</thead>
<tbody>
<tr>
<td>7. Infrastructure Development</td>
<td>The actions and activities relating to infrastructure development (roads, buildings, water development, fire breaks, disposal of liquid and solid waste.</td>
</tr>
<tr>
<td>8. Maintenance</td>
<td>The actions and activities designed to maintain, rehabilitate and/or enhance the parks bio-physical resources as well as infrastructure and equipment.</td>
</tr>
</tbody>
</table>

On the basis of these management programmes and taking into consideration the issues raised above, a situation analysis and needs assessment was conducted in Mangetti Game Camp in late 1997 and early 1998. The conclusions of this exercise were that MET should lease out the area, and that a management plan be developed in conjunction with the potential lease holder. MET would then fulfil the role of monitoring the development of Mangetti in terms of the agreed management plan and ensure that benefits accrue to the tribal authorities.

However, to arrive at this position, it is necessary to undertake a number of activities under each of the eight management programmes. The situation and needs analysis has taken this into consideration and listed in order of priority the various management activities to be addressed. Given the unique status of Mangetti Game Camp, and its current state of development, the priority management programmes are:

1 Administration Programme
2 Support Zone Programme
3 Protection Programme
4 Tourism and Visitor Programme
5 Maintenance Programme
6 Infrastructure Programme
7 Research and Monitoring Programme
8 Education, communication and PRO programme

Table 2 provides a summary of the prioritised management programmes and ranks the specific issues under each programme. The crucial issue here is that MET is the custodian of the Mangetti Game Camp, and the future management strategy can play a significant role in promoting the development of community based conservancies for the benefit of the local communities.

In view of this situation, the importance of the Support Zone Programme has been emphasised as has the Tourism and Visitor Programme. However, the Infrastructure, Research and Education Programmes have been demoted and will not play a significant part under this management plan.
Table 2: Priority of Management Programmes and Ranking of Situation Analysis and Needs Assessment for Mangetti Game Camp. The indicative time scale illustrates the time frame to resolve the various issues.

<table>
<thead>
<tr>
<th>Priority of Management Programmes</th>
<th>Ranking of Situation Analysis and Needs Assessment for Mangetti Game Camp</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Priority (1st to 3rd years)</td>
</tr>
<tr>
<td>1. Administration</td>
<td>1. Administration from Rundu is cumbersome</td>
</tr>
<tr>
<td></td>
<td>2. There are no protocols that will allow the involvement of the private sector in the management of Mangetti.</td>
</tr>
<tr>
<td>2. Support Zone Programme</td>
<td>1. Illegal settlement adjacent to Mangetti presents a threat to the integrity of the area.</td>
</tr>
<tr>
<td></td>
<td>2. Identification of the “local community” is difficult.</td>
</tr>
<tr>
<td></td>
<td>3. Involvement of Chief Kahenge/Kavango Administration in the future development and management of Mangetti is obscure.</td>
</tr>
<tr>
<td>3. Protection Programme</td>
<td>1. There is no adequate patrolling schedule to combat illegal activities.</td>
</tr>
<tr>
<td></td>
<td>2. The perimeter fence is not adequately monitored.</td>
</tr>
<tr>
<td></td>
<td>3. There is no fire protection system in place to combat wild fires.</td>
</tr>
<tr>
<td>4. Tourism and Visitor Programme</td>
<td>1. Income levels from consumptive and non-consumptive tourism are low.</td>
</tr>
<tr>
<td></td>
<td>2. Facilities to accommodate tourists are poorly developed.</td>
</tr>
</tbody>
</table>
### Ranking of Situation Analysis and Needs Assessment for Mangetti Game Camp

<table>
<thead>
<tr>
<th>Priority of Management Programmes</th>
<th>Priority (1st to 3rd years)</th>
<th>Secondary (2nd to 4th years)</th>
<th>Tertiary (4th to 5th years)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5. Maintenance Programme</td>
<td>1. The station does not have access to essential and reliable equipment (vehicles etc.).&lt;br&gt;2. Road maintenance is poor.</td>
<td>1. Pumps supplying water to artificial water points need repairs and renovation.&lt;br&gt;2. The perimeter fence is frequently damaged, allowing key animals such as sable to escape.</td>
<td></td>
</tr>
<tr>
<td>6. Infrastructure Programme</td>
<td>1. There are no workshop facilities to maintain equipment, particularly pumping equipment.</td>
<td>1. MET housing needs to be upgraded.</td>
<td></td>
</tr>
<tr>
<td>7. Research and Monitoring Programme</td>
<td>1. There is no formal system to monitor the status of animal populations in Mangetti.&lt;br&gt;2. Elephant movement to and from Mangetti is not well understood.</td>
<td>1. The extent of vegetation damage around the supplemented waterholes needs to be assessed.</td>
<td></td>
</tr>
<tr>
<td>8. Education, Communication and PRO programme</td>
<td>1. There is no communication, public relations or interpretative programme for the area.</td>
<td>1. Educational materials to promote the area as a Core Conservation Area need to be produced.</td>
<td></td>
</tr>
</tbody>
</table>
2.2 Overall Goal and Objective for Mangetti Game Camp

Given that the Kavango Administration regards Mangetti Game Camp as an important area that can make a positive contribution to the local economies of surrounding communities, the overall goal of Mangetti Game Camp is defined as:

*Improved conservation status and sustainable economic development of Mangetti Game Camp for the benefit of the Kavango Administration and local communities.*

The overall objective is to:

*To act as a core area of a future conservancy.*

and

*To generate and improve the level of income through the development of consumptive and non-consumptive tourism opportunities.*
2.3 Zonation of Mangetti Game Camp

Mangetti Game Camp is 480 km² located in the northern Kalahari savannah woodland vegetation zone on Kalahari sands (see Appendix II for background information).

For the purposes of this management plan, the area is designated as a Natural Zone (see Appendix III for definitions of zone categories). All infrastructure associated with the management of the Game Camp will be confined to a 10ha zone centred on the current MET station. In the event that Mangetti is offered as a concession to the private sector, an additional development zone not exceeding 10ha will be identified to facilitate the development of the necessary tourism infrastructure. The location of this development zone will be at the discretion of the Regional Warden in conjunction with the concessionaire.

2.3.1 Description of Mangetti Game Camp Management Zones

<table>
<thead>
<tr>
<th>Zone</th>
<th>Description</th>
<th>Purpose</th>
<th>Permitted Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Development Zone</td>
<td>10 hectares</td>
<td>To allow the establishment of infrastructure needed to manage the area, and establish tourism infrastructure</td>
<td>• Infrastructure development (staff housing, workshop facilities etc.)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Tourist camp sites</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Waste disposable sites</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Game capture bomas and quarantine stations</td>
</tr>
<tr>
<td>Mangetti Natural Zone</td>
<td>The whole area except for a maximum of two 10 hectare development zones</td>
<td>To generate funds from consumptive and non-consumptive, low-volume, low-impact tourism.</td>
<td>• All forms of non-consumptive tourism activities conducted either from vehicles or on foot.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Camping at designated sites</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Commercial sport hunting</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Game capture</td>
</tr>
</tbody>
</table>
3 STAFFING REQUIREMENTS FOR MANGETTI GAME CAMP

The staffing requirements for Mangetti Game Camp have been determined based on the assumption that:

a. The area will be offered as a concession to the private sector in the future and that the concessionaire will assume responsibility for most management activities (road and fire break maintenance, game water supplies etc.).

b. The MET will in future fulfil the role of caretaker and facilitator between the Kavango Administration and the concessionaire.

However, since Mangetti Game Camp has been restocked with endangered species such as black rhino, this requires that patrolling be maintained at a high level to ensure that these valuable animals are not poached. Furthermore, since the areas bordering Mangetti Game Camp are becoming settled, it is important that the level of vigilance is increased through regular patrolling of the boundary fence. The staff compliment for Mangetti Game Camp has therefore been determined using the following parameters:

- The minimum Patrol Area/Scout shall not be less than 40km\(^2\) and not greater than 50km\(^2\).
- Scouts will be expected to patrol up to 25 days per month.
- Each patrol shall consist of a maximum of 5 men. Each patrol unit will therefore complete up to 125 patrol-days/month.
- It is assumed that 50% of the Scout force will not be available for a variety of reasons (sick, leave, assigned to other duties etc.).
- The number of labourers is not to exceed 50% of the number of Scouts.
- At least two Gate Guards will be assigned to man entrance gates on a rotational basis.
- The number of Rangers is set at 1 for every 10 Scouts.
- The number of Senior Rangers is set at 1 for every 20 Scouts or part thereof.
- The number of Principle Rangers is set at 1 for every 3 Senior Rangers.

The Officer-in Charge of Mangetti Game Camp will not be ranked higher than a Senior Ranger, nor will any professional staff be appointed (ecologists, support zone co-ordinator etc.).

On the basis of the above assumptions, the staffing requirements for Mangetti Game Camp are provided in Table 3.
Table 3: Staff compliment for Mangetti Game Camp as determined by the eight management programmes

<table>
<thead>
<tr>
<th>STAFF COMPLIMENT</th>
<th>Management Programmes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Administration</td>
</tr>
<tr>
<td>Warden</td>
<td>-</td>
</tr>
<tr>
<td>Principle Ranger</td>
<td>-</td>
</tr>
<tr>
<td>Senior Ranger</td>
<td>1</td>
</tr>
<tr>
<td>Ranger</td>
<td>-</td>
</tr>
<tr>
<td>Scout</td>
<td>-</td>
</tr>
<tr>
<td>Gate Guard</td>
<td>-</td>
</tr>
<tr>
<td>Labourer</td>
<td>-</td>
</tr>
<tr>
<td>Ecologist</td>
<td>-</td>
</tr>
<tr>
<td>Support Zone Co-ordinator</td>
<td>-</td>
</tr>
<tr>
<td>Technicians</td>
<td>-</td>
</tr>
<tr>
<td>Clerk</td>
<td>-</td>
</tr>
<tr>
<td>Typist</td>
<td>-</td>
</tr>
<tr>
<td>Total Staff Compliment</td>
<td>1</td>
</tr>
</tbody>
</table>

The Officer-in-Charge will be based at Mangetti but will report to the Regional Warden in Rundu. A Ranger will be assigned to co-ordinate the day-to-day activities of the Scouts and labour force. The Scout force will fulfil a dual role under the Protection and Maintenance Programme. Contract labour will be recruited locally to during the fire season.

No staff is allocated to the Infrastructure, Support Zone, Education Programmes or Research Programmes. These programmes are to be dealt with by staff appointed at the central headquarters at Rundu or from Windhoek. Although the Support Zone Coordinator for the North East Parks will be based at Susuwe (for details see Volume 2: Kwando Core Area Management Plan), he/she will be responsible for working with the Regional Warden on issues relating to the Mangetti Game Camp.

3.1 Organisational Structure

The organisational structure of the North East Parks is illustrated below (Figure 3). This structure conforms to that applied elsewhere in MET with the Regional Warden answering to the Directorate of Resource Management in Windhoek.

Three “Conservation Area” Warden’s will be appointed to administer, manage and develop the Kwando-Linyanti Conservation Area, Okavango Conservation Area and Kalahari Conservation Area respectively.
The Support Zone Co-ordinator will be attached to the Regional Office but carry a rank similar to that of a Warden and Senior Conservation Officer. The Support Zone Co-ordinator will be responsible for the entire North East Parks. However, since the greatest emphasis is required in the Kwanza-Linyanti Core Conservation Area, this officer will be based at Susuwe, but expected to work in the other two Conservation Areas as well.

The three Wardens will be answerable to the Regional Warden who will be based at Rundu. A conventional staffing structure will apply at station level with the most senior officer being in overall command and answerable to the Warden. Rangers, Scouts, Gate Guards and labourers will be answerable to the Warden through their respective Senior Rangers and Principle Rangers.

Professional staff attached to the Division of Specialist Services will be based at Susuwe, Buffalo and Sikeretti respectively. These staff will be responsible for the respective Core Conservation Areas and will work closely with the Wardens and Regional Warden. They will, however, be answerable to the Division of Specialist Services based in Windhoek.

3.1.1 Staff Functions and Responsibilities

At the Conservation Area level, the Warden will be responsible for the overall administration and management of the Parks under his control. He/she will also be responsible for all disciplinary actions and will fulfil the role of co-ordinator between his junior staff and the Regional Warden. As a general rule all staff members will familiarise themselves with the Public Service Act, 1995, the Regulations under the Public Service Act, 1995 and the rules, regulations and policies of the Ministry of Environment and Tourism. Procedure guidelines on personnel administration, law enforcement and responsibilities of senior staff are given in Appendix IV.

With regard to Mangetti Game Camp, the responsibilities of the Officer in Charge have been tailored to suit the particular situation there.

Responsibilities of the Officer-in-Charge, Mangetti Game Camp

Although the Officer-in-Charge is the ultimate level of authority in Mangetti, he/she will be answerable to the Regional Warden in Rundu. In conjunction with the Regional Warden, an Annual Work Programme will be developed and it will be the responsibility of the Officer-in-Charge to ensure that this programme is implemented. The Officer-in-Charge will not be directly responsible for the Support Zone, Infrastructure, Education or Research Programmes. These will be managed by the Regional Warden in conjunction with other senior staff in the North East Parks and the Directorate in Windhoek.

His/her responsibilities shall include:

- Assuming overall responsibility for the day-to-day administration and management of the Game Camp, including all assets.
- Liase with other government agencies, non-government organisations, adjacent communities and the private sector.
- Implement Annual Work Plans prepared in conjunction with the Regional Warden within the approved budgets.
- Report any transgressions by Junior Staff to the Regional Warden and implement any disciplinary recommendations.
- Allocates duties to all Junior Officers (patrol duty, gate duty, routine maintenance etc.).
- Undertakes regular field visits to all sectors of the Game Camp.
- Submits periodic progress reports and liaises regularly with the Regional Warden to ensure that this office is informed regarding progress and problems in the development and management of Mangetti.
- Periodically communicates and co-ordinates with government organisations, non-government organisations, neighbouring communities and the private sector regarding the development and management of Mangetti.
- Overall in charge of co-ordinating and combating illegal activities.
- Responsible for financial accountability through:
  a. Recording all monies receipted in the park
  b. Monthly cash returns to Regional Office
  c. Government recurrent and operational budgets under his/her control
- Carrying out stock takes at the end of each financial year and reporting on the findings to the Regional Warden.
- Ensuring that all tourist facilities are clean and operational.
- Monitor hunting and other tourist activities in Mangetti Game Camp
- Attends to Scout force parades and kit inspection.
- Attends local authority meetings.
- Responds to all problem animal reports and deals with the issues expeditiously.
- Calls regular staff meetings.
- Recording any ecological or other data related to biophysical characteristics of the Game Camp (climate, animal trends, deaths, fire etc.).
- Ensures proper maintenance of equipment and facilities.
- Maintains discipline in the Game Camp
- Carries out any other duties assigned to him/her from time to time by the Regional Warden and Directorate.
Figure 3: Proposed Organisational Structure of the North-East Parks

Notes
- Regional Warden will be located at Rundu
- The Support Zone Co-ordinator will be attached to the Regional Office, but based at Susuwe. He/she will be responsible for co-ordinating all Support Zone activities in the North East Parks Project area.
- Three wardens will be in overall control of the three Conservation Areas
- All staff will be based in the respective parks
*Kwando-Linyanti Conservation Area
4 MANAGEMENT PLAN FOR MANGETTI GAME CAMP

A summary of Mangetti Game Camp's background and inventory is provided in Appendix II. The management of Mangetti Game Camp will conform to eight pre-defined management programmes described in Table 1 in the previous section. The situation analysis and needs assessment has identified various problems and issues that need to be addressed under each management programme (Table 2). These are transformed into specific activities that are to be undertaken by the management authorities (see Table 3) in order to achieve the goals and objectives as outlined in the Vision Statement. The resources to undertake these activities are identified here and summarised in Volume 3: Integrated Development Plan.

4.1 Management Framework

This five-year plan for Mangetti Game Camp is scheduled to start on 1st January 2000. Its purpose is to guide the MET in facilitating the direct involvement of the private sector in the future management of the Game Camp, and to improve the level of income to the Kavango Administration through the development of a future conservancy. By achieving this, the role of the MET will be reduced to that of a caretaker with the responsibility of monitoring the implementation of the management activities and acting as a liaison between the local communities, the Kavango Administration and private sector.

The priorities for action have been identified in the Situation and Needs Analysis, and are expounded in the mission and goals of the Ministry of Environment and Tourism, and the Vision Statement for Mangetti Game Camp.

4.2 Management Programme Activities

The activities identified here are designed to serve the objective of the park, and allocate the responsibilities for the required actions. Budgets to carry out these actions are summarised in Volume 3: Integrated Development Plan for Mangetti Game Camp.
4.2.1 Administration Programme

Introduction

The Administration Programme seeks to ensure that the MET is able to fulfil its mandate to development and management of Mangetti Game Camp on behalf of the Kavango Administration. It also seeks to set in place the protocols for the involvement of the private sector in the long-term management of the area.

Activity 1: Appoint support staff specifically for Mangetti Game Camp and develop an Annual Work Programme.

Current problem and issues

Mangetti Game Camp is currently administered from Rundu, and is staffed by a Ranger, Senior Scout and four labourers. This staff compliment cannot undertake even the most fundamental management activities (patrolling, fence maintenance, fire protection etc.). Furthermore, Mangetti Game Camp has been stocked with endangered species and thus there is the potential threat that these animals could be poached.

Proposed solutions

An Officer-in-Charge with the rank of not less than a Senior Ranger is to be posted to Mangetti. This officer will be supported by a Ranger and a compliment of Scouts, and general labourers.

Implementation

This activity is to be implemented by MET in conjunction with the Regional Warden, including the recruitment of additional staff (Scouts etc.). The staff is to be appointed as soon as possible and the Regional Warden will be responsible for developing an Annual Work Programme for Mangetti.

Resources required

No specific resources are required for this activity. Staff is to be recruited from within MET wherever possible.

Activity 2: Develop and implement protocols to involve the private sector in the future management of Mangetti Game Camp.

Current problem and issues

Under an agreement with Chief Kahenge, the MET is required to develop and manage the Mangetti Game Camp for the benefit of the Kavango Administration. The MET has introduced various species into the area, including black rhino, in an attempt to breed these animals for restocking elsewhere. This programme has not been a success, nor has the Kavango Administration received any significant income from the venture.
It is now the intention of MET to develop Mangetti as a “core conservation area” for a future conservancy. The success of this approach will depend on the level of involvement of the private sector.

**Proposed solutions**

A short-term consultancy is to be commissioned to:

a. Aims and aspirations of the Kavango Administration with regards to Mangetti Game Camp

b. Determine the feasibility of involving the private sector in the future management of the area

c. Develop and implement protocols necessary to involve the private sector in the future management of the Mangetti Game Camp.

The consultancy will also identify the contractual arrangement options, taking into consideration the following:

- The nature and aims of the proposed business
- The responsibilities and obligations of the parties concerned (i.e. private sector, Kavango Administration, local communities)
- The role of MET in these arrangements
- The rights of the parties
- The financial arrangements
- The management arrangements

Assuming that the Kavango Administration agree to this approach, the MET should invite tenders from the private sector for the management of the area. The tender will be awarded on the understanding that the successful lessee will assume responsibility for the basic management of the area in return for operating both consumptive and non-consumptive tourism activities. A long-term lease agreement (say 10 years) that offers sufficient time for the concessionaire to recoup any investments and make an adequate return is to be prepared.

**Implementation**

The implementation of this activity is the responsibility of the MET staff in Windhoek in conjunction with the Kavango Administration and Regional Warden. The Support Zone Co-ordinate will play an active role in co-ordinating the input of the Kavango Administration, and facilitating the negotiations between the MET and private sector. The Regional Warden will be responsible for monitoring the progress of the Mangetti Game Camp once the area has been leased out.

This activity is to be undertaken in conjunction with any initiatives implemented under the Tourism and Visitor Programme (see Section 4.2.4).

**Resources required**
Funds to pay for the short-term consultant
Funds to meet any legal costs
Logistical support
4.2.2 Support Zone Programme

Introduction

The Support Zone Programme is the vehicle by which MET will implement its “Parks and Neighbours” policy (see Appendix VI). This policy involves all levels of staff.

The overall North East Parks Support Programme will be co-ordinated by the Support Zone Co-ordinator attached to the Regional Office.

With regard to Mangetti Game Camp, it is the intention of MET to develop the area as a “Core Conservation Area” of a future Conservancy for the benefit of the local communities. The objective of this programme is therefore to facilitate this activity.

Activity 1: Facilitate the development of Mangetti Game Camp as a “core conservation area” of a future conservancy.

Current problems and issues

The Mangetti Game Camp is being rapidly surrounded by human settlement that is likely to threaten its integrity in the future. Up until now, the Kavango Administration has had very little involvement in the administration, development or direction of Mangetti Game Camp. Furthermore, since its inception in 1987, the Kavango Administration has not received any significant income from the area.

Proposed solution

A rapid appraisal is to be conducted in the area surrounding Mangetti Game Camp to identify the composition various communities and their relationship with Chief Kahenge and the Kavango Administration. This information will be used to identify possible community leaders who could form the nucleus of a Support Group that could become involved in the future development and management of Mangetti Game Camp.

These initiatives are to be undertaken in conjunction the activities under the Administration Programme (Activity 4.2.1.2).

Implementation

This activity will be co-ordinated by the Support Zone Co-ordinator. Where possible, local NGOs should become involved (if these exist). In addition, the Support Zone Co-ordinator will use the services of a community sociologist to undertake the rapid appraisal of the local communities, and to establish the lines of communication between the Regional Office, Mangetti staff and the local community leadership.

Resources required

Funds to undertake rapid appraisal of local communities
Logistic support to attend meetings
Logistic support to undertake PAC
4.2.3 Protection Programme

Introduction

The objective of the Protection Programme is to maintain the integrity of the Mangetti Game Camp in terms of law enforcement and from biophysical effects such as fire. Although the incidence of illegal activity in Mangetti Game Camp appears to be low, this could be a function of lack of information, patrolling effort, vehicles and fuel. However, the fact that rare and endangered species have been introduced into the Game Camp increases the importance of this programme. Furthermore, although there is an extensive road network in the Game Camp, the objective of the Protection Programme is to maintain the integrity of the Mangetti Game Camp in terms of law enforcement and from biophysical effects such as fire. Although the incidence of illegal activity in Mangetti Game Camp appears to be low, this could be a function of lack of information, patrolling effort, vehicles and fuel. However, the fact that rare and endangered species have been introduced into the Game Camp increases the importance of this programme.

Activity 1: Develop a law enforcement programme for the Mangetti Game Camp

Current problems and issues

The area surrounding Mangetti Game Camp is rapidly being settled. This poses a threat to the integrity of the Game Camp, including the real possibility of losing species such as black rhino to poachers. At current staff levels coupled with a lack of vehicles, it is not possible to implement an effective law enforcement programme.

Proposed solutions

A structured law enforcement programme is to be implemented based on the permanent presence of staff who are equipped to undertake regular patrols. The following activities are to be undertaken:

1. The borders are to be patrolled at least twice a week by vehicle and on foot on a random basis. Follow-up will be conducted on all evidence relating to unauthorised incursions of people and/or livestock. Contravention of any rules and regulations will be noted, enforced and reported. Reports of each incident will be filed with the Officer-in-Charge. This opportunity will also be used to monitor the perimeter fence and to report any breakage to the base station.

2. All roads will be patrolled bi-weekly on a random basis. Contravention of any rules and regulations will be noted, enforced and reported. Reports of each incident will be filed with the person in charge of the area.

3. The location of individual rhinos will be monitored on a regular basis (at least every 3 days), and a record of these data maintained by the Officer-in-Charge.

4. Maintain rapid response capabilities and procedures for following up on reported incidents from other law enforcement officers, concessionaires and/or members of the general public.

5. All incident reports will, at a minimum, contain information on the area(s) affected, animals or products involved, rules/regulations contravened, names of individuals involved (if known), arresting officer, recommendations for further actions, etc. The Officer-In-Charge will ensure that a comprehensive file of this information is kept, analysed and
utilised to assess priority areas for patrols, arrest performances of individual officers, trends in illegal activities, etc.

6. Provide a list of regulations to all visitors as they enter the Game Camp and encourage them to report any illegal incidents they may observe.

7. Maintain a reporting structure for incidents. Reports are to be filed, maintained and analysed by the person in charge.

8. The person in charge will maintain liaison with the Namibian Defence Force and the Namibian Police in Rundu.

**Implementation**

This activity will be implemented by the Officer-in-Charge at the station using a compliment of Scouts. Using local knowledge of the area, regular patrols varying from one to five days will be undertaken. Patrol effort will not be restricted to working days, but be spread at random throughout the month, including weekends and public holidays.

**Resources required**

Uniforms, transport, weapons, radios
Patrol equipment (backpacks, water bottles, sleeping bags, tents, mosquito nets etc.)
Logistic support

**Activity 2: Fire Management Programme Developed and Implemented**

**Current problem and issues**

Being surrounded by subsistence farmers exposed Mangetti Game Camp to the threat of wild fires, particularly towards the end of the dry season. The majority of fires originate outside the area, and although there is an extensive road network, no firebreaks are installed to curtail or stop wild fires from entering the Game Camp. Furthermore, staff based in Mangetti is not equipped to deal with wild fires should they occur.

**Proposed solutions**

A basic fire management programme is to be established using the following guidelines:

1. The boundaries are to be cleared to a width of at least 18 metres, and reinforced by burning a narrow strip approximately 100m wide adjacent to the road. These strips will be burnt on alternate sides of the road each year to avoid damage to the tree and shrub layer.

2. Special attention needs to be paid to the eastern border, as this is the direction of the prevailing wind.

If experience shows that fires are able to "jump" this firebreak, the width of the burnt strip is to be increased accordingly.
3. The internal road network is to be used as firebreaks particularly those roads that are at right angles to the prevailing wind \textit{i.e.} Middle Road. The roads are to be cleared to a width of not less than 9 metres.

4. Both internal and external firebreaks are to be cleared annually as early as possible after the end of the rainy season but not later than July. Heavy machinery may be used to establish the firebreaks but should not be used for firebreak maintenance on an annual basis. Hand tools and limited back burning should be used instead.

5. A fire officer will be appointed from existing staff and a fire duty roster for coordinating operations is to be maintained during the main fire season (April to November).

6. All fires inside or adjacent to the Game Camp will be investigated and action taken if necessary (or feasible).

\textit{Implementation}

Contract labour will be employed to clear and install the firebreaks. The boundary of the Game Camp will be cleared first, beginning with the eastern boundary followed by the southern and northern boundaries. The western boundary should only be reinforced if the fuel load is excessive.

The feasibility of contracting out this activity should be investigated.

\textit{Resources required}

Tools for firebreak maintenance (shovels, fire beaters)
Staff and casual labour to be used for clearing, maintenance and fire fighting.
Transport to move staff to scene of wild fires
4.2.4 Tourism and Visitor Programme

Introduction

The purpose of this management programme is to promote tourism use and that Mangetti Game Camp receives the maximum financial benefit from these activities. The opportunities available in Mangetti are limited by the difficult terrain, thick vegetation and paucity of wildlife. Nonetheless, it is possible to develop this limited tourism potential through the implementation of the following activities.

Activity 1: Develop and promote the tourism potential of Mangetti Game Camp

Current problem and issues

Mangetti Game Camp has been managed by MET as a breeding station for various species, including black rhino. Annual hunting rights were sold in 1997 to two bidders for N$190 000 per annum for two years. Apart from this, no other significant income has been generated from this area.

The option to continue offering hunting in this area cannot be assured. The current quotas (4 elephant, 4 eland, 4 leopard and 4 duiker) are not sustainable. Similarly the potential to develop photographic tourism is limited by the very dense vegetation that makes observation of animals difficult. As a result, Mangetti Game Camp is not regarded as a popular tourism destination.

Proposed solutions

The tourism potential of Mangetti Game Camp is to be developed through the direct involvement of the private sector. Both consumptive and non-consumptive tourism is to be encouraged, although the option to continue to offer hunting is to be reviewed particularly where this involves elephant.

With regards to non-consumptive tourism, it is proposed that Mangetti target the passing tourism trade, particularly the “overland” market travelling between Caprivi and the southern parts of the country. This market often uses camping facilities and does not require any significant investment in infrastructure (chalets, dining areas etc.).

Implementation

In conjunction with the Support Zone Co-ordinator, the Regional Warden will commission a short-term consultancy to examine the options to develop tourism in Mangetti and the feasibility of offering this to the private sector. This study will gather background information on the volume of tourism trade that passes Mangetti, and establish whether this trade is prepared to use Mangetti as an overnight camping facility. The study will also undertake a comparative study of the likely pricing structure and determine whether there is a business case to involve the private sector in a venture of this nature.

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2 A quota of 4 elephant per year assumes an overall population of 800 at an offtake level of 0.5%/annum. In 1997, the elephant population was estimated at 17 animals.

3 If both hunting and photographic tourism are to take place in Mangetti, it is recommended that the concession to undertake both activities be given to the same operator. This will avoid any potential conflicts between the hunting and non-hunting fraternity.
This activity is to be implemented in conjunction with the Administrative Programme (see Section 4.2.1) and Support Zone Programme (Section 4.2.2).

**Resources required**

Funding to support short-term consultancy
4.2.5 Maintenance Programme

Introduction

The Maintenance Programme is the vehicle that facilitates the rehabilitation and infrastructure development necessary to manage a protected area. This includes the regular maintenance of boundaries, fire breaks, building and roads. It also includes regular maintenance of all vehicles and associated equipment, including stationary equipment such as water pumps/engines, solar power equipment, radios etc.

An Annual Work Programme is prepared under this programme to carry out the following routine maintenance:

1. Annual border clearance
2. Annual road clearance
3. Installation of annual fire breaks
4. Appropriate waste disposal
5. Inspection and maintenance of tourist facilities
6. Vehicle maintenance
7. Regular maintenance of all pumps and associated equipment
8. Perimeter game fence

In the case of Mangetti, there is the additional need to maintain the periphery game fence.

Activity 1: Maintenance of the bio-physical resources and infrastructure

Current problem and issues

If Mangetti is to encourage private sector investment and generate income for the Kavango Administration, it will need to managed to a high standard. This will require that the area is accessible at all times, it is not regularly burnt out, camp sites are kept clean and tidy and all equipment is in good working order. In addition, the perimeter game fence is not being maintained with the result that animals introduced to the area are able to escape.

Proposed solution

The Officer-In-Charge is to be provided with the necessary financial budget and equipment to undertake routine maintenance. The various tasks should be contracted out to the private sector where feasible (e.g. road clearance, fire break maintenance, water pump maintenance, fence maintenance), and local contract labour is to used wherever possible.

A workshop equipped to undertake minor vehicle repairs and services is to be built. This will include the establishment of a fuel depot capable of storing a minimum of 2 000 litres of fuel. Major repairs to vehicles and plant equipment will be outsourced.

All waste material will be separated into combustible and hard waste. Hard waste is to be removed to an approved waste site while combustible litter will be incinerated.

The procedure guidelines on waste disposal site will consist of:
• Adequate structures for waste collection will be placed at the entrance gate. Structures should be designed to exclude baboons, monkeys and any other potential problem animal.

• Notices will be posted at appropriate places instructing visitors to take their waste out of the area themselves.

• All waste is to be collected at least weekly and more often if necessary.

• The solid waste disposal site is be enclosed with a five-metre mesh fencing to contain any windblown loss of refuse and should be electrified if deemed necessary. The top should also be covered if possible (i.e. to form a cage). Heavy soils should be avoided as these may impede drainage and so pose a health risk during the wet season.

• Where possible, all tin cans etc should be crushed to reduce their size and burnt before being disposed. The contents of the site should be set alight regularly to reduce the volume.

• The disposal site should be at least three metres deep and should not be filled beyond 2.5m. Once full, the site is to be filled and the topsoil compacted.

• All hazardous substances (e.g. engine oil, used batteries, poisons, caustic chemicals etc.) will be collected, stored in leak proof containers and taken to collection centres in the nearest municipality.

**Implementation**

The Officer-In-Charge is responsible for developing the maintenance budget to be included in the annual work programme. Specific tasks will be overseen by junior staff in the field (road maintenance, camp clearance, firebreaks, fence maintenance etc.). The work programme will identify the sub-tasks that need to be undertaken during the course of the year.

**Resources required**

Contract labour

Hire of heavy equipment (grader, lorries etc.)

Tools

Incinerator

Fuel supply

Vehicle repairs and maintenance

Pump/generator repairs and maintenance

Fence maintenance

**Activity 2: Maintenance of game water supplies**

**Current problem and issues**

Since there is no permanent surface water in Mangetti, four boreholes have been drilled and equipped with solar pumping units to supplement the water supply to existing natural pans (see Appendix II). Wildlife in the area has become habituated to these perennial supplies. It is important therefore that the pumping equipment is regularly maintained so that the supply of water remains constant.

**Proposed solution**
The Officer-In-Charge is to be provided with the necessary financial budget and equipment to undertake routine inspections and maintenance of the pumping units. All equipment will be standardised (engine model, pump model, pump base frame, pulley and fanbelt sizes, solar units, solar pumps etc.) to facilitate maintenance and repairs. At least one complete spare pumping unit will be held at the station to replace any major breakdowns at short notice. In addition at least one member of staff is to be trained to carry out minor repairs. All pumping units are to be inspected on a weekly basis during the pumping season.

Water quality is to be improved by constructing concrete troughs at each pan. Water is then to be pumped into the troughs and the overflow led into the natural pan itself.

**Trough design**

Design of the trough must take into consideration the affects of evaporation. The design of the troughs should therefore minimise the surface area of the water. As a guide oblong troughs measuring (at a minimum) 6m x 1.5m x 1.5m should be constructed using reinforced concrete (up to 20cm thick to withstand elephant damage) and set into the ground so that the top is at ground level. The trough should be “V” shaped and include steps to facilitate the escape of small animals that accidentally fall into the trough. The outlet pipe is to be set in concrete to prevent destruction by animals.

**Theft of solar panels**

To prevent the theft of solar panels, it is recommended that the panels be clearly engraved to indicate that they are the property of the Mangetti Game Camp. In addition, the panels are to be enclosed in a steel frame that is firmly concreted in the ground. A heavy fine (equal to double the cost of replacing the panel) is to be imposed on offenders caught in possession of stolen panels, and a reward offered for information leading to the recovery of any stolen panels.

**Implementation**

The Officer-In-Charge will develop the management and maintenance strategy for the game water supply programme. The pump maintenance unit is to undergo basic training in the repair and maintenance of borehole equipment.

The use of reservoirs and ball valves to control water supply is to be avoided. Instead, a pumping regime is to be established that will maintain water levels in the natural pans at a pre-determined level. The pumping regime will be modified according to demand, but may involve pumping continuously for periods of up to 10 days at the height of the dry season. Within reason, natural pans should not be permitted to dry out completely before supplementary pumping is initiated.

**Resources required**

Purchase of spares (pumps, piping, solar units etc.)
Logistic support (vehicles, fuel)
Maintenance budget, including basic tools
Training for pump maintenance unit
Vehicles, fuel
4.2.6 Infrastructure Development Programme

All capital investment requirements relating to infrastructure development (housing, roads, boreholes, etc.) are dealt with under the Infrastructure Development Programme in Volume 3: Integrated Development Plan for Mangetti Game Camp.

The activities will include:

Activity 1: Upgrade of the MET Station and procure necessary equipment (vehicles, radios, firearms, uniforms etc.).

4.2.7 Research and Monitoring Programme

Introduction

This programme will be given a low profile under the first five-year development plan for Mangetti. The area will be included in the annual aerial survey programme for the Kalahari Core Conservation Area. No specific research activities will therefore be undertaken in Mangetti.

4.2.8 Education, Communication and Public Relations Programme

Introduction

The Education, Communication and Public Relations Programme is designed to increase public knowledge and awareness of MET’s protected areas. This situation does not strictly apply in this case, given that Mangetti Game Camp is being managed by MET on behalf of the Kavango Administration. Furthermore, since it is the intention of MET to involve the private sector in the future management and development of Mangetti, it will not be appropriate at this stage to invest heavily in promoting Mangetti Game Camp. This activity is best left to the future concessionaire of the area.

Given this situation, it is proposed that no specific activities are developed under this...
# 5 PLANING MATRIX FOR MANGETTI GAME CAMP

## OVERALL GOAL

Improved conservation status and sustainable economic development of Mangetti Game Camp for the benefit of the Kavango Administration and local communities.

## OVERALL OBJECTIVE

<table>
<thead>
<tr>
<th>INDICATOR</th>
<th>MEANS OF VERIFICATION</th>
<th>ASSUMPTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. To act as a core area of a future conservancy.</td>
<td>Mangetti recognised as a core conservation area by local and regional community leaders.</td>
<td>• Kavango Administration recognises role of local communities</td>
</tr>
<tr>
<td>2. To generate and improve the level of income through the development of consumptive and non-consumptive tourism opportunities.</td>
<td>Benefits to the Kavango Administration.</td>
<td>• Cohesive local community structure in place</td>
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## RESULTS

<table>
<thead>
<tr>
<th>INDICATORS</th>
<th>MEANS OF VERIFICATION</th>
<th>ASSUMPTIONS</th>
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</thead>
<tbody>
<tr>
<td>1. Level of MET involvement decreases</td>
<td>Number of staff permanently resident in Mangetti reduced by 30% after Year 3.</td>
<td>• MET able to successfully involve private sector in future management of Mangetti</td>
</tr>
<tr>
<td>2. Mangetti Game Camp successfully tendered, and managed by private sector concessionaire</td>
<td>Successful agreement concluded with concessionaire.</td>
<td>• Kavango Administration agrees to private sector involvement in the future management of the area.</td>
</tr>
<tr>
<td>3. Incidence of wild fires reduced</td>
<td>Firebreaks in place.</td>
<td>• Staff adequately equipped and trained to deal with wild fires.</td>
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## 1. ADMINISTRATION PROGRAMME ACTIVITIES

<table>
<thead>
<tr>
<th>ACTIVITIES</th>
<th>MEANS</th>
<th>RESOURCES</th>
<th>ASSUMPTIONS</th>
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<tbody>
<tr>
<td>1.1 Appoint support staff specifically for Mangetti Game Camp and develop an Annual Work Programme.</td>
<td>Staff recruited by MET</td>
<td>• Funding to cover costs of recruitment</td>
<td></td>
</tr>
<tr>
<td>1.2 Develop and implement protocols to involve the private sector in the future management of Mangetti Game Camp.</td>
<td>Short term consultancy, Develop appropriate lease agreement, Approved management plan in place.</td>
<td>• Kavango Administration and other stakeholders agree to this approach</td>
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### 2. SUPPORT ZONE PROGRAMME ACTIVITIES

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<th>ACTIVITIES</th>
<th>MEANS</th>
<th>RESOURCES</th>
<th>ASSUMPTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.1 Facilitate the development of Mangetti Game Camp as a “core conservation area” of a future conservancy.</td>
<td>• Undertake rapid appraisal to establish extent of “local community” involvement • Protocols with Support Zone communities developed • Provides guidance on the creation of Conservancies • Liaise with NGOs (if any)</td>
<td>• Transport for local community leaders • Funds to convene workshops • Budget for short term consultancy</td>
<td>• Local and regional communities accept concept • Local Support Group established</td>
</tr>
</tbody>
</table>

### 3. PROTECTION PROGRAMME ACTIVITIES

<table>
<thead>
<tr>
<th>ACTIVITIES</th>
<th>MEANS</th>
<th>RESOURCES</th>
<th>ASSUMPTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1 Develop a law enforcement programme for the Mangetti Game Camp</td>
<td>• Boundary patrols • Road patrols • Rapid response • Reporting structures • Liaison • Training of game scouts</td>
<td>• Game scouts • Patrol equipment • Weapons • Transport</td>
<td>• Equipment and staff available</td>
</tr>
<tr>
<td>3.2 Fire Management Programme developed and implemented</td>
<td>• Prepare annual fire management programme • Prepare boundary fireguards • Prepare internal firebreaks • Investigate and deal with wild fires • Record fire history</td>
<td>• Planning workshop • Contract labour • Transport • Tools</td>
<td>• Contract labour available. • Equipment and fuel available at station level</td>
</tr>
</tbody>
</table>

### 4. TOURISM AND VISITOR PROGRAMME ACTIVITIES

<table>
<thead>
<tr>
<th>ACTIVITIES</th>
<th>MEANS</th>
<th>RESOURCES</th>
<th>ASSUMPTIONS</th>
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</thead>
<tbody>
<tr>
<td>4.1 Develop and promote the tourism potential of Mangetti Game Camp</td>
<td>• Private sector involvement • Consumptive and non-consumptive tourism promoted • Campsites prepared • Game viewing hides</td>
<td>• Short term consultancy • Concessionaire appointed</td>
<td>• Tourist levels increase • Private sector willing to be involved</td>
</tr>
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</table>

### 5. MAINTENANCE PROGRAMME ACTIVITIES

<table>
<thead>
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<th>ACTIVITIES</th>
<th>MEANS</th>
<th>RESOURCES</th>
<th>ASSUMPTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.1 Maintenance of the bio-physical resources and infrastructure</td>
<td>• Financial budget to undertake maintenance • Procurements of equipment (vehicles, tractor, trailer) • Contracting specialist skills(builders, plumbers, electricians, mechanics) • Waste removal • Equipped workshop • Boundary/firebreak clearance • Boundary fence maintained • Inspection of tourist facilities • Basic vehicle maintenance</td>
<td>• Fuel supply • Contract labour • Contract specialist staff • Incinerator • Basic workshop tools</td>
<td>• Local staff permitted to outsource specific tasks • Government meets recurrent budget • Capacity of staff</td>
</tr>
<tr>
<td>5.2 Maintenance of game water supplies.</td>
<td>• Financial budget • Standardised equipment • Spares in stock • Staff training • Construction of water troughs • Hire of contract labour • Tools</td>
<td>• Spares engine/pump/piping • Logistic support • Fuel supply</td>
<td></td>
</tr>
</tbody>
</table>
### 6. INFRASTRUCTURE DEVELOPMENT PROGRAMME ACTIVITIES

<table>
<thead>
<tr>
<th>ACTIVITIES</th>
<th>MEANS</th>
<th>RESOURCES</th>
<th>ASSUMPTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>SEE VOLUME 3: INTEGRATED DEVELOPMENT PLAN FOR THE MANGETTI GAME CAMP FOR DETAILS.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Activities to include:**
- Upgrade of staff accommodation and procurement of equipment

### 7. RESEARCH AND MONITORING PROGRAMME ACTIVITIES

<table>
<thead>
<tr>
<th>ACTIVITIES</th>
<th>MEANS</th>
<th>RESOURCES</th>
<th>ASSUMPTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>No activities planned for this programme under this first 5-year plan</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 8. EDUCATION, COMMUNICATION AND PUBLIC RELATIONS PROGRAMME ACTIVITIES

<table>
<thead>
<tr>
<th>ACTIVITIES</th>
<th>MEANS</th>
<th>RESOURCES</th>
<th>ASSUMPTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>No activities planned for this programme under this first 5-year plan</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
6 RECURRENT AND OPERATIONAL BUDGETS

The recurrent and operational budgets for Mangetti Game Camp have been derived based on the staffing structure of the park and the individual management programmes. These costs are usually met under the recurrent expenditure of government funding. The assumptions used to derive these costs are provided, together with the costs of the various inputs.

The Basic Recurrent Costs consider:

- Staff salaries
- Field allowance
- Equipment (uniforms, camping, radios etc)
- Mileage
- Training

The Operational Costs required to implement the individual management programmes are identified, including the assumptions used to derive the operational budgets.

These data are presented below and summarised in Volume 3: Integrated Development Plan for Mangetti Game Camp to indicate the overall cost of developing and managing the area.

6.1 Recurrent Costs for the Management of Mangetti Game Camp

The assumptions used to develop the recurrent costs for Mangetti Game Camp are:

- Field scouts are expected to be on patrol for up to 25 days per month. Labours may accompany them. A field allowance is to be paid as an incentive to ensure proper patrolling.
- Officers are expected to spend up to 10 days per month in the field. Junior officers are to lead patrols. Both are entitled to the field allowance.
- All staff is to be provided with patrol rations. This is calculated at N$360/man month.
- Uniforms are treated as consumables because they are generally worn out after one year.
- Camping equipment is written off after two years.
- One VHF radio is to be provided for every five scouts, and each officer should have a radio. Radio handsets to be replaced every four years.
- A lump sum is provided for base station and repeater links.
- Every scout and every officer should be armed.
- A lump sum is provided to cover costs for implements for labourers (picks, shovels etc.).
- An allowance of 2 000km per month for each 4 x 4 vehicle will provide for all necessary travel within the area and allow one trip to a major centre per month.
- The provision for the tractor assumes it will be used on average 175 hours per month.
- The mileage provision for reporting to the Regional and Head Office will be shared amongst senior officers, including travelling for training.
- A lump sum is allocated for vehicle repairs/maintenance.
- The cost/kilometre includes depreciation.
- The running cost for diesel-powered borehole pumps and generators assumes that this equipment will operate 6 hours per day.
The headquarters will receive a bulk fuel supply (up to 10,000 litres). Frequency and volume of supply will depend on the number of vehicles on station.

A lump sum provision is provided for all routine house maintenance (painting, plumbing, electrical repairs, etc.).

Provision is made for all scouts to undergo 14 days training either in service or elsewhere in Namibia.

Provision is made for senior officers to undergo 28 days training. This could involve travel to outside of Namibia but within the southern African region.

### Maintenance of firebreaks, road construction and rehabilitation

The total length of road in Mangetti Game Camp will not be increased over the next five years. The boundary cutlines will double as the major external firebreak and reinforced with a 100m strip burnt on alternate sides of the boundary each year.

- All roads will be maintained to a standard which most tourists are prepared to endure in a 4x4 vehicle, and which allow staff to carry out their daily duties. Major mechanical equipment inputs are not envisaged, nor construction of major earth works, culverts, bridges, etc.
- Roads will be maintained by a contract labour gang using normal implements (pick, shovel, grass cutter) and aided by a tractor/trailer/tow grader/mower.
- Firebreaks will be cleared sufficiently to allow easy travel by 4x4 vehicle.
- The cost of road maintenance is based on the assumption that a labour gang of 15 people can clear one kilometre of road in one day. The cost for a year of operation is as follows:

<table>
<thead>
<tr>
<th>Inputs</th>
<th>Annual Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wages: 15 labourers @ N$200/month</td>
<td>N$ 36,000</td>
</tr>
<tr>
<td>Field allowance: N$6/day x 15 labourers x 365</td>
<td>N$ 32,850</td>
</tr>
<tr>
<td>Ration allowance: N$6/day x 15 labourers x 365</td>
<td>N$ 32,850</td>
</tr>
<tr>
<td>Implements: 15 labourers @ N$200 each</td>
<td>N$  3,000</td>
</tr>
<tr>
<td>Tentage: 3 x 5-man tents @ N$3,000 each</td>
<td>N$  9,000</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>N$113,700</strong></td>
</tr>
<tr>
<td><strong>COST/KM/YEAR</strong></td>
<td><strong>N$311</strong></td>
</tr>
<tr>
<td><strong>ADJUSTED FOR 15% DOWN TIME</strong></td>
<td><strong>N$360</strong></td>
</tr>
</tbody>
</table>

- The cost of installing firebreaks assumes that a contract labour gang can prepare 10km of roads/firebreaks per day. The cost/km is therefore calculated at N$36/km.
- Mileage is provided to transport labourers, and for use of tractor.
- Provision is made for the hire of a grader or bulldozer for those portions of the road/firebreak which are beyond the capacity of hand labour.

A summary of the basic recurrent costs and operational costs per management programme are provided in Table 4 and 5. The basic recurrent costs are approximately N$550,000 per year with staff salaries and transport costs forming the bulk of these expenses. The overall operational cost to implement the management programmes is estimated at approximately N$1 million over the five-year period. Approximately 40% of these costs will be incurred in the first year. Thereafter the costs are estimated to be approximately $150,000/year.
This translates to an overall cost/km$^2$ of approximately N$1\ 330$ to N$1\ 915$/km$^2$ (or US$222 – US$319$). 

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1 Assumes an exchange rate of US$1 : N$6.00
Insert Spreadsheet Table 4 and 5 here. These tables are found in the Excel File: Mangetti idp.xls and labelled “Recurrent” and “Operational”
APPENDIX I

NORTH-EAST PARKS PROJECT

MINISTRY OF ENVIRONMENT AND TOURISM

MISSION STATEMENT AND CONSERVATION GOALS
Ministry of Environment and Tourism - Mission Statement and Conservation Goals

The vision statement for Mangetti Game Camp is tempered by the mission and conservation goals of the Ministry of Environment and Tourism. These state:

It is the mission of the Ministry of Environment and Tourism...

“To maintain and rehabilitate essential ecological processes and life support systems, to conserve biological diversity and to ensure that the utilisation of natural resources is sustainable for the benefit of all Namibians, both present and future, as well as for the international community.”

— Mission Statement and Mandate of the Ministry of Environment and Tourism, May 1994 —

Further to this mission...

“it is the policy of the Ministry of Environment and Tourism to ensure adequate protection of all species and subspecies, of ecosystems and of natural life support processes, by means of:

1. inventories, monitoring and appropriate research,
2. education and extension,
3. managing, and assisting and advising in the management of land and natural resources in Namibia,
4. legislation,
5. co-operation with local, national, regional and international organisations working for biotic diversity and habitat protection.”

— Conservation of Biotic Diversity and Habitat Protection, May 1994 —

Additionally, the Government of the Republic of Namibia recognises “the key role that protected areas play in the conservation of ecosystems, essential ecological processes and biological diversity. The Government also recognises that these are the primary objectives for the establishment and management of protected areas,” and within this context it is the policy of the Government to:

“Manage protected areas in ways which are sensitive to the needs and aspirations of people whose lives are impacted or affected by these areas, giving particular attention to promoting their socio-economic development, promoting communication and consultation and providing preferential opportunities in order to meet obligations for the establishment of mutually compatible land uses on an equitable basis particularly with regard to people removed from their land or denied access to key resources through the establishment of a protected area.”

— Parks and Neighbours: A policy for linking Namibian protected areas with neighbouring people and sharing protected areas with resident communities, January 1998 —

With the promulgation of this mission and clarifying policies the Government has defined the criteria for protected area management in Namibia and set the stage for the
establishment and prioritisation of the goals for the development and management of the North-East Parks...

Through the promulgation of its mission and policies the government has established that the **primary purpose of the North-East Parks is to act as conservation areas.** Secondary is the recognition that these parks can also serve to enhance local economies and increase the quality of life in neighbouring communities. In addition, they are a tourism product, playing a role in the national economy and serving as a window through which the world views Namibia’s conservation ethic (Table 1).

**Table 1: Primary and secondary conservation goals for Namibian National Parks.**

<table>
<thead>
<tr>
<th>Primary Goals</th>
<th>Secondary Goals</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. To maintain and, where necessary, rehabilitate areas or features essential to the functioning of ecological processes.</td>
<td>1. To provide opportunities that increase awareness, appreciation, positive relations, economic benefits and compatible land uses in neighbouring communities.</td>
</tr>
<tr>
<td>2. To conserve biological diversity.</td>
<td>2. To facilitate, promote, develop, administer, co-ordinate and/or manage a range of opportunities to enhance visitor experiences with Namibia’s natural environments and optimise economic returns from these resources.</td>
</tr>
<tr>
<td>3. To conserve and manage renewable natural resources for sustainable production.</td>
<td>3. To provide Namibian citizens the opportunity for aesthetic, educational and recreational experiences at affordable cost.</td>
</tr>
</tbody>
</table>
APPENDIX II

NORTH-EAST PARKS PROJECT

BACKGROUND AND INVENTORY

MANGETTI GAME CAMP
Legal Framework

Control of Mangetti Game Camp was transferred to the Directorate of Nature Conservation and Recreational Resorts from the Administration for Kavangos on 1 September 1987. Chief Kahenge⁴, through the Kwangali Tribal Authority, requested that the area be developed for the benefit of the tribe, expecting that all funds generated from hunting in the area would be returned to the Kavango Administration.

The Mangetti Game Camp is approximately 480 km² located to the east of the main Rundu-Grootfontein Highway and to the north of the “red line⁵”. The entire area is surrounded by a game fence.

The Mangetti Game camp is bordered to the south by commercial farms. Adjacent land on the west is held under a PTO by the parastatal Amalgamated Commercial Holdings (Pty) Ltd. (AMCOM). Land to the east and north is un-assigned communal land on which traditional settlement is allowed (Figure 1).

Figure 1: Mangetti Game Camp and surrounding areas

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⁴ Chief Kahenge’s khuta is on the Okavango river upstream from Rundu
⁵ The “red line” is a veterinary cordon fence effectively separating commercial farmland from the communal areas
Environmental Baseline

Topography and Hydrology

The major topographical feature of the Mangetti Game Camp is a series of northwest/southeast aligned ancient dunes.

There is no permanent surface water in the area. However, four boreholes have been drilled to supplement existing pans during the dry season (Figure 2).

**Figure 2: Artificially supplemented pans in Mangetti Game Camp**

Vegetation

The vegetation of Mangetti Game Camp can be broadly described as *Baikiea-Pterocarpus-Burkea-Combretum* dry woodland. The area is characterised by north-east/south-west running dunes and the vegetation on the dune crests is markedly different to that in the valleys (Table 1; Figure 3).
Table 1: Description of vegetation of Mangetti Game Camp

<table>
<thead>
<tr>
<th>VEGETATION TYPE</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dune Crests</td>
<td>Kalahari woodland on sand. Common tree species include Burkea africana, Combretum collinum, Terminalia sericea, Baikiea plurijuga, Lochocarpus nelsii and Commiphora species. The shrub layer consists mainly of Combretum celastroides, Ochna pulcra, Baphia obovata, Bauhinia mucrantha, Croton gratissimus, Dichrostachys cinerea and Grewia, Diospyros and Maytenus species.</td>
</tr>
</tbody>
</table>
Dune Valleys | Mixed Acacia savannah. Common trees include Acacia erioloba, Boscia albitrunca, Ziziphus mucronata, Peltophorum africanum and Acacia mellifera. The shrub layer comprises Dichrostachys cinerea, Bauhinia mucrantha, Bauhinia petersiana, Lochocarpus nelsii, Combretum hereoense and Grewia species. Grasses common in these valleys are Schmidtia pappohoroides, Antheophora pubsesans, Digitaria polevansii, Digitaria eriantha, Brachiaria nigropeda, Stipagnostis uruplmis and Eragrostis pallens.

Fauna

The stated objective of the Mangetti Game Camp when the MET assumed responsibility for it was to ensure the survival of rare and endangered game species in Namibia. In keeping with this objective the MET has been moving animals in and out of the area for the last 10 years.

A recent (1997) population survey for the Mangetti Game Camp documented the presence of both black and white rhino. Records show that at least seven rhino have been relocated here from Etosha National Park. A number of other species, including sable, have been relocated here but population survey samples are too small to allow conclusions as to the success of these relocations (Table 2).

Elephant are found in the area and have been seen during all surveys. However, local MET staff believe that elephant are not resident, but migrate in and out on an east-west axis. Periodic elephant damage to the eastern boundary fence supports this view.

Table 2: Wildlife population estimates for the Mangetti Game Camp (MET, 1997)

<table>
<thead>
<tr>
<th>SPECIES</th>
<th>1995</th>
<th>1997</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elephant</td>
<td>19</td>
<td>17</td>
</tr>
<tr>
<td>Black Rhino</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td>White Rhino</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>Eland</td>
<td>398</td>
<td>478</td>
</tr>
<tr>
<td>Sable</td>
<td>23</td>
<td>9</td>
</tr>
<tr>
<td>Hartebeest</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td>Kudu</td>
<td>7</td>
<td>1</td>
</tr>
<tr>
<td>Warthog</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>Duiker</td>
<td>36</td>
<td>15</td>
</tr>
<tr>
<td>Steenbok</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>Wildebeest</td>
<td>46</td>
<td>23</td>
</tr>
<tr>
<td>Oryx</td>
<td>13</td>
<td>16</td>
</tr>
<tr>
<td>Giraffe</td>
<td>20</td>
<td>8</td>
</tr>
</tbody>
</table>

Faunal lists are not included with this document as comprehensive listings applicable to the entire North-East Region were prepared for the proposed Okavango National Park (Management and Development Plans for the Okavango National Park held by the MET).
Socio-Economic Baseline

The only settlements close to the Mangetti Game Camp are several villages along the main Grootfontein-Rundu Highway populated mainly by Humbukushu people. MET personnel in Rundu believe this settlement is illegal because it is in a designated quarantine area. Rain-fed crop production is the main activity but some people keep cattle and goats.

There are a number of settlements close to the Omataka Omurumba east of Mangetti Game Camp. The Government has recently drilled boreholes in the area and settlement can be expected to follow this water development.

A cattle ranch to the west of the Mangetti Game Camp is run by AMCOM who have expressed interest in turning the eastern part of their area over to wildlife. Discussions have been entered into with MET regarding the possibility of establishing a conservancy in conjunction with Mangetti Game Camp. Possible options to facilitate this are to move the red line veterinary cordon fence (currently the southern boundary of Mangetti Game Camp) to the north of the Mangetti/AMCOM complex. This would be coupled with the relocation of people settled along the road.

Administration and Infrastructure

MET’s Mangetti Station is located in the north west corner of the area. Accommodation consists of five Bavaria huts and three Buffalo huts. One of the Bavaria huts is used as an office.

There are four boreholes in the area (Figure 2), one of which, Olifantsklip, was not operational at the time of this writing. A boma (suitable for rhino) is located at the Boma Drink borehole.

Staffing

Six staff are assigned to Mangetti Station; one ranger, one senior scout and four labourers. The area is administered from the regional headquarters in Rundu.

Monitoring and Enforcement

The station has one 4X4 vehicle which is used to deploy patrols and to travel to and from Rundu.

Communications

There are currently 216.5 km of road within Mangetti Game Camp (Figure 4). Road segments have been named and categorised in two classes for management purposes (Table 3):

Class 1  **Prime Game Viewing Road** – roads located in wildlife concentration areas and suitable for tourist traffic.
Class 2 Management/Transit Road – roads located outside wildlife concentration areas and/or unsuitable for tourist traffic.

Figure 4: Roads in the Mangetti Game Camp
There are 129 km of Class 1 (Prime Game Viewing Road) within the Mangetti Game Camp. Only the 87.5 km of cutline are Class 2 (Management/Transit Road).

Table 3: Roads in the Mangetti Game Camp.

<table>
<thead>
<tr>
<th>NAME</th>
<th>DESCRIPTION</th>
<th>KM</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Class 1 (Tourist) Roads</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Olifantsklip Road</td>
<td>Between the MET station and the Eastern Cutline</td>
<td>11.0</td>
</tr>
<tr>
<td>Middle Road</td>
<td>Between the MET station and the Southern Cutline</td>
<td>23.0</td>
</tr>
<tr>
<td>Centre Road 1</td>
<td>Northern track between the Eastern and Western Cutlines</td>
<td>14.0</td>
</tr>
<tr>
<td>Centre Road 2</td>
<td>Centre track between the Eastern and Western Cutlines</td>
<td>16.0</td>
</tr>
<tr>
<td>Centre Road 3</td>
<td>Southern track between the Eastern and Western Cutlines</td>
<td>18.0</td>
</tr>
<tr>
<td>South Road 1</td>
<td>Northern road between the Western Cutline and West Road</td>
<td>5.0</td>
</tr>
<tr>
<td>South Road 2</td>
<td>Southern road between the Western Cutline and West Road</td>
<td>7.5</td>
</tr>
<tr>
<td>West Road</td>
<td>Road between Centre Road 3 and the Southern Cutline</td>
<td>12.0</td>
</tr>
<tr>
<td>Zebra Road</td>
<td>Road between Boma Road and Middle Road</td>
<td>5.5</td>
</tr>
<tr>
<td>Boma Road</td>
<td>Road between West Road and the Eastern Cutline</td>
<td>17.0</td>
</tr>
<tr>
<td><strong>Class 2 (Management) Roads</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>North Cutline</td>
<td>Northern boundary of the park</td>
<td>7.0</td>
</tr>
<tr>
<td>West Cutline</td>
<td>Western boundary of the park</td>
<td>30.0</td>
</tr>
<tr>
<td>East Cutline</td>
<td>Eastern boundary of the park</td>
<td>24.5</td>
</tr>
<tr>
<td>South Cutline</td>
<td>Southern boundary of the cutline</td>
<td>26.0</td>
</tr>
</tbody>
</table>

**Tourism**

Hunting is the only form of tourism currently taking place in this area.

**Tourism Potential**

Photographic tourism potential is limited as the vegetation is very dense and observation of animals difficult. However, proximity to the main Grootfontein-Rundu Highway brings a number of potential visitors by the area. With proper development and management it could become a tourist attraction.

**Hunting**

The annual hunting rights to the Mangetti Game Camp were sold at the 1997 auctions in Windhoek to two bidders for NS 190 000 per annum. Quotas for 1998 and 1999 are 4 elephant, 4 eland, 4 leopard and 4 duiker each year split between the two operators.
APPENDIX III

NORTH-EAST PARKS PROJECT

CONCEPTS OF PARK ZONATION
**GENERAL CONCEPTS OF ZONATION**

The purpose of subdividing a protected area into "zones" is to facilitate the management objectives of the park. It also defines the type of activities that can or cannot take place in the "zone". Zonation is therefore a double process:

a) A park is zoned for management purposes. This could apply to factors such as fire management, removal of animals, protection of sensitive habitats *etc.* These zones would therefore define what management actions are required to achieve the objectives. For example, an objective may be to prevent wild fires from entering a particular zone.

b) A park is zoned for visitor use. This implies that the park management will allow access to different zones of the protected area based on set criteria. For example, a zone may feature a popular tourist attraction, and will be managed to accommodate large numbers of tourists. Alternatively, the park management may not want large numbers of tourists to enter a particular area thus conserving its "wilderness" or "wild" ambience. Access to such areas will therefore be limited to relatively few tourists.

The net result of the above approach is that two "zonation maps" are produced which overlay each other to define the various zones. These zones are then used to develop the management strategies of the park. The number of zones identified will depend on the complexities of the protected area. Ideally, a number of variables are used to determine the characteristics of the zone. These would include:

- Rating of the area as a tourist attraction
- Habitat sensitivity
- Dispersal capacity of the area
- Tourist behaviour
- Location of support staff
- Management capability of staff
- Financial status of management authority
- Visitor satisfaction

The present degree of management capability and data gathering sophistication that exists in the MET in the North East Parks does not warrant a complex zonation process. For this reason, only three "zonation" categories were identified under the Phase I planning process. These appear in the Okavango National Park Management Plan as:

- Special Protection Zone
- Natural Zone
- Development Zone

With time, and as the capacity of the North East Parks management increases, it will be possible to define additional management zones that meet the objectives of the protected areas.
For the purpose of this planning process, the zonation criteria will follow that adopted under Phase I. The description, restrictions, goals and objectives of the three categories are provided in the following table.
### Description of the three zonation categories used in the planning process

<table>
<thead>
<tr>
<th>ZONE</th>
<th>DESCRIPTION</th>
<th>RESTRICTIONS</th>
<th>GOALS AND OBJECTIVES</th>
</tr>
</thead>
</table>
| Special Protection Zone   | This zone comprises the unique, valuable and sensitive features that are either of high ecological sensitivity and/or high conservation value. Location is independent of distance from the park boundaries and permanent constructions. No infrastructural development may take place within these zones. Restrictions relating to these areas may be permanent, seasonal, intermittent or incidental. Access to this zone is severely restricted. | • The areas may only be accessed by MET staff for management purposes, for purposes of research and monitoring (registered projects only) and for educational purposes subject to the approval of the Regional Head.  
• Outside research scientists may only access these areas if they are working on approved research and monitoring programmes.  
• No vehicle access may take place. Access to riverine habitats by boat is permissible. Only essential management of these areas is envisaged and the priority for park staff would be the restriction of access and the collection of monitoring data.  
• Management for the sake of tourism is not permissible and controlled tourism access may be permitted but should be minimal. | • Maintain essential ecological processes and life support systems, conserve biodiversity and genetic diversity;  
• Maintain and preserve areas or features essential for ecological processes intrinsic to the functioning of the parks;  
• Protect unique habitats, species, aquatic systems and ecological processes associated with the parks; and  
• Provide opportunities for research and monitoring to further understand processes within the parks. |
<table>
<thead>
<tr>
<th>ZONE</th>
<th>DESCRIPTION</th>
<th>RESTRICTIONS</th>
<th>GOALS AND OBJECTIVES</th>
</tr>
</thead>
</table>
| Natural Zone| This zone is characterised by being essentially unmodified, except through natural processes. No infrastructure development will be allowed, except for limited management and tourism facilities and access roads. Any infrastructural developments in this area will be subject to the EA procedure (at an appropriate level) as laid out in the National Policy on Environmental Assessment. | • No camps/lodges permitted  
• Off-road driving not permitted  
• Walking not permitted unless accompanied by a registered guide | • Conserve a representative sample of the bioclimatic region in a state relatively unaltered by man and to use the area as a benchmark;  
• Provide a tourism environment which is less restrictive and which allows for the broadest possible base of potential users; and  
• Generate economic benefits and opportunities, while not compromising the conservation and ecological objectives of the North-East Parks. |
<table>
<thead>
<tr>
<th>ZONE</th>
<th>DESCRIPTION</th>
<th>RESTRICTIONS</th>
<th>GOALS AND OBJECTIVES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Development Zone</td>
<td>This zone comprises all areas of infrastructure development, roads, staff accommodation, fire-breaks, entrance control facilities, airfields, tourism facilities, private camps and management facilities (e.g. game-capture holding pens). All future developments within this zone are required to be approved by the Planning Committee after submission of a full motivation. An EA (as laid out in the National policy on EA) may have to be done before such a development takes place. Large areas cannot be classified as Development Zones as this would compromise the primary conservation and ecological objectives of the parks.</td>
<td>Permission required to live in this zone</td>
<td>• Generate economic benefits and opportunities, while not compromising the conservation and ecological objectives of the parks;&lt;br&gt;• Provide an environment in which innovative tourism opportunities and tourism experiences can be optimised through a combination of activities;&lt;br&gt;• Provide the infrastructural framework for research and monitoring to take place in an effective and efficient manner, such that processes within the park are better understood; and&lt;br&gt;• Provide an enabling management infrastructure through which the park staff will be able to carry out their duties.</td>
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APPENDIX IV

NORTH-EAST PARKS PROJECT

PROCEDURE GUIDELINES ON PERSONNEL ADMINISTRATION
Procedure Guidelines on Personnel Administration

All staff engaged by MET and stationed in a National Park are expected to maintain the highest standard of conduct, efficiency and personal behaviour. They are also expected to be courteous, helpful and attentive in their dealings with the general public.

The following guidelines are provided on personnel administration

a  **Conduct of staff members:**

No staff member shall perform or engage himself or herself to perform remunerative work at any time outside his or her employment with the government unless granted permission to do so by the permanent secretary.

b  **Dress code:**

It is the responsibility of supervisors to ensure that all staff members who are required to wear a uniform on duty do so, and that they comply with instructions issued in that respect.

c  **Acceptance of gifts or benefits:**

A staff member shall not accept any gift or benefit, pecuniary or otherwise, offered to him or her by any person by reason of him or her occupying a particular office or post in the MET.

d  **Use of government vehicles:**

No staff member shall drive a government vehicle unless he or she is in possession of a valid driver’s license, and has permission from a competent staff member to make the journey concerned. A staff member who has been granted permission to drive a government vehicle shall not:

- Deviate from the authorised route,
- Take the vehicle to his or her place of residence unless he or she has permission in writing from the appropriate authority to do so,
- While undertaking any journey with such vehicle;
- allow any unauthorised person to travel; or
- convey any unauthorised goods.
- Use such vehicle for any purpose other than official purposes,
- Drive such vehicle while under the influence of intoxicating liquor or stupefying drugs;
- Commence a journey until the appropriate entry has been made in the log book of such vehicle.

e  **Official hours of attendance:**

The Warden is responsible for the observance by staff members under his or her supervision of the official hours of attendance as established. A staff member shall at all
times during his or her official hours of attendance be present for duty at his or her place of work and give his or her full attention to the duties entrusted to him or her.

A staff member shall not, without the consent of his or her supervisor, be absent from his or her place of work during his or her official hours of attendance.

**f  Duties of a supervisor:**

It is the duty of every supervisor to supervise his or her subordinates and to take appropriate action in every case of breach of any of the provisions of the Public Service Act, 1995, the Regulations under the Public Service Act, 1995 and/or staff rules as adopted by MET. A supervisor who fails to comply with this duty shall be deemed to have been negligent in the performance of his or her duties.

**g  Misconduct:**

Any staff member shall be guilty of misconduct if he or she;

- Disobeys, disregards or makes wilful default in carrying out any lawful order given to him or her by any person authorised to do so, or by word or conduct shows insubordination,
- Is negligent or indolent in the performance of his or her duties,
- Operates or undertakes, without the approval of the Prime Minister, any private agency or private work in regard to any matter directly or indirectly related to the performance of his or her official functions or any matter directly or indirectly related to the field of operations of the office, ministry or agency in which he or she is employed or fails to declare that any member of his or her household operates or undertakes any such private agency or private work,
- Uses his or her position in the Public Service or utilises any property of the State to promote or prejudice the interests of any political party,
- Uses his or her position in the Public Service or utilises any property of the State to promote or prejudice the interests of any private business or private agency, except in the performance of his or her official duties,
- Conducts himself or herself in a disgraceful, improper or unbecoming manner causing embarrassment to the MET or to the Public Service or, while on duty, is grossly discourteous to any person,
- Uses intoxicating liquor excessively or uses stupefying drugs without a prescription of a medical practitioner resulting in his or her incapacity to perform his or her duties efficiently,
- Uses or is under the influence of intoxicating liquor or stupefying drugs during the prescribed official hours of attendance without a prescription of a medical practitioner,
- Accepts or demands in respect of the performance of or the failure to perform his or her duties any commission, fee or reward, pecuniary of otherwise, to which he or she is not entitled by virtue of his or her office, or fails to report forthwith to the permanent secretary the offer of any such commission, fee or reward,
- Misappropriates or improperly uses any property of the State,
- Absents himself or herself from his or her office or official duties without leave or valid cause,
- With a view to obtain any privilege or advantage in relation to his or her official position or his or her duties, or to cause prejudice or injury to the government or any office, ministry or agency or any member of the Public Service, makes a false or incorrect statement, knowing it to be false or incorrect,

- Contravenes or fails to comply with any provision relating to his or her employment or conditions of service, or contravenes of fails to comply with any provision of a prescribed code of conduct.
Procedure Guidelines on Law Enforcement

Parks staff will ensure the provisions of Nature Conservation Ordinance 4 of 1975 and all subsequent amendments as well as all Ministry of Environment and Tourism rules and regulations are effectively applied. Toward this end:

a  With regard to control of illegal activities by tourists:

• Provide a list of all the most applicable (and contravened) park regulations to all visitors as they enter the park. Point these regulations out to visitors on handing them their park entry permit, guidebook and map and encourage them to report illegal incidents they observe.
• Maintain a reporting structure for incidents. Reports are to be filed, maintained and analysed by the Warden.

b  With regard to contractual contravention’s by concessionaires:

• Exclusions from any regulations and sections of the Nature Conservation Ordinance 4 of 1975 and subsequent amendments must clearly and unambiguously be stated in any concessionary agreement or contract.
• Contravention of park rules and regulations will not be tolerated. Three written warnings (together with the appropriate fine) for minor contravention’s, such as driving off designated roads, are to be given before going to review of a concessionaire’s agreement. Major contravention’s, such as illegal hunting in a park, will result in immediate loss of concession.

c  With regard to poaching and other illegal activities:

• All park borders are to be patrolled at least once weekly on a random basis. Follow-up will be conducted on all evidence relating to unauthorised incursions of people and/or livestock into the park. Contravention’s of any and all park rules and regulations will be noted, enforced and reported. Reports of each incident will be filed with the Warden.
• All park roads will be patrolled at least twice weekly on a random basis. Contravention’s to park rules and regulations will be noted, enforced and reported. Reports of each incident will be filed with the Warden.
• Maintain rapid response capabilities and procedures for following up on reported incidents from other law enforcement officers, concessionaires and/or members of the general public.
• All incident reports will, at a minimum, contain information on the area(s) affected, animals or products involved, rules/regulations contravened, names and addresses of individuals involved (if known), arresting officer, recommendations for further actions, etc. The Warden will ensure a comprehensive file of this information is kept, analysed and utilised to assess priority areas for patrols, arrest performances of individual officers, trends in illegal activities, etc.

d  With regard to cross-border contravention’s:
• The Warden will maintain liaison with the Namibian Defence Force and the Namibian Police and utilise their capabilities to deal with cross-border violations and co-operative patrolling of the borders with Botswana and/or Angola.
• The Warden will maintain liaison with Botswana and/or Angola authorities in matters relating to the prosecution of cross-border violations.
Responsibilities of the Warden

The Warden is the ultimate level of authority in the Park and thus assumes overall responsibility for the development and management of all management programmes with the exception of the Support Zone Programme and Research Programme. He/she will however represent the Kalahari Conservation Area on all park/support zone related matters. His/her responsibilities shall include:

- Assuming overall responsibility for the administration and management of the Park, including all assets.
- Fulfiling the role of co-ordinator between the Directorate, Regional Warden and all staff in the Park.
- Liase with other government agencies, non-government organisations, adjacent communities and the private sector.
- Co-ordinate the preparation of comprehensive staffing plans.
- Determine and recommend to the Regional Warden the in-service and other training requirements of staff.
- Prepare and implement Annual Work Plans, schedules and budgets following the approval of the Regional Warden.
- Prepare Staff Establishment list in accordance with the Management Plans for approval of the Regional Warden and Directorate.
- With permission of the Regional Warden recruits and dismisses Junior Staff in his/her Park.
- Allocates duties to all Junior Officers (patrol duty, gate duty, routine maintenance etc.).
- Ensures that all infrastructure development within the park is in accordance with Namibian’s laws, policies, regulations and health and safety standards.
- Visits all Parks under his/her control at least once a month, including visits to the field.
- Submits periodic progress reports and liaises regularly with the Regional Warden to ensure that this office is informed regarding progress and problems in the development and management of the parks.
- Periodically communicates and co-ordinates with government organisations, non-government organisations, neighbouring communities and the private sector regarding the development and management of the parks.
- Overall in charge of co-ordinating and combating illegal activities.
- Responsible for financial accountability through:
  a. Recording all monies receipted in the park
  b. Monthly cash returns to Regional Office
  c. Government recurrent and operational budgets under his/her control

- Carrying out stock takes at the end of each financial year and reporting on the findings to the Regional Warden.
- Ensuring that all tourist facilities are clean and operational.
- Attends to Scout force, parades and kit inspection.
- Actively involving local Support Group in Park Management wherever possible.
- Attends local authority meetings.
- Responds to all problem animal reports and deals with the issues expeditiously.
- Preparing contracts, terms of reference, reports and briefings as required by the exigencies of the position.
• Procuring all necessary materials required to develop and manage the park (fuel, building material, hire or equipment etc.).
• Carrying out regular spot-checks on how work plans are being implemented.
• Providing the Regional Warden with confidential reports on all his/her staff.
• Calling regular staff meetings.
• Recording any ecological or other data related to biophysical characteristics of the Park (climate, river flow, animal trends, deaths, fire etc.).
• Ensures proper maintenance of equipment and facilities.
• Maintains discipline in the Park
• Carries out any other duties assigned to him/her from time to time by the Regional Warden and Directorate.

Responsibilities of the Senior Conservation Officer

The Senior Conservation Officer will hold the same rank as the Warden and will be responsible for the staff under his control. He/she will work closely with the Warden to ensure the smooth running of the administration, development and management of the park. He/she will assume overall responsibility for the Research and Monitoring Programme for the Kalahari Conservation Area. His/her responsibilities shall include:

• Develop a comprehensive plan for the management and staffing of the Research and Monitoring Programme for the Kalahari Conservation Area.
• Prepare and implements budget and work plans following approval of the Directorate of Specialist Services.
• Supervise research and monitoring activities.
• Compile, process and interpret baseline data.
• Assist in the production of information materials for the Education, Communication and Public Relations programme.
• Assist the Support Zone Co-ordinator in the development of Conservancies.
• Prepare contracts, terms of reference and agreements with scientists and research institutions.
• Organise and supervise the research and monitoring functions within the individual parks.
• Ensure that clearly defined and appropriate duties are described in individual job descriptions for all research and monitoring staff.
• Determine and recommend to the Regional Warden and Directorate of Specialist Services the in-service training requirements for research and monitoring staff.
• Appraise the level of performance of research and monitoring staff, and make recommendations to the Regional Warden and Directorate of Specialist Services regarding staff transfers, discipline, promotion and general welfare.
• Formulates and proposes to the Directorate of Specialist Services and Regional Warden, through a mechanism of annual submission of a budget and work plan, specific tasks and activities for research and monitoring that are consistent with the 5-year Management Plan.
• Oversees the implementation of research projects and work plans, and provides guidance to all ongoing research and monitoring within the Kalahari Conservation Area.
• Evaluates and recommends to the Division of Specialist Services the relevance of proposed independent research projects as they relate to the Management Plans.
• Determines and directs the appropriate timing and methods employed to assess the
abundance and distribution of natural resources in the individual parks and adjacent
Support Zones, using such information to determine and recommend to the Regional
Warden appropriate ways of managing and utilising these resources.
• Monitors the efficacy of the tourism industry in the area, and compiles a data base of
occupancy, rates and economics of the various operations.
• Assists the Regional Warden and Directorate of Specialist Services in vetting
applications for recruitment of research and monitoring staff.
• Compiles and submits such reports and briefings as may be required by the Regional
Warden and Directorate of Specialist Services.
• Undertakes any other related duties as assigned by the Regional Warden and/or
Directorate of Specialist Services.

Responsibilities of the Support Zone Co-ordinator

The principle functions and responsibilities of this position are to assume overall
responsibility for all activities related to the Support Zone Programme in the North East
Parks. He/she will also provide input into the Education, Communication and Public
Relations programme to ensure that information regarding the development and
management of Conservancies is accurately reflected. His/her specific responsibilities will
include:

• Develop a 5-year comprehensive plan for the management and staffing of the Support
Zone Programme that is consistent with the Management Plans for the North East
Parks.
• Develop and implement annual work plans and operational budgets in accordance with
the Integrated Development Plans.
• Establish protocol and working relationships with governmental organisations, non-
government organisations, support zone communities and private sector.
• To be the liaison between the park and support zone communities, NGOs and private
sector.
• Closely co-ordinate and co-operate with all park personnel and provide in-service
training of all staff in communication and community liaison skills.
• Organise support zone functions for the individual Conservation Areas and supervise
the effective discharge of these functions.
• Determine and recommend to the Regional Warden the required number and grade of
Support Zone Personnel and their duty station placement.
• Ensure that clearly defined and appropriate duties are described in individual job
descriptions.
• Determine and recommend the in-service training requirements for Support Zone staff.
• Appraise the level of performance of Support Zone staff and make recommendations to
the Regional Warden regarding staff transfers, discipline, promotion and general
welfare.
• Formulate and propose to the Regional Warden, through a mechanism of annual
submission of a budget and work plan, specific tasks and activities for Support Zone
development that are consistent with the 5-year Management Plans.
• Oversee the implementation of Support Zone projects and work plans, and provide
guidance to all Support Zone personnel within the North East Parks.
• Liase with local non-government organisations in the creation of conservancies within Support Zones.
• Liase with the individual Wardens to develop methods and schedules for Community Game Guard participation in patrolling of the Conservation Areas.
• Liase with the Senior Conservation Scientist and Warden to develop protocols and procedures whereby neighbouring communities may be allowed access to the parks for the sustainable utilisation of natural resources consistent with the primary conservation purposes of the parks.
• Co-ordinates the compilation of financial estimates relating to the Support Zone programme and supervises the disbursement and expenditure of allocated funds.
• Assists the Regional Warden in vetting applications for recruitment of Support Zone staff.
• Evaluates and recommends to the Regional Warden and/or MET the relevance of proposed independent research projects as they relate to the Management Plans.
• Compiles and submits such reports and briefings as may be required by the Regional Warden and/or Ministry of Environment and Tourism.
• Undertakes any other related duties as assigned by the Regional Warden.
APPENDIX V

NORTH-EAST PARKS PROJECT

PROCEDURE GUIDELINES ON INFRASTRUCTURE DEVELOPMENT
PROCEDURE GUIDELINES FOR INFRASTRUCTURE DEVELOPMENT

Procedure guidelines on design, placement and construction of firebreaks:

Fire-breaks on park boundaries are to be at least eighteen metres in width (this is a double fire-break). Internal fire-breaks are to be at least nine metres in width. Internal fire-breaks should follow natural features or ecotones which may act as natural fire-breaks. Road locations should be considered in the context of roads also serving as fire breaks.

Fire-breaks should be cleared and/or burnt annually as early in the calendar year as possible but no later than July. For the maintenance and monitoring of fire-break condition see policies on roads, tracks, trails and paths.

Heavy machinery may be used to establish fire-breaks, but should not be used in fire-break maintenance.

A fire officer will be appointed from existing staff and a fire duty roster for co-ordinating operations maintained during the main fire season (April to October).

Park staff will initiate co-operative programmes and actions with other fire control authorities, adjacent communities and neighbouring landowners.

Conservation scientists will provide for the recording of fire history in the parks.

Procedure guidelines on buildings, temporary structures, power supplies and equipment:

All buildings will be designed and placed in line with the primary objectives of the park and the level of facility development shall be in accord with park plans.

All structures will be designed and placed as unobtrusively as possible so as to not detract from the natural landscape, scenic beauty or ecological integrity of the parks. Whenever possible, natural barriers will be used to screen facilities from general view.

All buildings will be assigned a registration number and a maintenance record kept by the Warden.

All buildings will be inspected annually by the Warden.

Annual maintenance priorities will be assigned, motivated and budgeted. Buildings will be prioritised as follows:

- Staff housing and accommodation
- Administrative buildings and stores
- Plant buildings and structures (e.g. pump house)
- Workshop and maintenance areas.

Where appropriate the Warden will consider annual service contracts to the private sector for building (and other capital items) maintenance. This will be done on the basis of an analysis of the most cost-effective options for maintenance.
Power supply infrastructure and development will be designed to cause minimal ecological, visual and/or aesthetic impact. Underground lines are to be utilised in preference to overhead lines where feasible.

Domestic power supplies will be separately metered and the costs borne by occupants.

The Warden will ensure that temporary structures are removed on completion of the task for which they were constructed. Additionally, he or she will ensure that the site is fully rehabilitated and cleaned after completion of assigned tasks.

The Warden will designate sites within the park (consistent with the park zonation scheme) to specific tasks which are repeated regularly (e.g. game capture). These sites, activities, or structures will not conflict with park goals and objectives.

Equipment will be issued to individuals who will be held responsible for the items and their maintenance and servicing.

Training in the use of sophisticated equipment is compulsory for all users.

**Procedure guidelines on potable water for parks staff:**

No toilets, ablution facilities or water-based service facilities are to be positioned within 100m of a borehole or other primary water source.

Game capture pens and bomas must not be placed within 100 m of a borehole or other primary water source.

Water quality testing is done by NamWater, Private Bag 13389, Windhoek. A one litre sample of the water to be tested must be delivered in a closed glass container.

**Procedure guidelines on water supply management:**

The Warden will ensure that all water abstraction infrastructure is unobtrusive and blends in with the surroundings as best possible. Every effort should be made to suppress exhaust noise at installations using diesel or petrol engines. Solar installations should be used where possible.

No water abstraction for non-park purposes is permitted.

The provision of artificial water points for wildlife within the parks must be preceded by an Environmental Assessment in which the ecological framework for that supply must be given the fullest consideration.

Artificial water points for wildlife must not be constructed near (<2 km) park boundaries where there is a potential for conflict with surrounding communities or land-uses.

No barriers or obstructions of any type may be built on drainage's.

A monitoring programme must be developed at each artificial water point for wildlife. Wildlife species and numbers, seasonality of use and the effects on vegetation (at varying
radii around the water point) are to be assessed in terms of whether the water point is achieving a stated management objective.

Adequate protection measures against damage and theft must be developed for installations.

Development of water sources for wildlife carries with it the responsibility to ensure that these sources do not fail the wildlife which becomes dependent upon them. All sources of water for wildlife will be inspected, and maintenance performed if necessary, at least weekly throughout the dry season (or year round during droughts).

**Procedure guidelines on sewage disposal facilities:**

Soak pits for waterborne sewerage should not be built within 100 m of a borehole or water source to avoid contamination. Developments on the river margin must ensure that pits do not cut through the permanent water table.

No chemical toilets will be allowed within the park. Concessionaires should be made aware of this restriction.

No direct discharge of human wastes into any of the parks’ perennial or seasonal rivers are allowed under any circumstances.

No open water, evaporation pan sewerage treatment systems are allowed within the parks.
APPENDIX VI

NORTH-EAST PARKS PROJECT

PROCEDURE GUIDELINES ON NEIGHBOURING COMMUNITY RELATIONS
PROCEDURE GUIDELINES ON NEIGHBOURING COMMUNITY RELATIONS

_The Warden_ in conjunction with the Support Zone Co-ordinator and other park staff will promote the establishment and development of conservancies by providing assistance to communities within Support Zones by:

- Providing information to emerging Conservancy Committees with regard to the process and procedure for formation
- Forwarding applications through the appropriate channels
- Providing information to Conservancy Committees with regard to economic opportunities related to wildlife and the conservation of the park,
- Providing technical support to Conservancy Committees to assist in management issues such as problem animal control, identifying potential lodge sites, _etc._
- Providing technical support for the development of long term management plans for Conservancies including land use plans.
- Supporting non-governmental organisations in assisting communities with the establishment and development of Conservancies.
- Training Conservancy members in modern techniques for natural resource management.

_The Support Zone Co-ordinator_ will develop a comprehensive understanding of the conditions within the Support Zones and the environments in which they exist by:

- Documenting available socio-economic information particularly with regard to local livelihood strategies and traditional social structures.
- Documenting existence of non-governmental organisations (if any) and other conservation and development organisations operating within Support Zones to the parks.
- Documenting historical claims to the land on which parks are located.
- In conjunction with the Conservation Scientist, conducting joint research and establishing an information sharing system which combines indigenous knowledge and modern science in order to establish sustainable levels of resource use and harvest within Support Zones.
- Identifying and documenting the different natural resource user groups operating within the conservation area.
- Identifying how other government departments can assist communities with the development of Conservancies and conservation activities.
- Identifying and documenting current and probable conflict points between the management of the parks and neighbours.

_The Support Zone Co-ordinator_ will, in conjunction with appropriate park staff, private interests and non-governmental organisations, identify and promote a range of economic opportunities that can be associated with the parks. This will include:

- Providing technical support to link tourist development between the park and Conservancies to diversify the tourist products available to local communities.
• Identifying sites to establish community operated craft and curio shops at park entrance gates and/or visitor centres.

• Exploring opportunities for Community Game Guard walking safaris within the parks.

**The Support Zone Co-ordinator** will, in conjunction with the appropriate park staff will develop mechanisms to improve and formalise communications between parks and stakeholders regarding policies, objectives and processes. This will be accomplished by:

• Maintaining close liaison with Support Zones and Conservancies.

• Developing guidelines and procedures to enable Support Zone residents to use selected natural resources, where sustainable use levels have been determined by the Conservation Scientist and the park and neighbouring Conservancy Committees have established and agreed a set of rules governing the use of these resources. These rules will establish;
  
  • Who can harvest,
  • How much material can be harvested by each person,
  • When it can be harvested,
  • Where it can be harvested,
  • What techniques and instruments can be used,
  • Who will be responsible for checking on use,
  • What will be the procedures for dealing with those who abuse this privilege.

• Promoting labour intensive maintenance programmes (roads, construction, *etc.*) so as to maximise local employment opportunities.

• Presenting changes in park plans, policies or management strategies for comment and contributions from Conservancy Committees.

• Establish a protocol for problem animal control in Support Zones by:
  
  • Providing support to Community Game Guard programmes operating within Support Zones.
  
  • Supporting Conservancies and Support Zones in establishing, where necessary, electrified fencing around vulnerable fields.
  
  • Investigating cattle keeping practices and providing support for improved techniques for kraal building.

Developing a rapid response procedure for dealing with problem animal complaints.
APPENDIX VII

NORTH-EAST PARKS PROJECT

PROCEDURE GUIDELINES ON TOURISM, VISITOR AND CONCESSIONAIRES
PROCEDURE GUIDELINES FOR TOURISM, VISITORS AND CONCESSIONAIRES

Tourism will be encouraged in the parks where it is not in conflict with the purposes for which the parks were established and the goals and objectives thereof. Emphasis will be placed on low density and high quality tourism.

Visitor access will be controlled, or if necessary restricted, by Special Protection Zone designation of any areas where there are unique, valuable and sensitive features that are either of high ecological sensitivity and/or high conservation value and may be impacted by visitor use.

Visitor activities and numbers will be monitored in the parks and carrying capacities assessed. If deemed necessary, the numbers of individuals and/or vehicles will be regulated. At such time as this becomes necessary, it is essential that a centralised booking system be established for all North-East Parks.

Commercial, promotional or documentary filming will be allowed in the parks subject to proper permitting and the approval of the Warden.

The use of private boats will be monitored and controls introduced where it is established that such use is resulting in accelerated bank erosion, pollution and/or significant conflict with wildlife or other park user groups. A maximum speed of 10 km per hour will apply to all private watercraft used within the parks.

Any commercial operation utilising the parks is subject to the provisions of the Nature Conservation Ordinance and its regulations. A limited number of commercial operators that can offer high quality services consistent with the mission, goals and objectives of the parks will be permitted to operate therein. Such operations will be conducted within terms and conditions defined by the Warden.

Once granted, the terms and conditions applicable to the concessionaire will be made available to all staff members within the park as well as affected Conservancies, such that the management of the concession agreement can be carried out with the minimum conflict between parties.

Ministry of Environment and Tourism personnel will consult with outside tourism interests in the areas involved to ensure development of tourism which is appropriate to and in harmony with park goals and objectives.

Commercial operations within the parks will be monitored to ensure that permit conditions are be adhered to and to assess the relevance and quality of the services provided. The information collected will be used to evaluate any application for lease and/or permit renewal.

Commercial operators utilising the parks must ensure their customers are aware of possible dangers and the rules of proper behaviour.

Firewood for use within any campground or picnic site must be from sources outside the parks.
Park Entrance. The Warden will ensure those officials at all park entrance and registration facilities are aware of and charge current park tariff structures and that the current tariff structures are clearly displayed at entrance gates and reception facilities.

The Warden will ensure that all visitors to the park are provided with a list of park regulations as well as pertinent information about the park and its natural resources.

The Warden will ensure that rules and regulations are posted in prominent places at visitor reception facilities.

Walking safaris will be encouraged in the North-East Parks if visitors are accompanied by a qualified guide.

Guides undertaking walking safaris in the North-East Parks need to be holders of a “Big Game” Professional Hunters Licence as stipulated in the Nature Conservation Ordinance.

Visitor densities will be regulated by the approved management plan for each protected area.
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1 INTRODUCTION

Development of the North-East Parks is a priority of the Ministry of Environment and Tourism. They are important for a number of reasons, including biological diversity protection, maintenance of ecological systems, income generation and rural development. The north-east region is currently underdeveloped, with limited agricultural potential and virtually no mineral or industrial potential, yet strategically located in terms of tourism. Development of these parks is therefore one of the few options for economic expansion.

Under Phase II of the Planning Phase: North-East Parks Programme, management plans have been prepared for Mamili National Park, Mudumu National Park, Kwando Core Area, Khaudum Game Reserve and Mangetti Game Camp.

The background information regarding the biophysical, ecological, legal, socio-economic and infrastructure characteristics of these North-East Parks is provide in Volume 1. The Management Plans detailing the management of the specific parks is given in Volume 2. This document, Volume 3: Integrated Development Plan for the Mangetti Game Camp uses Volume 1 and Volume 2 to develop the investment programme for Mangetti, and access its potential income from tourism.

A Master Integrated Development Plan summarises all the IDPs for the individual parks to indicate the elements required for the planning of a larger scale management and development programme for the North East Parks.

1.1 Structure of this document

The objective of the Integrated Development Plan is to elaborate on:

1. An investment programme for actions that are required to develop the parks’ potential in an economically viable and sustainable way.

2. Summarise the capital budgets, including revenue potentials.

3. Present a chronogramme (or schedule) for implementing the development programme.

The development programme itself is summarised in a planning matrix that adopts a log frame format. The Capital Budgets are presented using a spreadsheet format, and consider the costs for infrastructure development over a 5-year period. These are presented in the Appendices together with a summary of capital and recurrent costs, and a schedule of implementation.

1.2 Budget Requirements for Mangetti Game Camp

In 1987 Chief Kahenge, through the Kwangali Tribal Authority, entered into an agreement with the Directorate of Nature Conservation and Recreational Resorts (now the Ministry of Environment and Tourism) to manage Mangetti Game Camp on behalf of the Kavango Administration.

In terms of the agreement, all benefits accruing from this arrangement are to be returned to the tribal authorities. In return, MET are able to utilise this area as a breeding station for rare and endangered species, although this has not been as successful as was initially anticipated. Furthermore, the Kavango Administration has not received any significant income from this area since its inception.

To rectify this situation, the MET intend to develop the area as part of a “core conservation area” for a future conservancy. To achieve this, the recommendations of the management plan are to involve the private sector in the promotion and development of the tourism potential of Mangetti Game Camp. It also envisages that the private sector will in future
assume greater responsibility for the management of the area. However, since Mangetti is stocked with endangered species such as black rhino, MET has an obligation to continue to be involved with the area in the short term.

This situation has an impact on the level of investment needed to achieve the objectives of the management plan, particularly as it is envisaged that MET will gradually withdraw from the area and fulfil a caretaker role.

In the interim, MET will assign a nucleus of staff to Mangetti Game Camp who will be responsible for the administration and management of the area. The main focus of these responsibilities will be to protect the area from illegal activities, and to protect the area from wild fires. Limited infrastructural development is envisaged, notably to improve staff accommodation and procure equipment necessary to implement the management plan. The Integrated Development Plan presented here reflects this approach.
2 INTEGRATED DEVELOPMENT PLAN FOR MANGETTI GAME CAMP

The Integrated Development Plan for Mangetti Game Camp is to be implemented over a five-year period. The estimated capital costs take into consideration expenditures such as:

- Refurbishment of staff housing
- Construction of office accommodation
- Construction of basic workshop facilities
- Procurement of vehicles
- Procurement of firearms
- Procurement of workshop/office equipment
- Refurbishment of water supplies
- Power/fuel supplies
- Wildlife introductions (or removals)

2.1 Capital Costs for the Development of Mangetti Game Camp

The following assumptions are used to derive the capital costs for the infrastructure development programme.

- Two Scouts will share a house with two bedrooms, central mess area and an external kitchen.
- Four labourers will be housed in one "barrack" unit.
- Ablution blocks consist of three showers and three toilets and are intended to be shared by up to 25 people.
- The office space provides space for the Officer in Charge, including a storeroom.
- No tourist facilities (entrance gate, reception area etc.) will be provided. These developments are to be undertaken by the future concessionaire.
- Provision is made for nominal office furnishing.
- The number of 4 x 4 vehicles is calculated in the basis of 1 vehicle per 5 scouts. All vehicles will be diesel powered.
- One tractor, trailer and tow grader will be allocated to Mangetti.
- The size of the workshop/storeroom complex has been made proportional to number of field staff scouts on station.
- A flat allowance is made to kit the workshop out with tools.
- Provision is made to refurbish and equip the existing borehole and pumping units. No new boreholes are envisaged.
- Provision is made for one 50kva generator.
- A lump sum is provided to translocate wild animals to or from the Game Camp.

The capital costs are provided in Appendix I, and summarised together with the Recurrent and Operational Costs in Appendix II. Assuming that the entire programme is implemented, it is estimated that approximately N$2.3 million will have to be invested in the area over the 5-year period. Procurement of vehicles is responsible for 50% of this investment, which could be recovered if MET reduces its presence in the area in the next five years.

When these costs are combined with the estimated recurrent and operational costs (see Appendix II), it is estimated that approximately N$6 million will be required to develop and manage Mangetti Game Camp over the 5-year period. The bulk of the expenditure will be required to meet the purchase of vehicles (N$ 1 million), staff salaries (N$900 000), transport costs (N$0.945 million) and maintenance (N$0.65 million).

This translates to an overall cost/km of approximately N$1 800 – 3 550/km² (or US$300 – 590¹).

¹ Assumes an exchange rate of US$1 : N$6.00
2.2 Infrastructure Development Programme

Introduction

All infrastructure development in the Mangetti Game Camp will be co-ordinated under this management programme. This includes the construction of any buildings, staff accommodation, entry gates, signs, water (both domestic and game water supplies), power (including fuel supply), sewerage, fire breaks, rods etc. Procedure guidelines on the design, placement and construction of infrastructure developments are provided in Appendix IV. Where possible, the implementation of any major construction programmes will be outsourced following an analysis of the most cost-effective options.

Infrastructure development in the Mangetti Game Camp is poor. Staff accommodation is inadequate and there are no facilities to deal with tourists. The objective of the Infrastructure Programme is to address this problem. This will be accomplished through the implementation of the following activity.

Activity 1: Upgrade of the MET Station and procure necessary equipment (vehicles, radios, firearms, uniforms etc.).

Current problem and issues

The dilemma facing MET regarding Mangetti Game Camp is whether or not to invest heavily in upgrading its facilities given that its ultimate objective is to fulfil a caretaker role in the future. At present there is insufficient housing to accommodate the proposed staff, and there are no facilities to undertake basic maintenance and repairs. Furthermore, the Camp has only one 4 x 4 vehicle that is used to deploy staff and undertake routine administrative journeys.

Proposed solutions

The existing accommodation (five Bavaria huts and three Buffalo huts) is to be upgraded and made more comfortable for the existing staff. Additional accommodation to house new staff is to be constructed, including basic workshop and storeroom facilities.

The transport position at the Camp is to be improved through the procurement of two 4 x 4 vehicles and one tractor/trailer combination.

Implementation

The implementation of this activity is to be co-ordinated by the Regional Warden in conjunction with the Senior Ranger and officials from the Ministry of Works. Siting of the various facilities will be the responsibility of the Regional Warden, using the guidelines provided in Appendix IV. Construction will be outsourced wherever possible.

Resources required

Building materials
Funding to engage contractors
Solar power and associated equipment
Electric generator
Basic workshop tools
Radio communication system
Funds to remove unwanted infrastructure
Funds to procure equipment
# Planning Matrix for Mangetti Game Camp

## OVERALL GOAL

Improved conservation status and sustainable economic development of Mangetti Game Camp for the benefit of the Kavango Administration and local communities.

## OVERALL OBJECTIVE

<table>
<thead>
<tr>
<th>INDICATOR</th>
<th>MEANS OF VERIFICATION</th>
<th>ASSUMPTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. To act as a core area of a future conservancy.</td>
<td>Mangetti recognised as a core conservation area by local and regional community leaders.</td>
<td>Kavango Administration recognises role of local communities</td>
</tr>
<tr>
<td>2. To generate and improve the level of income through the development of consumptive and non-consumptive tourism opportunities.</td>
<td>Benefits to the Kavango Administration. Tourism facilities established</td>
<td>Cohesive local community structure in place</td>
</tr>
</tbody>
</table>

## RESULTS

<table>
<thead>
<tr>
<th>INDICATOR</th>
<th>MEANS OF VERIFICATION</th>
<th>ASSUMPTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Level of MET involvement decreases</td>
<td>Number of staff permanently resident in Mangetti reduced by 30% after Year 3. Private sector involvement in management of Mangetti</td>
<td>MET able to successfully involve private sector in future management of Mangetti</td>
</tr>
<tr>
<td>2. Mangetti Game Camp successfully tendered, and managed by private sector concessionaire</td>
<td>Successful agreement concluded with concessionaire</td>
<td>Kavango Administration agrees to private sector involvement in the future management of the area.</td>
</tr>
<tr>
<td>3. Incidence of wild fires reduced</td>
<td>Firebreaks in place</td>
<td>Staff adequately equipped and trained to deal with wild fires</td>
</tr>
</tbody>
</table>

## 2. INFRASTRUCTURE DEVELOPMENT PROGRAMME ACTIVITIES

<table>
<thead>
<tr>
<th>ACTIVITIES</th>
<th>MEANS</th>
<th>RESOURCES</th>
<th>ASSUMPTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Upgrade of the MET Station and procure necessary equipment (vehicles, radios, firearms, uniforms etc.).</td>
<td>Renovate existing accommodation, Rehabilitation funds, Construction of staff housing, Installation of water reticulation system, Construction of sewerage system, Construction of workshop/storeroom, Installation of power generator, Installation of solar system, Installation of fuel storage</td>
<td>Design of buildings, Building contractor, Borehole/pump, Electrical equipment (generator, solar), Fuel storage tanks, Funds to procure equipment</td>
<td>Government adopts the management plan</td>
</tr>
<tr>
<td>1. ADMINISTRATION PROGRAMME ACTIVITIES</td>
<td>See Volume 2: Mangetti Game Camp Management Plan for details</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. SUPPORT ZONE PROGRAMME ACTIVITIES</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. PROTECTION PROGRAMME ACTIVITIES</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. TOURISM AND VISITOR PROGRAMME ACTIVITIES</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. MAINTENANCE PROGRAMME ACTIVITIES</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. RESEARCH AND MONITORING PROGRAMME ACTIVITIES</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. EDUCATION, COMMUNICATION AND PUBLIC RELATIONS PROGRAMME ACTIVITIES</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
4 ESTIMATE OF POTENTIAL REVENUE

Total gross expenditure on tourism generated in the North-East Region is estimated at approximately N$ 25 million (N$1996). This represents the total value of tourism in the region to the country as a whole (see: *Tourism Development Planning Framework for the Caprivi Region, 1996*). Only a portion of this money stays in the region with the bulk, estimated at about 80%, moving out of the region as a result of "leakage's" into other areas of the country.

Expenditures remaining within the region can be viewed at two different levels (see: *The Value of Non-Agricultural Land Use in Some Namibian Communal Areas: A Data Base for Planning, 1995*). One is the net contribution of resource use activities to the regional economy (resulting in additional economic benefit and induced employment through the multiplier effect) and the second is the contribution of these activities to local community income.

Table 1 shows the estimated current and potential aggregate net economic contribution to the regional for the Caprivi and Northern Kalahari Regions.

Table 1: Comparison of estimates of the current and potential contributions of non-agricultural land use to regional income in the Caprivi and Northern Kalahari Regions (N$ 1994)

<table>
<thead>
<tr>
<th>Item</th>
<th>Caprivi Region¹</th>
<th>Northern Kalahari Region²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extent (sq. km.)</td>
<td>18,800</td>
<td>21,718</td>
</tr>
<tr>
<td>Estimated current contribution</td>
<td>4,886,466</td>
<td>260,616⁵</td>
</tr>
<tr>
<td>Estimated potential contribution</td>
<td>8,274,234</td>
<td>1,541,978⁴</td>
</tr>
<tr>
<td>Potential magnitude of increase</td>
<td>1.7</td>
<td>5.9</td>
</tr>
</tbody>
</table>

¹entire Caprivi District; ²former Bushmanland plus Khaudum N.P.; ³extrapolation based upon N$12 per km² for Bushmanland alone (Barnes, 1995); ⁴extrapolation based upon N$ 71 per km² for Bushmanland alone (Barnes, 1995).

Assuming that in future the economic potential of the Caprivi and Northern Kalahari regions is realised it would total approximately N$ 10 million. Applying the 80% "leakage" figure discussed above to this amount suggests that the overall potential to the national economy is approximately N$ 50 million (N$1996).

The economic values discussed above are measures of the value of tourism to the region and the nation. These are impressive amounts of obvious importance to national and regional economies. They do not, however, reflect direct benefits to neighbouring communities. This is best measured by the contribution of these activities to local community income. Table 2 shows estimated current and potential income to communities (conservancies) from non-agricultural, natural resource land use inside and outside protected areas within the Kwando-Linyanti, Okavango and Kalahari Conservation Areas.
Table 2. Comparison of estimates of current and potential community income from non-agricultural natural resource use in land inside and outside protected areas in the North-East Region (N$ 1994).

<table>
<thead>
<tr>
<th>Item</th>
<th>Kwando-Linyanti C.A.</th>
<th>Okavango C.A.</th>
<th>Kalahari C.A.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Protected¹</td>
<td>non-protected²</td>
<td>Protected⁵</td>
</tr>
<tr>
<td>Extent (sq. km.)</td>
<td>2,640</td>
<td>3,665</td>
<td>1,200</td>
</tr>
<tr>
<td>Estimated current Community income</td>
<td>92,400</td>
<td>505,770</td>
<td>42,000</td>
</tr>
<tr>
<td>Estimated potential Community income</td>
<td>683,760</td>
<td>967,560</td>
<td>310,800</td>
</tr>
<tr>
<td>Potential magnitude Of increase</td>
<td>74</td>
<td>1.9</td>
<td>7.4</td>
</tr>
</tbody>
</table>

¹Mamili, Mudumu and proposed Kwando N.P.; ²proposed/potential adjacent conservancy areas; ³proposed Okavango N.P.; ⁴potential conservancy area north of the Trans-Caprivi Highway; ⁵Khaudum N.P.; ⁶Nyae Nyae Conservancy; ⁷assumes same ratio between inside and outside protected areas as in Caprivi.

Information contained in Table 2 illustrates that these areas generate income to communities which, although moderate at present, has significant growth potential if natural resources are properly managed. Additionally, such things as locating tourist lodges and campgrounds just outside the parks would provide for joint venture partnerships between conservancies and the private sector. Also, issuing trophy hunting quotas to conservancies rather than within parks would enhance conservancy revenue earning potential. Yet another possibility for increasing revenues and improving neighbour relations is the sharing of gate receipts between the Ministry and conservancies.

4.1 Potential Income from Mangetti Game Camp

Mangetti Game Camp is the only area within the North East Parks complex where commercial sport hunting is permitted. In contrast, non-consumptive tourism in this area has not been developed. This situation presents an opportunity for the future management of this area to develop both consumptive and non-consumptive tourism products. There is also the opportunity to introduce the live sale of selected species, however the current status of the wildlife populations will not support this in the foreseeable future.

The management plan envisages that the future tourism development of Mangetti Game Camp will focus on attracting “overland” touring parties to the area in addition to supporting low-key commercial sport hunting. The following table illustrates the magnitude of developing this tourism potential under a best case and worst case scenario (Table 3).

These data suggest that under the best case scenario, 73 “overland” trucks/year will utilise the camping facilities (i.e. one truck arriving every 5 days), and that 45% of the campers (493 people) will enter the Game Camp for game viewing purposes. When the sale of the hunting rights and mobile tour operator concession are included, Mangetti Game Camp is likely to generate approximately N$180,483/year (or N$376/km²). If tourist numbers do not exceed 26 vehicles and 56/year (i.e. 5% of potential occupancy) and no hunting takes place, the estimated total income drops to N$25,043/year (or N$52/km²).
Table 3: The potential income from Mangetti Game Camp using best case and worst case scenarios.

<table>
<thead>
<tr>
<th>Park Activity</th>
<th>Fee Schedule</th>
<th>Occupancy</th>
<th>Occupancy</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Best case scenario</td>
<td>Worst case scenario</td>
</tr>
<tr>
<td></td>
<td></td>
<td>45% (493)</td>
<td>10% (110)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>25% (274)</td>
<td>5% (55)</td>
</tr>
<tr>
<td>Park entry</td>
<td>N$30/day/person (No people)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>N14 783</td>
<td>N$3 285</td>
</tr>
<tr>
<td></td>
<td></td>
<td>N$8 213</td>
<td>N$1 643</td>
</tr>
<tr>
<td>Overnight camping (for overland parties)</td>
<td>N$300/party/day) (average stay – 2 days)</td>
<td>45% (493)</td>
<td>10% (110)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>25% (274)</td>
<td>5% (55)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>N65 700</td>
<td>N$3 285</td>
</tr>
<tr>
<td></td>
<td></td>
<td>N49 275</td>
<td>N$1 643</td>
</tr>
<tr>
<td>Mobile Tour Operators</td>
<td>N$5 000/year</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>No operators</td>
<td>No operators</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Hunting Concession</td>
<td>N$95 000/year (with elephant)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>N95 000</td>
<td>N60 000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(without elephant)</td>
<td>(reduced quota)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>N75 000</td>
<td>N52 000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(without elephant)</td>
<td>(reduced quota)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>N49 275</td>
<td>N$1 643</td>
</tr>
<tr>
<td>Potential Income (N$)</td>
<td>N$180 483</td>
<td>N$133 488</td>
<td>N$97 885</td>
</tr>
<tr>
<td></td>
<td></td>
<td>N$25 043</td>
<td></td>
</tr>
<tr>
<td>Income/km²</td>
<td>N$376</td>
<td>N$278</td>
<td>N$204</td>
</tr>
<tr>
<td></td>
<td>US$63</td>
<td>US$46</td>
<td>US$34</td>
</tr>
<tr>
<td>Income US$/km²</td>
<td>US$63</td>
<td>US$46</td>
<td>US$34</td>
</tr>
</tbody>
</table>

Assumptions used to derive these data are as follows:

- Basic entry set at a minimum of N$30/person/day.
- Occupancy: Maximum of 73 “overland” vehicles per year (i.e. one vehicle/5-days).
- Each vehicle carries a minimum of 15 people.
- Camp is open all year round.
- Maximum number of people is therefore 15 people/vehicle x 73 vehicles = 1 095 people. Therefore, 45% occupancy = 493 people/year.
- No allowance is made for independent tourists who may visit this area.
- Overnight camping: Flat rate of N$450/vehicle (equivalent to US$75/night) for “overland” parties. Model assumes that each vehicle remains at Mangetti for two nights.
- Arrivals set at:
  - One truck every 5 days = 73 vehicles/year
  - One truck every 7 days = 55 vehicles/year
  - One truck every 10 days = 37 vehicles/year
  - One truck every 14 days = 26 vehicles/year
- Tour operators: Assumes that one mobile tour operator concession will be awarded.
- Hunting Concession: Assumes that current quota with:
  - Trophy elephant will continue to be available or;
  - Trophy elephant will be removed from the quota or;
  - Current quota will be reduced or;
  - Hunting will be stopped altogether.

4.2 Financing of the Development and Management Programme

The Kavango Administration cannot expect to receive significant levels of income from Mangetti given its low earning potential. Furthermore, this analysis illustrates the importance of commercial sport hunting on the levels of income for this area. If this is reduced or removed altogether, it is unlikely that Mangetti will generate significant levels of income in the
future unless the area is marketed more aggressively. This will be best achieved by involving a private sector operator who can exploit factors such as the presence of endangered species such as black rhino\(^2\). It may also be possible to review the pricing structure suggested here, and attract a greater volume of tourism traffic, however this will depend on the results of the proposed short term consultancy to investigate the possible involvement of the private sector (see Volume 2, Section 4.2.4).

Given the current arrangement between MET and the Kavango Administration, MET will have to continue to meet all the capital, recurrent and operational costs associated with Mangetti. This situation is only likely to change if it is possible to involve the private sector in the future. Furthermore, should MET decide to withdraw completely from the current agreement in future, it will have to review its current policy of using Mangetti as a breeding station for species such as black rhino.

\(^2\) Habituated black rhino are now major tourism attractions in remote areas of Tanzania’s Selous Game Reserve and in the Matusadona National Park in Zimbabwe.
5 SCHEDULE OF IMPLEMENTATION

A schedule of implementation is provided in Appendix III, and assumes a 5-year period. It is designed to facilitate the eventual withdrawal of MET from the direct management of Mangetti and to encourage greater involvement of the Kavango Administration and the private sector. Given these circumstances, the bulk of the activities during this 5-year period will focus on law enforcement, control of wild fires and maintenance of assets.

5.1 Notes on the Implementation Programme

The following considerations are to be taken into account regarding the timing of the implementation programme.

- The project year will run from January to December
- The duration of each activity is indicative.
- An Inception Report is to be prepared, together with the first Annual Work Programme that includes the annual budget.
- Appointment of competent staff is on the critical path, and is to be completed before any of the other project tasks are implemented.
- All staff housing and related infrastructure development is to take place within the first three years of the project.
- Law enforcement and fire management programmes recur each year throughout the project.
- Routine maintenance is conducted throughout the period of the project on an "as required basis".
- All activities associated with the Tourism and Visitor programme are to commence in the first year of the plan.
- No activities are scheduled under the Research and Monitoring Programme or the Education, Communication and PRO programme.
- The issue of MET’s continued involvement in Mangetti in the long term is to be reviewed following the conclusion of the tourism studies proposed in Volume 2, Section 4.2.4

The overall implementation programme is to be re-appraised annually and adjusted according to the previous years’ progress and changing priorities.

5.2 Project Start-up Phase

The implementation of this Integrated Development Plan will be preceded by a Project Start-up Phase. The purpose of this phase is to appoint a Project Co-ordinator who will be responsible for implementing the IDP. The Project Co-ordinator can be appointed either from within MET or provided by a donor.

He/she will be responsible for:

- Setting up the Project Accounts
- Preparing an Inception Report
- Procuring the necessary equipment (vehicles etc)
- Procuring building contractors (if required)
- Preparing the Annual Work Programme
- Fulfilling the role of co-ordinator between MET, Regional Office and Field Staff
APPENDIX I

CAPITAL COSTS

MANGETTI INTEGRATED DEVELOPMENT PLAN
## POTENTIAL INCOME OF MANGETTI GAME CAMP

**Area:** 480

<table>
<thead>
<tr>
<th>Park Activity</th>
<th>Fee Schedule (N$)</th>
<th>Best Case Scenario</th>
<th>Worst Case Scenario</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entry fee in addition to camping fees</td>
<td>30 pp/day</td>
<td>14,783</td>
<td>8,213</td>
</tr>
<tr>
<td></td>
<td>No visitors</td>
<td>493</td>
<td>274</td>
</tr>
<tr>
<td>Overnight camping</td>
<td>900</td>
<td>No parties(20%)</td>
<td>No parties (15%)</td>
</tr>
<tr>
<td>(for overland parties)</td>
<td>2 days x</td>
<td>73</td>
<td>55</td>
</tr>
<tr>
<td></td>
<td>15 people</td>
<td>65,700</td>
<td>49,275</td>
</tr>
<tr>
<td>Mobile Tour Operators</td>
<td>5,000 per year</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5,000</td>
<td>-</td>
</tr>
<tr>
<td>Hunting Concession</td>
<td>95,000 per year</td>
<td>15</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>95,000</td>
<td>76,000</td>
</tr>
<tr>
<td></td>
<td>(with elephant)</td>
<td>(without elephant)</td>
<td>(reduced quota)</td>
</tr>
<tr>
<td><strong>Potential Income (N$)</strong></td>
<td><strong>180,483</strong></td>
<td><strong>133,488</strong></td>
<td><strong>97,885</strong></td>
</tr>
<tr>
<td><strong>Potential Income (US$)</strong></td>
<td><strong>30,080</strong></td>
<td><strong>22,248</strong></td>
<td><strong>16,314</strong></td>
</tr>
<tr>
<td>Income/km² (N$)</td>
<td>376</td>
<td>278</td>
<td>204</td>
</tr>
<tr>
<td>Income/km² (US$)</td>
<td>63</td>
<td>46</td>
<td>34</td>
</tr>
</tbody>
</table>

**Maximum Assumptions:**
- Visitors: 1,095
- Max Occupancy: Assumes area used by Overland parties
- Vehicles: 73
- One vehicle every 5 days
- People/vehicle: 15
- Average number of people/vehicle
- Days: 365
- Operational all year

**NS/camp**
- 2. Overnight camping:
  - 900
  - Flat rate/overland vehicle/night
  - No days: 2
  - Party stays minimum of one night
  - No people: 15
  - Average number of people/vehicle
  - Cost/person: 30
  - Equivalent to US$5/day/person
  - No days: 365
  - Open all year
  - No camps: 1
  - Max No camping days: 365
  - 5% 18
  - Truck every 21 days
  - 10% 37
  - Truck every 10 days
  - 15% 55
  - Truck every 7 days
  - 20% 73
  - Truck every 5 days
APPENDIX II

SUMMARY OF CAPITAL AND RECURRENT COSTS

MANGETTI INTEGRATED DEVELOPMENT PLAN
APPENDIX III

CHRONOGRAMME

MANGETTI INTEGRATED DEVELOPMENT PLAN
APPENDIX IV

NORTH-EAST PARKS PROJECT

PROCEDURE GUIDELINES ON INFRASTRUCTURE DEVELOPMENT
PROCEDURE GUIDELINES FOR INFRASTRUCTURE DEVELOPMENT

Procedure guidelines on design, placement and construction of firebreaks:

_Fire-breaks on park boundaries_ are to be at least eighteen metres in width (this is a double fire-break). Internal fire-breaks are to be at least nine metres in width. Internal fire-breaks should follow natural features or ecotones which may act as natural fire-breaks. Road locations should be considered in the context of roads also serving as fire breaks.

_Fire-breaks_ should be cleared and/or burnt annually as early in the calendar year as possible but no later than July. For the maintenance and monitoring of fire-break condition see policies on roads, tracks, trails and paths.

Heavy machinery may be used to establish fire-breaks, but should not be used in fire-break maintenance.

A fire officer will be appointed from existing staff and a fire duty roster for co-ordinating operations maintained during the main fire season (April to October).

Park staff will initiate co-operative programmes and actions with other fire control authorities, adjacent communities and neighbouring landowners.

Conservation scientists will provide for the recording of fire history in the parks.

Procedure guidelines on buildings, temporary structures, power supplies and equipment:

All buildings will be designed and placed in line with the primary objectives of the park and the level of facility development shall be in accord with park plans.

All structures will be designed and placed as unobtrusively as possible so as to not detract from the natural landscape, scenic beauty or ecological integrity of the parks. Whenever possible, natural barriers will be used to screen facilities from general view.

All buildings will be assigned a registration number and a maintenance record kept by the Warden.

All buildings will be inspected annually by the Warden.

Annual maintenance priorities will be assigned, motivated and budgeted. Buildings will be prioritised as follows:

- Staff housing and accommodation
- Administrative buildings and stores
- Plant buildings and structures (e.g. pump house)
- Workshop and maintenance areas.

Where appropriate the Warden will consider annual service contracts to the private sector for building (and other capital items) maintenance. This will be done on the basis of an analysis of the most cost-effective options for maintenance.

Power supply infrastructure and development will be designed to cause minimal ecological, visual and/or aesthetic impact. Underground lines are to be utilised in preference to overhead lines where feasible.

Domestic power supplies will be separately metered and the costs borne by occupants.
The Warden will ensure that temporary structures are removed on completion of the task for which they were constructed. Additionally, he or she will ensure that the site is fully rehabilitated and cleaned after completion of assigned tasks.

The Warden will designate sites within the park (consistent with the park zonation scheme) to specific tasks which are repeated regularly (e.g., game capture). These sites, activities, or structures will not conflict with park goals and objectives.

Equipment will be issued to individuals who will be held responsible for the items and their maintenance and servicing.

Training in the use of sophisticated equipment is compulsory for all users.

Procedure guidelines on potable water for parks staff:

No toilets, ablution facilities or water-based service facilities are to be positioned within 100m of a borehole or other primary water source.

Game capture pens and bomas must not be placed within 100 m of a borehole or other primary water source.

Water quality testing is done by NamWater, Private Bag 13389, Windhoek. A one litre sample of the water to be tested must be delivered in a closed glass container.

Procedure guidelines on water supply management:

The Warden will ensure that all water abstraction infrastructure is unobtrusive and blends in with the surroundings as best possible. Every effort should be made to suppress exhaust noise at installations using diesel or petrol engines. Solar installations should be used where possible.

No water abstraction for non-park purposes is permitted.

The provision of artificial water points for wildlife within the parks must be preceded by an Environmental Assessment in which the ecological framework for that supply must be given the fullest consideration.

Artificial water points for wildlife must not be constructed near (<2 km) park boundaries where there is a potential for conflict with surrounding communities or land-uses.

No barriers or obstructions of any type may be built on drainage’s.

A monitoring programme must be developed at each artificial water point for wildlife. Wildlife species and numbers, seasonality of use and the effects on vegetation (at varying radii around the water point) are to be assessed in terms of whether the water point is achieving a stated management objective.

Adequate protection measures against damage and theft must be developed for installations.

Development of water sources for wildlife carries with it the responsibility to ensure that these sources do not fail the wildlife which becomes dependent upon them. All sources of water for wildlife will be inspected, and maintenance performed if necessary, at least weekly throughout the dry season (or year round during droughts).

Procedure guidelines on sewage disposal facilities:
Soak pits for waterborne sewerage should not be built within 100 m of a borehole or water source to avoid contamination. Developments on the river margin must ensure that pits do not cut through the permanent water table.

No chemical toilets will be allowed within the park. Concessionaires should be made aware of this restriction.

No direct discharge of human wastes into any of the parks’ perennial or seasonal rivers are allowed under any circumstances.

No open water, evaporation pan sewerage treatment systems are allowed within the parks.
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1 INTRODUCTION

Development of the North-East Parks is a priority of the Ministry of Environment and Tourism. They are important for a number of reasons, including biological diversity protection, maintenance of ecological systems, income generation and rural development. The north-east region is currently underdeveloped, with limited agricultural potential and virtually no mineral or industrial potential, yet strategically located in terms of tourism. Development of these parks is therefore one of the few options for economic expansion.

Under Phase II of the Planning Phase: North-East Parks Programme, management plans have been prepared for Mamili National Park, Mudumu National Park, Kwando National Park, Khaudum Game Reserve and Mangetti Game Camp.

The background information regarding the biophysical, ecological, legal, socio-economic and infrastructure characteristics of these North-East Parks is provide in Volume 1. The Management Plans detailing the management of the specific parks is given in Volume 2. This document, Volume 3: Integrated Development Plan for Mudumu National Park, uses Volume 1 and Volume 2 to develop the investment programme for Mudumu National Park, and assess its potential income from tourism.

A Master Integrated Development Plan summarises all the IDPs for the individual parks to indicate the elements required for the planning of a larger scale management and development programme for the North East Parks.

1.1 Structure of this document

The objective of the Integrated Development Plan is to elaborate on:

1. An investment programme for actions that are required to develop the parks' potential in an economically viable and sustainable way.

2. Summarise the capital budgets, including revenue potentials.

3. Present a chronogramme (or schedule) for implementing the development programme.

The Development Programme is summarised in a planning matrix that adopts a log frame format. The Capital Investment Budgets are presented using a spreadsheet format, and consider the costs for infrastructure development over a 5-year period. These are presented in the Appendices together with a summary of capital and recurrent costs, and a schedule of implementation.
# 2 BUDGET REQUIREMENTS FOR MUDUMU NATIONAL PARK

In terms of the management plan, a Warden is to be appointed for the Kwando-Linyanti Conservation Area who will be responsible for the administration and management of the Mamili, Mudumu and Kwando National Parks. However, all field staff responsible for Mudumu National Park will reside in the park and be based at Ngenda, and be answerable to the Warden. At present, the staff compliment consists of a Principle Ranger, Senior Ranger, one Scout and three labourers/workhands. The Warden post is shared with Mamili National Park, but this officer resides in Katima Mulimo. Furthermore, infrastructure development is poor and the staff does not have the necessary equipment to carry out their mandate.

The operational budgets needed in protected areas in southern Africa are determined by the number of men required for effective patrolling\(^1\) to deter illegal activities, and undertake routine management. Despite the establishment of effective community wildlife programmes in areas adjacent to national parks, there is still the ever-present threat from illegal hunters who may come from further afield in search of meat and other natural resource products. As a general rule the number of men required is related to the size of the park as follows (after Martin, 1997):

\[
\text{Number of men: } N_s = \sqrt{A}
\]

- where \(A\) is expressed in square kilometres.

The number of men also determines the annual running costs (made up of salaries, field allowances, equipment, transport, maintenance costs etc.). Allowing for variations in salaries and other costs from country to country in the region, the operational costs are approximately given by the formula:

\[
\text{Annual recurrent expenditure/km}^2: \quad C_R = \text{US$}50 \left( 1 + \frac{2 + 3}{\sqrt{A}} \right)
\]

Similarly, capital requirements are also dependent on the total staff complement in the park but vary depending on building costs across the region. The required capital per unit area is approximately given by the formula:

\[
\text{Total capital expenditure/ km}^2: \quad C_C = \text{US$}500 \left( 1 + \frac{1 + 1}{\sqrt{A}} \right)
\]

Where \(A\) = thousands of square kilometres \((\text{i.e. } A = 1 = 1000\text{km}^2)\).

These formula suggest the recurrent and capital expenditure required to manage and develop a park of 1000km\(^2\) will require US$300/km\(^2\) and US$1 500/km\(^2\) respectively.

The table below illustrates these relationships.

<table>
<thead>
<tr>
<th>Park size (km(^2))</th>
<th>50</th>
<th>150</th>
<th>500</th>
<th>1000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of men</td>
<td>7</td>
<td>12</td>
<td>22</td>
<td>32</td>
</tr>
<tr>
<td>Total Recurrent Cost (US$)</td>
<td>136 041</td>
<td>165 595</td>
<td>231 066</td>
<td>300 000</td>
</tr>
<tr>
<td>Total Capital Cost (US$)</td>
<td>636 803</td>
<td>768 649</td>
<td>1 103 553</td>
<td>1 500 000</td>
</tr>
</tbody>
</table>

These budgets represent a threshold: where the state provides annual operating budgets equal to or greater than the amounts given in the table, there can be some certainty that the protected area will be adequately managed and conserved. Where budgets are lower than the amounts given, it is almost certain that the park management authority will not be able to protect the resources of the park.

---

\(^1\) "Effective" patrolling is defined by the requirement that illegal activities are detected in less than two days.
Furthermore, these data illustrate the very high cost of developing and managing relatively small-protected areas. The cost of equipping and manning small protected areas cannot escape from the economies of scale associated with large protected areas. The general rule of thumb is that recurrent and capital costs should be in the order of magnitude of US$300/km$^2$ and US$1,500/km$^2$ respectively.

However, in reality, protected agencies are very rarely provided with “optimal” budgets, and very often have to compromise. The approach adopted here is to present the “optimal” budgets required to develop and manage Mudumu National Park. The budgets thus derived will therefore serve as an indication to government (and donors) of the level of funding required to management the National Park so as to achieve its objectives.
3 INTEGRATED DEVELOPMENT PLAN FOR MUDUMU NATIONAL PARK

The Integrated Development Plan for Mudumu National Park is to be implemented over a five-year period. The estimated capital costs take into consideration expenditures such as:

- Staff housing
- Other buildings (workshop, entrance gates etc)
- Expansion of tourist facilities
- Road construction
- Vehicles
- Firearms
- Workshop/office equipment
- Water supplies
- Power/fuel supplies
- Wildlife introductions (or removals)

3.1 Capital Costs for the Development of Mudumu National Park

The following assumptions are used to derive the capital costs for the infrastructure development programme.

- Two Scouts will share a house with two bedrooms, central mess area and an external kitchen.
- Four labourers will be housed in one "barrack" unit.
- Principle Rangers have a two-bedrooomed house with sitting room/dining room, shower and toilet.
- Gate Guards have the same style of house as Senior Rangers.
- Ablution blocks consist of three showers and three toilets and are intended to be shared by up to 25 people.
- The office space provides space for the Warden, Ecologist, Support Zone Co-ordinator and Principle Ranger. Senior Rangers would not necessarily enjoy a room to themselves. Clerks and Typists to have separate offices.
- The basic design of the entrance gate will include a lockable office, reception area and toilet facilities. Solar power will be optional.
- Provision is made for nominal office furnishing for each office.
- The number of 4 x 4 vehicles is calculated in the basis of 1 vehicle per 5 scouts. All vehicles will be diesel powered.
- Each park and will be allocated at least one 5-tonne lorry. Parks greater than 500km² will be provided with an additional vehicle for every 500km² (i.e. a 1,000km² park will be allocated two lorries).
- Each park will be allocated one tractor, trailer and tow grader. Mowers and disc ploughs are optional. Parks greater than 500km² will be provided with an additional tractor/trailer combination for every 500km² or part thereof (i.e. a 1,000km² park will be allocated two tractor/trailers).
- The size of the workshop/storeroom complex has been made proportional to number of field staff scouts on station.
- A flat allowance is made to kit the workshop out with tools.
- Provision is made for game water supplies for a number of boreholes plus pumps calculated on the basis of one unit to 500km² (this implies a radius of approximately 10km for each water point)
- Provision is made for one 50kva generator per station.
- A lump sum is provided to translocate wild animals to or from the park.

2 Recurrent and operational costs for the Management Programmes are provided in Volume 2, and summarised in Appendix II
The capital costs are provided in Appendix I, and summarised together with the Recurrent and Operational Costs in Appendix II. Assuming that the entire programme is implemented, it is estimated that approximately N$4.9 million will have to be invested in the park over the 5-year period. Most of these investments will occur in the first three years (78%). Construction of staff housing and associated infrastructure will form the bulk of this investment. The overall cost/km² varies from N$614 to N$2 500/km² (or US$100 – US$420).

When these costs are combined with the estimated recurrent and operational costs (see Appendix II), it is estimated that approximately N$13 million will be required to develop and manage Mudumu National Park over the 5-year period. The bulk of the expenditure (approximately N$9 million) will be required in the first 3 years of this plan.

3.1 Infrastructure Development Programme

Introduction

All infrastructure development in Mudumu National Park will be co-ordinated under this management programme. This includes construction of any new buildings, staff accommodation, entry gates, signs, water (both domestic and game water supplies), power (including fuel supply), sewerage, firebreaks etc. Procedure guidelines on design, placement and construction of infrastructure developments are provided in Appendix IV. Where possible, the implementation of any major construction programmes will be outsourced following an analysis of the most cost-effective options.

Infrastructure development in Mudumu National Park is poor with staff having to travel back and forth between Ngenda and Nakatwa because of a lack of suitable accommodation. Staff accommodation is inadequate and facilities to deal with tourists are non-existent. The fact that few facilities exist in the park affects all other management programmes, particularly the protection programme and tourism programme. The objective of the Infrastructure and Development Programme is therefore to address these problems. This will be accomplished through the implementation of the following activities.

Activity 1: Removal of Nakatwa Station and upgrade of Ngenda Station, and provide the necessary equipment (vehicles, radios, firearms, uniforms etc.)

Current problem and issues

Although Nakatwa Station is the official base station of Mudumu National Park, there are a number of issues relating to its choice and location.

a Because of the shortage of accommodation facilities at Nakatwa Station, some staff is accommodated at Ngenda Station and have to be transported back and forth to work each day.

b The state of staff accommodation is poor. The warden's house consists of a rustic pole and mud house; a temporary storeroom/office has been constructed but there is no electrical power available for the HF radio system (or any other equipment).

Conditions at Ngenda Station are no better. The station does not have a water reticulation system, and the "Bavaria" huts used for staff housing are unsuitable for the climate and not conducive to an efficient work force. There are also no facilities to deal with tourism arrivals and departures.

1 Assumes an exchange rate of US$1 : N$6.00
A further problem is that Nakatwa occupies a prime tourism site within the park, and although a camping area has been identified close by, the presence of the park headquarters detracts from its ambience.

**Proposed solution**

Nakatwa Station is to be demolished and all permanent structures removed. A new park headquarters is to be constructed at Ngenda, including the establishment of the northern park entry gate.

Construction of staff housing is to be commissioned taking the following points into consideration:

- The area’s main climatic characteristics are heat and dryness. The area has a high intensity of direct solar radiation plus an added factor of high levels of reflected radiation from the ground. High diurnal and annual temperature ranges are prevalent.
- Low humidity levels and generally low precipitation are features of the local climate. The area has low average wind speeds contrasting with occasional violent windstorms. A large portion of the area has a sandy environment.
- Uncomfortable living and working conditions is created by the extreme heat and dryness. Flies, sand and dust storms need to be counteracted. All building must therefore be adapted to summer conditions i.e. protected from intense radiation from the sun, ground and surrounding buildings.
- Buildings are to be designed where reduction of heat takes precedence over air circulation during the daytime. Measures are to be taken to reduce glare and to prevent dust and insect penetration.
- Buildings are to be designed to take advantage of the prevailing weather conditions i.e. have courtyards, wide patios and large roof overhangs. No mechanical ventilation systems will be required.
- The largest dimensions and windows should face south. West faces of buildings should have no openings or windows. Eastern faces may have openings, but must be kept to a minimum. Non-inhabitable rooms (e.g. storerooms) should be located on the western side of the buildings to form a thermal barrier.
- Rooms are to be rectangular, with the narrow width as the external wall. They are to have high ceilings and ideally open on to a patio of indoor courtyard. Heat producing areas, such as kitchens, should be isolated and separately ventilated.
- Outdoor areas should contain plants and be shaded most of the day. Paved surfaces should be avoided wherever possible. Provision is to be made for outdoor sleeping (a patio screened with gauze is ideal).
- Windows are to be relatively small, particularly on outside walls and must be shielded from direct radiation and glare. Ventilation during daytime must be kept to a minimum, but designed for good ventilation at night.
- Direct sunlight on workspaces is to be avoided.
- Walls facing north and west (i.e. exposed to direct sunlight) must be thick and solid. They are to be shielded by large eaves and by vegetation. Generally walls of 600mm thickness is sufficient to provide heat sink capabilities.
- The exterior is to be painted white to make them as reflective as possible
- Roof should be thatched where possible. The ceiling space is to be open to allow for maximum ventilation.
Housing Specifications

The following specifications are provided as a guide for the construction of a purpose built 1-bedroom or 2-bedroom house.

a  Construction

- Bricks or blockwork walls
- Floors – Cement screed
- Walls – Woodfloat cement plaster
- Steel frame windows and doors, and plasterboard ceiling.
- Limited electrical installation is to be installed to facilitate solar powered lighting.
- Kitchen installation to include a stainless steel sink, wooden shelving, one steel cabinet unit.

b  Room sizes

- One-bedroom (with built in cupboard) 16m²
- Two-bedroom (with built in cupboard) 13m²
- Bathroom (possibly with shower only) 5m²
- Toilet (with washbasin) 2m²
- Living room (lounge/dining) 30m²
- Kitchen (including pantry/storeroom) 12m²
- Circulation/cupboards 6m²
  - Total 84m²

Verandah (optional) 18m²

c  Sewerage and water reticulation

- Sewerage disposal is to consist of septic tanks. A reliable water reticulation system is to be installed.

The complex is to be provided with a power generator (staff housing is to be equipped with solar power), and basic workshop facilities incorporating a storeroom and overhead fuel tanks are to be constructed.

Once Ngenda is operational, Nakatwa is to be rehabilitated and developed as a campsite.

Implementation

This operation is to be co-ordinated by the Regional Warden in conjunction with the Warden and officials from the Ministry of Works. Siting of the various facilities will be the responsibility of the Warden, using the guidelines provided in Appendix IV. Construction will be outsourced wherever possible.

Resources required

Building materials
Funding to engage contractors
Solar power and associated equipment
Borehole pump and motor
Electric generator
Basic workshop tools
Radio communication system
Funds to rehabilitate Nakatwa (remove building rubble and other waste material)
Activity 2: Construct entry gates at the northern and southern end of the Kongola - Linyanti road.

Current problem and issues

Mudumu National Park is traversed by the Kongola - Linyanti road, but there are no entrance gates to control tourism traffic. In addition, there are no facilities that enables staff to collect entry fees or distribute promotional information.

Proposed solution

Entrance gates are to be constructed at either end of the Kongola - Linyanti road and permanently manned by staff on a rotational basis. The gate is to conform to a standard design applicable for all North East Parks that consists of a reception area and lockable weatherproof office. The office will be equipped with a radio to communicate with Ngenda Station as well as other stations in the Kwando-Linyanti Conservation Area. Logbooks, tourist receipts and tourist information is to be available at all times.

Implementation

This activity will be co-ordinated by the Regional Warden in conjunction with the Warden. Construction of the entrance gates will be outsourced.

Resources required

Building materials
Funding to engage building contractor
Radio equipment, including solar power system
Safe

Activity 3: Manufacture and erect appropriate signs in the park

Current problem and issues

The road network is fairly extensive, consisting of several inter-linked loop roads. However, signs directing tourism traffic consist of inappropriate concrete tablets, and it is easy for visitors to get lost.

Proposed solution

The design and construction of signs for Mudumu National Park will conform to the standards agreed to at the regional level. The design of the signs is to be sufficiently robust to withstand elephant damage, yet not obtrusive. These are to be erected at the intersection of all major roads, indicating destination, distances, directional arrows and right of access as appropriate. Information notice boards are to be provided at the entrance gates and visitor reception areas.

Implementation

The Warden will be responsible for co-ordinating the implementation of this activity, including the installation of the signs.

Resources required

Materials to fabricate signs (Sheet metal, paint, iron bars, concrete)

Activity 4: Construction of two east/west access roads to act as firebreaks
**Current problem and issues**

The Kwando floodplain has several loop roads that service the various camp sites and game viewing areas. Access to the remainder of the park is dependent on several cutlines that are aligned on a north-south axis (Figure 1). This means that the staff has to travel long distances in order to reach the eastern sector of the park. Furthermore, although these cutlines divide the park into a number of blocks, they do not act as efficient firebreaks.

**Proposed solution**

Two east-west access roads are to be constructed either side of the Mudumu malapo. These roads will serve a dual purpose of 4 x 4 game viewing tracks and firebreaks. The roads will be routed in such a way as to avoid bisecting or entering the malapo itself.

**Figure 1:** The approximate location of east-west access roads to be constructed as firebreaks in the Park.

**Implementation**

This activity is to be implemented by the Warden in conjunction with input from the regional ecologist. Aerial photographs will be used to determine the exact route. Before construction commences, the recommended route will be physically checked to ensure that the proposed road does not interfere with any sensitive habitats.

**Resources required**

Global Positioning System  
Aerial photographs  
Contract labour to clear track
Activity 5: Installation of game water supplies at one or more major pans

Current Problems and Issues

The water supply at Santika Pan is augmented by a borehole, although this has not been operational for some time. This waterhole is maintained through the dry season in order to supply water to species such as zebra, roan, buffalo, impala and elephant. There are other suitable natural pans in the park that could serve a similar purpose, viz. Maziba Pan, Mukotokoto Pan and Makuni Pan. Providing artificial water at these pans will improve the game densities in the park, and thus the game viewing opportunities.

Proposed solutions

The borehole at Santika Pan is to be resuscitated. This will require the replacement of the pumping unit and engine. The conditions at the other pans should be reviewed to determine whether it would be feasible to install similar artificial water supplies at these pans. Factors to be taken into consideration are:

- Presence of species such as roan, buffalo, impala
- Density of elephant in the park (no artificial water is to be developed if densities exceed 2 animals/10km²)
- Availability of ground water
- Location relative to other sources of open water

Implementation

The Warden, in conjunction with the Conservation Scientist, will visit all the major pans to determine the level of utilisation by wild animals, and their location relative to *Colophospermum mopane* woodlands. In addition to Santika Pan, one or more major pan will be selected for development of an artificial water supply. The Warden will be responsible for co-ordinating the installation of the borehole and pumping unit, using expertise from Water Affairs. Preference will be given to installing solar powered units.

Resources required

Drilling rig
Pumping unit
Piping
Building materials (to construct concrete water trough)

Activity 6: Upgrade of tourism facilities (campsites, game viewing hides etc.)

Current problem and issues

There are three camping sites within the Kwando floodplain and possibly a further two sites at the major pans where tourists are able to camp. These are at Buffalo Trails, Nakatwa, Mvuubu, Santika Pan and one other (Maziba or Mukotokoto Pan). There are no facilities at these sites to deal with refuge, nor are there any ablution facilities to cater for overnight camping.
**Proposed solution**

It keeping with the management framework no permanent structures is to be erected at any of these sites. To cater for short duration self contained camping (up to three days), long-drop toilet facilities are to be constructed to an approved design. No water reticulation system is to be installed (tourists will be expected to carry their own water). Animal proof bins are to be provided for litter and these must be emptied at regular intervals. Firewood is to be brought in from outside the park - firewood collection within the park is prohibited.

**Implementation**

This activity is to be implemented by the Warden who will inspect the sites on a regular basis. A labour crew will be used to ensure that the sites are kept clean and tidy. Toilet facilities will be inspected regularly to ensure that these do not become a health hazard. A regular schedule will be installed to clear litter bins on a weekly basis (and more frequently during peak usage times).

**Resources required**

- Construction of toilet facilities
- Animal proof refuge bins
- Logistic support (waste collection, inspection)
## 4 PLANNING MATRIX FOR MUDUMU NATIONAL PARK

### OVERALL GOAL

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Means of Verification</th>
<th>Assumptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biological diversity of Mudumu National Park conserved to provide opportunities that increases the awareness and economic benefits of neighbouring communities, and enhances visitor experiences in the park.</td>
<td></td>
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### OVERALL OBJECTIVE

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Means of Verification</th>
<th>Assumptions</th>
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<tr>
<td>Secure the integrity of the park in order to conserve and manage its natural resources for the benefit of Namibian citizens.</td>
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### RESULTS

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<tr>
<th>Indicator</th>
<th>Means of Verification</th>
<th>Assumptions</th>
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<tbody>
<tr>
<td>1. Legal integrity of Mudumu National Park established</td>
<td></td>
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</tr>
<tr>
<td>2. Staff permanently based in the Park with the necessary infrastructure, equipment and budgets to carry out their mandate</td>
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<tr>
<td>3. Level of illegal activity reduced</td>
<td></td>
<td></td>
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<tr>
<td>4. Co-operation with Mashi and Wuparo Support Group improved</td>
<td></td>
<td></td>
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<tr>
<td>5. Incidence of wild fires reduced</td>
<td></td>
<td></td>
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</tbody>
</table>

### 2. INFRASTRUCTURE DEVELOPMENT PROGRAMME ACTIVITIES

<table>
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<th>Means</th>
<th>Resources</th>
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<tbody>
<tr>
<td>2.1 Removal of Nakatwa Station and upgrade of Ngenda Station</td>
<td></td>
<td></td>
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<tr>
<td>2.2 Construct entry gates at northern and southern end of Kongola-Linyanti road.</td>
<td></td>
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<tr>
<td>2.3 Manufacture and erect appropriate signs in the park</td>
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Page 12
### 2. INFRASTRUCTURE DEVELOPMENT PROGRAMME ACTIVITIES

<table>
<thead>
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<th>MEANS</th>
<th>RESOURCES</th>
<th>ASSUMPTIONS</th>
</tr>
</thead>
</table>
| 2.4 Construct two east/west access roads | • GPS  
• Aerial photographs | • Contract labour  
• Tractor/trailer  
• Tools | |
| 2.5 Installation of game water supplies at one or more major pans | • Pans surveyed  
• Borehole site identified | • Drilling rig  
• Pumping unit  
• Piping  
• Building materials | • Suitable pan identified  
• Ground water available |
| 2.6 Upgrade of tourism facilities (camp sites, game viewing hides etc) | • Identify campsites  
• Provide animal proof refuse bins  
• Construct toilet facilities  
• Transport for refuse collection | • Animal proof bins  
• Contract labour  
• Logistic support | |

1. ADMINISTRATION PROGRAMME ACTIVITIES  
2. PROTECTION PROGRAMME ACTIVITIES  
3. MAINTENANCE PROGRAMME ACTIVITIES  
4. SUPPORT ZONE PROGRAMME ACTIVITIES  
5. EDUCATION, COMMUNICATION AND PUBLIC RELATIONS PROGRAMME ACTIVITIES  
6. TOURISM AND VISITOR PROGRAMME ACTIVITIES  
7. RESEARCH AND MONITORING PROGRAMME ACTIVITIES  

See Volume 2: Mudumu National Park Management for details
5 ESTIMATE OF POTENTIAL REVENUE

Total gross expenditure on tourism generated in the North-East Region is estimated at approximately N$ 25 million (N$1996). This represents the total value of tourism in the region to the country as a whole (see: Tourism Development Planning Framework for the Caprivi Region, 1996). Only a portion of this money stays in the region with the bulk, estimated at about 80%, moving out of the region as a result of "leakage's" into other areas of the country.

Expenditures remaining within the region can be viewed at two different levels (see: The Value of Non-Agricultural Land Use in Some Namibian Communal Areas: A Data Base for Planning, 1995). One is the net contribution of resource use activities to the regional economy (resulting in additional economic benefit and induced employment through the multiplier effect) and the second is the contribution of these activities to local community income.

Table 1 shows the estimated current and potential aggregate net economic contribution to the regional for the Caprivi and Northern Kalahari Regions.

Table 1: Comparison of estimates of the current and potential contributions of non-agricultural land use to regional income in the Caprivi and Northern Kalahari Regions (N$ 1994)

<table>
<thead>
<tr>
<th>Item</th>
<th>Caprivi Region</th>
<th>Northern Kalahari Region</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extent (sq. km.)</td>
<td>18,800</td>
<td>21,718</td>
</tr>
<tr>
<td>Estimated current contribution</td>
<td>4,886,466</td>
<td>260,616</td>
</tr>
<tr>
<td>Estimated potential contribution</td>
<td>8,274,234</td>
<td>1,541,978</td>
</tr>
<tr>
<td>Potential magnitude of increase</td>
<td>1.7</td>
<td>5.9</td>
</tr>
</tbody>
</table>

1entire Caprivi District; 2former Bushmanland plus Khaudum N.P.; 3extrapolation based upon N$12 per km² for Bushmanland alone (Barnes, 1995); 4extrapolation based upon N$ 71 per km² for Bushmanland alone (Barnes, 1995).

Assuming that in future the economic potential of the Caprivi and Northern Kalahari regions is realised it would total approximately N$ 10 million. Applying the 80% "leakage" figure discussed above to this amount suggests that the overall potential to the national economy is approximately N$ 50 million (N$1996).

The economic values discussed above are measures of the value of tourism to the region and the nation. These are impressive amounts of obvious importance to national and regional economies. They do not, however, reflect direct benefits to neighbouring communities. This is best measured by the contribution of these activities to local community income. Table 2 shows estimated current and potential income to communities (conservancies) from non-agricultural, natural resource land use inside and outside protected areas within the Kwando-Linyanti, Okavango and Kalahari Conservation Areas.
Table 2. Comparison of estimates of current and potential community income from non-agricultural natural resource use in land inside and outside protected areas in the North-East Region (N\$1994).

<table>
<thead>
<tr>
<th>Item</th>
<th>Kwando-Linyanti C.A.</th>
<th>Okavango C.A.</th>
<th>Kalahari C.A.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Protected 1</td>
<td>Protected 2</td>
<td>Protected 3</td>
</tr>
<tr>
<td></td>
<td>non-protected 2</td>
<td>non-protected 4</td>
<td>non-protected 5</td>
</tr>
<tr>
<td>Extent (sq. km.)</td>
<td>2,640</td>
<td>1,200</td>
<td>3,841</td>
</tr>
<tr>
<td>Estimated current Community income</td>
<td>92,400</td>
<td>42,000</td>
<td>23,046</td>
</tr>
<tr>
<td>Estimated potential Community income</td>
<td>683,760</td>
<td>310,800</td>
<td>353,372</td>
</tr>
<tr>
<td>Potential magnitude of increase</td>
<td>74</td>
<td>7.4</td>
<td>15.3</td>
</tr>
</tbody>
</table>

1Mamili, Mudumu and proposed Kwando N.P.; 2proposed/potential adjacent conservancy areas; 3proposed Okavango N.P.; 4potential conservancy area north of the Trans-Caprivi Highway; 5Khaudum N.P.; 6Nyae Nyae Conservancy; 7assumes same ratio between inside and outside protected areas as in Caprivi.

Information contained in Table 2 illustrates that these areas generate income to communities which, although moderate at present, has significant growth potential if natural resources are properly managed. Additionally, such things as locating tourist lodges and campgrounds just outside the parks would provide for joint venture partnerships between conservancies and the private sector. Also, issuing trophy hunting quotas to conservancies rather than within parks would enhance conservancy revenue earning potential. Yet another possibility for increasing revenues and improving neighbour relations is the sharing of gate receipts between the Ministry and conservancies.

5.1 Potential Income from Mudumu National Park

The presence of the 20-bed Lianshulu Lodge attracts approximately 2 500 tourists a year to Mudumu National Park (this represents an occupancy of approximately 34%/year). There are no reliable records indicating the number of independent visitors, but it is unlikely that they exceed 500 per year.

Although Mudumu National Park is 800km², the prime tourist area is confined to approximately 45m² of the Kwando floodplain. Furthermore, the range of tourism activities available to visitors is restricted to vehicle, walking and static game viewing. Other alternatives, such as water borne tourism, are not possible. There is therefore a high risk of this area becoming congested if the tourism levels increase substantially.

One option is to disperse the tourism load into the dry mopane woodland area of the park, but this will depend on developing prime game viewing opportunities in this area centred on the natural pans. Possible activities here could include overnight camping and walking safaris (game viewing by vehicle may be difficult due to the heavy sands).

The following table illustrates the magnitude of potential tourism revenue under a best case and worst case scenario (Table 3). These data suggest that under the best case scenario or 45% occupancy (representing approximately 18 400 visitors/year), Mudumu National Park is only likely to generate N\$455 000/year (or N\$570/km²). Doubling the present visitor levels to 5 000/year (or approximately 10% occupancy) would generate approximately N\$125 000 (or N\$160/km²).

Of significance here is the amount of potential income that can be generated by offering camping facilities. The estimates represent approximately 50% of the gross income to the park and indicate the level of income that could accrue to neighbouring conservancies if they offered similar facilities.
### Table 3: The potential income from Mudumu National Park using best case and worst case scenarios.

<table>
<thead>
<tr>
<th>Park Activity</th>
<th>Fee Schedule</th>
<th>Occupancy Best case scenario</th>
<th>Occupancy Worst case scenario</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>45%</td>
<td>25%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(18 390)</td>
<td>(10 220)</td>
</tr>
<tr>
<td>Park entry</td>
<td>N$20/day/person (No people)</td>
<td>N$367 920</td>
<td>N$204 400</td>
</tr>
<tr>
<td>Overnight camping</td>
<td>N$1 200/3 days X 4 persons</td>
<td>No 3-day Parties</td>
<td>No 3-day Parties</td>
</tr>
<tr>
<td></td>
<td></td>
<td>39</td>
<td>29</td>
</tr>
<tr>
<td></td>
<td></td>
<td>N$47 040</td>
<td>N$35 280</td>
</tr>
<tr>
<td>Mobile Tour Operators</td>
<td>N$5 000/year</td>
<td>No operators</td>
<td>No operators</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>N$10 000</td>
<td>N$5 000</td>
</tr>
<tr>
<td>Concession</td>
<td>N$15 000/year</td>
<td>N$30 000</td>
<td>N$15 000</td>
</tr>
<tr>
<td>Potential Income (N$)</td>
<td></td>
<td>N$454 960</td>
<td>N$259 680</td>
</tr>
<tr>
<td>Income/km²</td>
<td></td>
<td>N$569</td>
<td>N$325</td>
</tr>
<tr>
<td>Income US$/km²</td>
<td></td>
<td>US$95</td>
<td>US$54</td>
</tr>
</tbody>
</table>

Assumptions used to derive these data are as follows:

- **Occupancy:** Maximum of 28 vehicles/day with 4 people/vehicle for 365 days = 28 x 4 x 365 = 40 880 visitors to the park. Therefore, 45% occupancy = 18 396 people.
- **Overnight camping:** One camp occupied for a maximum of 3 days by 4 people = 3 days x N$100 x 4 people = N$1 200/camp. Five camps are occupied between March and September. This represents 28 weeks or a maximum of 196 days/camp = 980 camping days. Therefore, the maximum number of parties = 980/5 camps = 327. Occupancy set at 20%, 15%, 10% and 5% respectively.
- **Tour operators:** concessions will be given to mobile commercial tour operators.
- **Concession:** Annual concession fee paid by resident concessionaires.

### 5.2 Financing of the Development and Management Programmes

The projected potential income for Mudumu National Park will not be sufficient to meet the running costs of the Park, nor will this money meet any of the capital costs. This situation is exacerbated by the fact that it is MET’s intention to “share” the income from the park with neighbouring communities.

The gap between potential income and capital and recurrent expenditure will therefore have to be met from Government allocations. It must be accepted that it is unlikely that Mudumu National Park will ever be financially self sustainable in the short to medium future.
6 SCHEDULE OF IMPLEMENTATION

A schedule of implementation is provided in Appendix III, and assumes a 5-year period. Some of the tasks are "once off" activities while others will occur throughout the implementation phase.

6.1 Notes on the Implementation Programme

The following considerations are to be taken into account regarding the timing of the implementation programme.

- The project year will run from January to December
- The duration of each activity is indicative.
- A project startup period is envisaged. During this time, an Inception Report is to be prepared, together with the first Annual Work Programme that includes the annual budget.
- The formalisation of the park boundary is on the critical path, and is to be completed before any of the other project tasks are implemented.
- All staff housing and related infrastructure development is to take place within the first three years of the project.
- Law enforcement and fire management programmes recur each year throughout the project.
- Routine maintenance is conducted throughout the period of the project on an "as required basis".
- Specific research and monitoring activities are to begin in the second quarter of the second year.
- Similarly, all activities associated with the Tourism and Visitor programme and the Education, Communication and PRO programme are to commence in the second year once the basic infrastructure is complete.

The overall implementation programme is to be re-appraised annually and adjusted according to the previous years' progress and changing priorities.

This schedule is designed to facilitate the low input required to manage Mudumu National Park to achieve four objectives. These are:

- Improve law enforcement
- Facilitate an improved tourist use, particularly the dispersion of tourists into the dry parts of the park.
- Maintain and improve relations with adjacent communities.
- Reduce the incidence of fire in the park.

Other activities will focus on routine maintenance of infrastructure, particularly the road network, and implementation of basic monitoring programmes.

6.2 Project Start-up Phase

The implementation of this Integrated Development Plan will be preceded by a Project Start-up Phase. The purpose of this phase is to appoint a Project Co-ordinator who will be responsible for implementing the IDP. The Project Co-ordinator can be appointed either from within MET or provided by a donor.

He/she will be responsible for:

- Setting up the Project Accounts
- Preparing an Inception Report
- Procuring the necessary equipment (vehicles etc)
- Procuring building contractors
• Preparing the Annual Work Programme for Year 2
• Fulfilling the role of co-ordinator between MET, Regional Office and Field Staff
APPENDIX I

CAPITAL COSTS

MUDUMU INTEGRATED DEVELOPMENT PLAN
### TABLE 4: BASIC RECURRENT COSTS ASSOCIATED WITH THE MANAGEMENT OF MUDUMU NATIONAL PARK

<table>
<thead>
<tr>
<th>Area (km²)</th>
<th>800</th>
</tr>
</thead>
</table>

#### A. Staff Salaries

<table>
<thead>
<tr>
<th>Staff</th>
<th>No Staff</th>
<th>N$/month</th>
<th>Annual Cost</th>
<th>Total</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
<th>Five year total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Warden</td>
<td>0</td>
<td>7000</td>
<td>84,000</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Principle Ranger</td>
<td>0</td>
<td>2500</td>
<td>30,000</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Senior Ranger</td>
<td>1</td>
<td>2100</td>
<td>25,200</td>
<td>25,200</td>
<td>25,200</td>
<td>25,200</td>
<td>25,200</td>
<td>25,200</td>
<td>25,200</td>
<td>126,000</td>
</tr>
<tr>
<td>Ranger</td>
<td>2</td>
<td>1800</td>
<td>21,600</td>
<td>43,200</td>
<td>43,200</td>
<td>43,200</td>
<td>43,200</td>
<td>43,200</td>
<td>43,200</td>
<td>216,000</td>
</tr>
<tr>
<td>Scouts</td>
<td>15</td>
<td>800</td>
<td>9,600</td>
<td>144,000</td>
<td>144,000</td>
<td>144,000</td>
<td>144,000</td>
<td>144,000</td>
<td>144,000</td>
<td>720,000</td>
</tr>
<tr>
<td>Gate Guard</td>
<td>6</td>
<td>800</td>
<td>9,600</td>
<td>57,600</td>
<td>57,600</td>
<td>57,600</td>
<td>57,600</td>
<td>57,600</td>
<td>57,600</td>
<td>288,000</td>
</tr>
<tr>
<td>Labourers</td>
<td>12</td>
<td>300</td>
<td>3,600</td>
<td>43,200</td>
<td>43,200</td>
<td>43,200</td>
<td>43,200</td>
<td>43,200</td>
<td>43,200</td>
<td>216,000</td>
</tr>
<tr>
<td>Ecologist</td>
<td>0</td>
<td>7500</td>
<td>90,000</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Support Zone Co-ordinator</td>
<td>0</td>
<td>7500</td>
<td>90,000</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Technicians</td>
<td>0</td>
<td>6500</td>
<td>78,000</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Clerks</td>
<td>0</td>
<td>2100</td>
<td>25,200</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Total Staff</td>
<td>36</td>
<td></td>
<td></td>
<td>313,200</td>
<td>313,200</td>
<td>313,200</td>
<td>313,200</td>
<td>313,200</td>
<td>313,200</td>
<td>1,566,000</td>
</tr>
</tbody>
</table>

#### B. Field Allowance

<table>
<thead>
<tr>
<th>Allowance</th>
<th>No</th>
<th>Units</th>
<th>Unit Cost (N$)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scouts/Labourers</td>
<td>33</td>
<td>9,400</td>
<td>12</td>
<td>71,280</td>
</tr>
<tr>
<td>Officers</td>
<td>3</td>
<td>360</td>
<td>12</td>
<td>4,320</td>
</tr>
<tr>
<td>Staff rations</td>
<td>36</td>
<td>360</td>
<td>12,960</td>
<td></td>
</tr>
</tbody>
</table>

Subtotal: 88,560

#### C. Equipment

<table>
<thead>
<tr>
<th>Equipment</th>
<th>No</th>
<th>Units</th>
<th>Unit Cost (N$)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uniforms</td>
<td>36</td>
<td>800</td>
<td>28,800</td>
<td></td>
</tr>
<tr>
<td>Camping equipment</td>
<td>36</td>
<td>300</td>
<td>10,800</td>
<td></td>
</tr>
<tr>
<td>VHF radios</td>
<td>4</td>
<td>2,000</td>
<td>8,800</td>
<td></td>
</tr>
<tr>
<td>VHF base station+repeater</td>
<td>1</td>
<td>1</td>
<td>5,000</td>
<td></td>
</tr>
<tr>
<td>Weapons</td>
<td>18</td>
<td>3,000</td>
<td>54,000</td>
<td></td>
</tr>
<tr>
<td>Other consumables</td>
<td>36</td>
<td>250</td>
<td>9,000</td>
<td></td>
</tr>
</tbody>
</table>

Subtotal: 88,560

#### D. Mileage

<table>
<thead>
<tr>
<th>Mileage</th>
<th>Distance/year</th>
<th>Rate</th>
<th>No Units</th>
<th>Unit Cost (N$)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>4x4</td>
<td>30,000</td>
<td>3.5</td>
<td>4</td>
<td>10,000</td>
<td>420,000</td>
</tr>
<tr>
<td>5 tonne truck</td>
<td>12,000</td>
<td>6</td>
<td>2</td>
<td>72,000</td>
<td></td>
</tr>
<tr>
<td>Tractor (Min 65hp) -100hrs/month</td>
<td>1,200</td>
<td>10</td>
<td>2</td>
<td>12,000</td>
<td></td>
</tr>
</tbody>
</table>

Subtotal: 588,000

#### F. Training

<table>
<thead>
<tr>
<th>Training</th>
<th>Days/year</th>
<th>No Staff</th>
<th>No Units</th>
<th>Unit Cost (N$)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Game Scouts</td>
<td>14</td>
<td>21</td>
<td>294</td>
<td>180</td>
<td>52,920</td>
</tr>
<tr>
<td>Officers</td>
<td>28</td>
<td>3</td>
<td>84</td>
<td>300</td>
<td>25,200</td>
</tr>
<tr>
<td>External travel (airfares)</td>
<td>3</td>
<td>2</td>
<td>5,000</td>
<td>10,000</td>
<td></td>
</tr>
</tbody>
</table>

Subtotal: 88,120

#### Contingency (10% of Costs)

| Contingency | 119,428 | 112,648 | 118,348 | 112,648 | 111,568 | 113,528 |

**TOTAL BASIC RECURRENT COSTS (N$)**

| N$/km² | 1,313,708 | 1,239,128 | 1,301,828 | 1,239,128 | 1,227,248 | 1,248,808 |
| US$/km² | 274 | 258 | 271 | 258 | 256 | 260 |

**Mudumu-IDP: Recurrent Costs**

Page 1
APPENDIX II

SUMMARY OF DEVELOPMENT AND RECURRENT COSTS

MUDUMU INTEGRATED DEVELOPMENT PLAN
APPENDIX III

CHRONOGRAMME

MUDUMU INTEGRATED DEVELOPMENT PLAN
APPENDIX IV

NORTH-EAST PARKS PROJECT

PROCEDURE GUIDELINES ON INFRASTRUCTURE DEVELOPMENT

MAMILI INTEGRATED DEVELOPMENT PLAN
PROCEDURE GUIDELINES FOR INFRASTRUCTURE DEVELOPMENT

Procedure guidelines on design, placement and construction of firebreaks:

Fire-breaks on park boundaries are to be at least eighteen metres in width (this is a double fire-break). Internal fire-breaks are to be at least nine metres in width. Internal fire-breaks should follow natural features or ecotones which may act as natural fire-breaks. Road locations should be considered in the context of roads also serving as fire breaks.

Fire-breaks should be cleared and/or burnt annually as early in the calendar year as possible but no later than July. For the maintenance and monitoring of fire-break condition see policies on roads, tracks, trails and paths.

Heavy machinery may be used to establish fire-breaks, but should not be used in fire-break maintenance.

A fire officer will be appointed from existing staff and a fire duty roster for co-ordinating operations maintained during the main fire season (April to October).

Park staff will initiate co-operative programmes and actions with other fire control authorities, adjacent communities and neighbouring landowners.

Conservation scientists will provide for the recording of fire history in the parks.

Procedure guidelines on buildings, temporary structures, power supplies and equipment:

All buildings will be designed and placed in line with the primary objectives of the park and the level of facility development shall be in accord with park plans.

All structures will be designed and placed as unobtrusively as possible so as to not detract from the natural landscape, scenic beauty or ecological integrity of the parks. Whenever possible, natural barriers will be used to screen facilities from general view.

All buildings will be assigned a registration number and a maintenance record kept by the Warden.

All buildings will be inspected annually by the Warden.

Annual maintenance priorities will be assigned, motivated and budgeted. Buildings will be prioritised as follows:

- Staff housing and accommodation
- Administrative buildings and stores
- Plant buildings and structures (e.g. pump house)
- Workshop and maintenance areas.

Where appropriate the Warden will consider annual service contracts to the private sector for building (and other capital items) maintenance. This will be done on the basis of an analysis of the most cost-effective options for maintenance.

Power supply infrastructure and development will be designed to cause minimal ecological, visual and/or aesthetic impact. Underground lines are to be utilised in preference to overhead lines where feasible.

Domestic power supplies will be separately metered and the costs borne by occupants.
The Warden will ensure that temporary structures are removed on completion of the task for which they were constructed. Additionally, he or she will ensure that the site is fully rehabilitated and cleaned after completion of assigned tasks.

The Warden will designate sites within the park (consistent with the park zonation scheme) to specific tasks which are repeated regularly (e.g. game capture). These sites, activities, or structures will not conflict with park goals and objectives.

Equipment will be issued to individuals who will be held responsible for the items and their maintenance and servicing.

Training in the use of sophisticated equipment is compulsory for all users.

**Procedure guidelines on potable water for parks staff:**

No toilets, ablution facilities or water-based service facilities are to be positioned within 100m of a borehole or other primary water source.

Game capture pens and bomas must not be placed within 100 m of a borehole or other primary water source.

Water quality testing is done by NamWater, Private Bag 13389, Windhoek. A one litre sample of the water to be tested must be delivered in a closed glass container.

**Procedure guidelines on water supply management:**

The Warden will ensure that all water abstraction infrastructure is unobtrusive and blends in with the surroundings as best possible. Every effort should be made to suppress exhaust noise at installations using diesel or petrol engines. Solar installations should be used where possible.

No water abstraction for non-park purposes is permitted.

The provision of artificial water points for wildlife within the parks must be preceded by an Environmental Assessment in which the ecological framework for that supply must be given the fullest consideration.

Artificial water points for wildlife must not be constructed near (<2 km) park boundaries where there is a potential for conflict with surrounding communities or land-uses.

No barriers or obstructions of any type may be built on drainage’s.

A monitoring programme must be developed at each artificial water point for wildlife. Wildlife species and numbers, seasonality of use and the effects on vegetation (at varying radii around the water point) are to be assessed in terms of whether the water point is achieving a stated management objective.

Adequate protection measures against damage and theft must be developed for installations.

Development of water sources for wildlife carries with it the responsibility to ensure that these sources do not fail the wildlife which becomes dependent upon them. All sources of water for wildlife will be inspected, and maintenance performed if necessary, at least weekly throughout the dry season (or year round during droughts).

**Procedure guidelines on sewage disposal facilities:**
Soak pits for waterborne sewerage should not be built within 100 m of a borehole or water source to avoid contamination. Developments on the river margin must ensure that pits do not cut through the permanent water table.

No chemical toilets will be allowed within the park. Concessionaires should be made aware of this restriction.

No direct discharge of human wastes into any of the parks’ perennial or seasonal rivers are allowed under any circumstances.

No open water, evaporation pan sewerage treatment systems are allowed within the parks.
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1 INTRODUCTION

In late 1993, the Ministry of Environment and Tourism (MET) received donor funding to draft a set of development and management plans for six conservation areas in north-east Namibia. This planning exercise was split into two phases, and involved two different consulting firms.

Under Phase I of the Planning Phase: North-East Parks Programme (1994 – 1996), Environmental Information Services (EIS) was contracted to produce development and management plans for all six protected areas in north-east Namibia. However, EIS only produced a management plan (in 2 volumes) for the Mahango Game Reserve and the Core Conservation Area of the Caprivi Game Reserve known as the “Buffalo” Section. For various reasons, the Integrated Development Plan for these two areas (to be known in future as the Okavango National Park) was not completed under Phase I nor were the management plans for the remaining five protected areas. Instead, the management plan of Okavango National Park was reviewed and the results summarised in a document titled German Financial Co-operation with Namibia Project: Management Plan for Okavango National Park, Caprivi (Schuerholz, G., 1996). This document also failed to produce an Integrated Development Plan although it does attempt to resolve the staff requirements for the Park. Nonetheless, Phase I was accepted by Letter of Agreement between the donor and MET dated 16th April 1996.

Thereafter, fresh Terms of Reference were drafted for Phase II, using a more structured format to prepare management plans for the remaining five protected areas, and complete the Integrated Development Plan for Okavango National Park.

Under Phase II of the Planning Phase: North-East Parks Programme, management and development plans have been prepared by PricewaterhouseCoopers (Harare) for Mamili National Park, Mudumu National Park, Kwando Core Area, Khaudum Game Reserve and Mangetti Game Camp.

This document, Integrated Development Plan for the Okavango National Park, uses Volume 1 and Volume 2 developed under Phase I of the Planning Phase: North-East Parks Programme, and the German Financial Co-operation with Namibia Project: Management Plan for Okavango National Park, Caprivi, to develop the investment programme for the Okavango National Park, and access its potential income from tourism. In doing so, this planning effort attempts to adapt these data to conform to the format used under the Phase II planning programme.

However, this planning effort does not alter the approach, recommendations or objectives of the original management plan accepted by MET in April 1996.

A Master Integrated Development Plan summarises all the IDPs for the individual parks to indicate the elements required for the planning of a larger scale management and development programme for the North East Parks.

1.1 Current Status of Okavango National Park

In terms of the management plan, the existing Mahango Game Reserve and the “Buffalo” section of the Caprivi Game Reserve were to be amalgamated to become the Okavango National Park. However some fundamental changes have occurred in the Caprivi since 1996 as a result of an outbreak of bovine pleural pneumonia in Botswana. The most significant of these has been the construction of a double electrified fence along the border by the Botswana Government. The purpose of this fence is to act as a barrier to cattle movement, however it has also had a marked impact on the movement of wildlife back and forth between Botswana and Caprivi. The continued presence of this fence therefore threatens the future viability of the proposed Okavango National Park and its associated Support Zones.

The two governments (Botswana and Namibia) have held negotiations in an attempt to resolve these issues. One option that could result in the border fence being removed is contingent
upon the Namibian authorities implementing a fencing scheme within Namibia that would allow for the declaration of a “cattle-free zone” adjacent to the Botswana border (Figure 1).

**Figure 1:** The proposed internal fence alignment to accommodate a “cattle-free zone” adjacent to the Botswana border.

Secondly, it is anticipated that the Caprivi Game Reserve will be upgraded to form the “Bwabwata National Park” in the future. The “Buffalo” Core Area is expected therefore to form part of this National Park that will include all the land between the Okavango and Kwando rivers (Figure 2). This proposed park will then be divided into three broad use zones: the Buffalo and Kwando Core areas will have preservation of natural processes as their primary goal while the central Bwabwata Multiple Use Zone will accommodate historical developments and settlements already in existence (Figure 2)\(^1\).

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\(^1\) Please note that the area encompassing the “Caprivi Game Reserve” was excluded from the Phase I and Phase II planning process for the NEPP. Management Plans for this area have therefore not yet been prepared.
Given the changes that have occurred since 1996, the planning effort conducted under Phase II of the Planning Phase recommended that the Buffalo Core Area defined under Phase I be extended south of the Trans-Caprivi Highway as far east as Omega (i.e. to approximately E 23° 15’). This area, together with associated Support Zones, would then form the Okavango Conservation Area (Figure 3).

These changes are reflected in the Vision Statement for the Buffalo Core Area and Mahango Reserve.

1.2 Vision Statement for Okavango National Park

The Vision Statement for the Okavango National Park is tempered by the overall mission statement, policies and conservation goals of the Ministry of Environment and Tourism. These
clearly define the criteria and goals for protected area management in Namibia (see Appendix I).

In terms of these overall statements, the government has established that the primary purpose of the North East Parks is to act as conservation areas. Secondary is the recognition that these parks can also serve to enhance local economies and increase the quality of life in neighbouring communities. In addition, they are a tourism product, playing a role in the national economy and serving as a window through which the world views Namibia’s conservation ethic.

Within the context of these parameters, the vision statement for the Okavango National Park is defined as follows:

**The Buffalo Core Area** shall be managed as an integral part of the Bwabwata National Park mainly to protect the Okavango wetland, riparian woodland, broadleaf Kalahari sand woodland and their associated biodiversity, particularly avifauna, fish species, buffalo, sable, lechwe, bushbuck, hippo and crocodile. Tourism shall be non-consumptive, being a combination of a high-volume lodge at Buffalo, and low-volume, low-impact, high-quality nature tourism in the rest of the area. Management shall include the establishment of mutually beneficial partnerships with communities. Buffalo shall be a core area for the multiple use area in Bwabwata National Park.

**Mahango Game Reserve** shall be managed as an integral part of the Bwabwata National Park mainly to protect the Okavango wetland, riparian woodland and their associated biodiversity, particularly avifauna, fish species, sable, bushbuck, sitatunga, lechwe, reedbuck, hippo and crocodile. Tourism shall be non-consumptive low-volume, low-impact with an emphasis on high quality nature experience. Accommodation facilities shall be limited to one small lodge located peripherally. Management shall include the establishment of mutually beneficial partnerships with communities.

1.3 Objectives of Okavango National Park Management Plan

The management plan prepared by EIS identifies the following objectives for Okavango National Park (see Volume 2, Okavango National Park Management Plan, 1996):

The objectives of the Okavango National Park (ONP) outlined below are based on a broad prioritisation of objectives. The primary purpose of the park is to act as a conservation area; hence biological, ecological, environmental and biodiversity objectives are outlined first. The park acts at another level to serve the local and regional communities and economies in that it has the potential to provide important economic and social benefits to the local community. At a third level, the park acts as an important part of the Namibian tourism product, playing an important role in the national economy and serving as an international attraction.

**Ecological and conservation objectives**

The principal purpose of the Okavango National Park is to act as an area in which the wildlife, habitat and socio-economic diversity of the park is adequately conserved. Objectives directly relevant to the ecological functioning and conservation of the Okavango National Park are:
• To protect the unique habitats, species, aquatic systems and ecological processes associated with the Okavango River, as a national and international asset, as no other section of the Okavango River is afforded this status in Namibia or other countries

• To conserve a representative sample of the bioclimatic region in a state relatively unaltered by man and to use the area as a benchmark in assessing the affects of development and change both within and outside the park

• To maintain, rehabilitate (where necessary) and/or preserve areas or features essential for ecological processes intrinsic to the park's functioning

• To preserve the inherent non-use values (aesthetics, "sense of place", etc.) of the Okavango River system

• To maintain and manage natural resources for sustainable production, whether for consumptive or non-consumptive activities

• To maintain both the genetic diversity and genetic integrity of all taxa occurring with the park

• To optimise the production of "high-value" and rare species, such as Roan, Sable, Tsessebe, for the purpose of restocking other Namibian conservation areas and for the generation of capital to finance the effective management of the park

**Objectives related to park neighbours and local communities**

The local community and regional authorities are seen as integral to the successful management and development of the ONP. Objectives relevant to the socio-economic aspects of local communities and the development and management of the ONP are:

• To provide opportunities and structures that increase awareness and appreciation of wildlife values at the local level

• To optimise economic benefits and opportunities in the ONP, while not compromising the conservation and ecological objectives set out above

• To provide economic benefits and opportunities to local communities around the park, such that the park becomes a fully integrated aspect of the local economy and is viewed as an asset

• To provide opportunities and structures that promote positive relations between local communities and the park administration

• To provide opportunities and support structures (e.g. extension services) to encourage the development of compatible land uses (such as conservancies) in buffer areas outside the park.

**Objectives related to tourism and research**

The Okavango National Park serves a number of important national and international functions. Most of the objectives below relate to the development of tourism, recreational and research opportunities within the park. It must be noted here, that during the April 1995 Planning Workshop two aspects relating to tourism
in the park were strongly expressed. The first related to the fact that Namibians
should not be excluded on financial grounds from using the park (i.e. entrance fees
should not be a disincentive for Namibian visitors and should realistically reflect
the ability to pay). The second aspect was that the tourism value of the park lay in
its informal character and less restrictive regulations (e.g. tourists are allowed to
get out of their cars), and that it was essential to retain this approach to tourism
management if the park was to fulfil its potential as an important tourism
destination in Namibia.

Objectives relating to these (and broader) functions are:

- To provide an informative and positive tourism environment which is less
  restrictive, allowing for the satisfaction of the broadest possible base of
  potential users, from those who wish to walk on their own, to those who wish
  to use the park in a more formal way (e.g. being guided or remaining in
  vehicles)
- To provide Namibians with a valuable and informative recreational
  environment at a cost which allows access to the park by the widest range of
  potential users
- To provide facilities and opportunities for research and monitoring to further
  understand processes within and outside the park, through encouraging an
  active programme of research by both local and international scientists
- To provide an environment in which innovative tourism opportunities and
  tourism experiences can be optimised through a combination of uses, to
  contribute to the national economy of Namibia
- To provide opportunities to take advantage of international, regional and local
  ecotourism, within the context of a number of tourism circuits which pass
  through the area, and hence promote local, regional and national economies
- To develop and manage a range of facilities/opportunities to enhance visitor
  experiences and appreciation of the area, with an emphasis on providing
  facilities for education and interpretation programmes for visitors aimed at
  promoting an awareness and a better understanding of the environment
- To develop a management, tourism and research environment and
  infrastructure that does not foreclose on land-use options in the future.

1.4 Structure of this document

The format and approach that is used to develop the park management plans under Phase I
differ significantly from the approach that is used under Phase II. Notably Phase I does not
adhere to the eight “management programmes” defined by MET that form the basis of the
Phase II planning approach (see Table 1).

Instead, the management plan for the Okavango National Park is divided into ten parts, and 27
chapters that “…. defines the specific objectives and actions required to fulfil the principal
aims of the park” (Volume 2, Okavango National Park Management Plan, 1996. See Appendix
II for the complete Table of Contents of Volume II).
Furthermore, the management plan does not summarise the activities in a planning matrix format nor does it provide an indication of recurrent, operational budgets or capital development costs.

Table 1: Definition of the Eight Management Programmes used under Phase II of the Planning Phase for the North-East Parks Project

<table>
<thead>
<tr>
<th>Management Programme</th>
<th>Brief Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Administration</td>
<td>The actions and activities taken by MET leadership to facilitate the attainment of the objectives of all management programmes.</td>
</tr>
<tr>
<td>2. Protection</td>
<td>The actions and activities aimed at preserving the physical and biological integrity of the parks.</td>
</tr>
<tr>
<td>3. Research and Monitoring</td>
<td>The actions and activities to determine the status and dynamics of park natural resources as well as the effects of management actions upon these resources.</td>
</tr>
<tr>
<td>4. Tourism and Visitor</td>
<td>The actions and activities to enhance visitor experiences in the parks as well as to minimise the impact of tourism on park natural resources.</td>
</tr>
<tr>
<td>5. Support Zone</td>
<td>The actions and activities aimed at encouraging compatible land uses in areas bordering the parks. In particular, the establishment and development of conservancies is to be encouraged, with MET providing technical advice on all aspects of wildlife management. The flow of benefits from the park to neighbouring communities will be facilitated.</td>
</tr>
<tr>
<td>6. Education, Communication and Public Relations</td>
<td>The actions and activities designed to increase knowledge and awareness of the parks and their role in the conservation of the nation’s natural resources.</td>
</tr>
<tr>
<td>7. Infrastructure Development</td>
<td>The actions and activities relating to infrastructure development (roads, buildings, water development, fire breaks, disposal of liquid and solid waste).</td>
</tr>
<tr>
<td>8. Maintenance</td>
<td>The actions and activities designed to maintain, rehabilitate and/or enhance the parks bio-physical resources as well as infrastructure and equipment.</td>
</tr>
</tbody>
</table>

This document therefore uses the information produced under Phase I to develop the Integrated Development Plan for Okavango National Park. It also attempts to adapt these data to conform to the eight “management programmes” used to develop the Management and Integrated Development Plans for the remaining five protected areas in the Kwando-Linyanti and Kalahari Conservation Areas.

For ease of understanding, the Okavango Integrated Development Plan is structured around the following five major components:

- Staffing requirements
- Integrated Development Plan (including capital, recurrent and operational budgets)
- Planning Matrix
- Potential income
- Chronogramme (or schedule of implementation)

The document is also supported by a number of appendices that provide specific background data and information relevant to the planning process. The development programme itself is summarised in a planning matrix that adopts a log frame format. The budgets are presented using a spreadsheet format, and assume that development will be spread over a 5-year period. These are presented in the Appendices together with a summary of capital, recurrent and operational costs. An indicative a schedule of implementation (or chronogramme) is also provided.
2 STAFFING REQUIREMENTS FOR OKAVANGO NATIONAL PARK

There currently 15 staff based in Mahango Game Reserve (mostly scouts and labourers). The management plan recommends that nine staff are to be based in Mahango and 30 staff are to be based in the Buffalo section (assuming that this is where the park headquarters is to be constructed). Furthermore, the project review of the Okavango National Park Management Plan (Schuerholz, 1996) identifies the following senior personnel:

- Park Director supported by a junior assistant
- Chief Administration and Archives (supported by a filing clerk)
- Chief Protection Programme
- Chief Education, Communication and Public Relations Programme
- Chief Research and Monitoring Programme (supported by an assistant)
- Chief Tourism and Visitor Programme (supported by six Gate Guards)
- Chief Maintenance Programme (supported by three unskilled labourers)
- Chief Support Zone Programme.

Using these data, the distribution of staff required to implement the eight management programmes for Okavango National Park are given in Table 2.

**Table 2: Proposed staff compliment for Okavango National Park as determined by the eight management programmes**

<table>
<thead>
<tr>
<th>STAFF COMPLIMENT</th>
<th>Administration</th>
<th>Infrastructure</th>
<th>Protection</th>
<th>Maintenance</th>
<th>Support Zone</th>
<th>Tourism</th>
<th>Education</th>
<th>Research</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Park Director</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>Assistant to Park Director</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>Chief Administration</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>Chief Protection</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>Chief Education</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>Chief Research</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Chief Tourism</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>Chief Maintenance</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>Chief Support Zone</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>Clerks</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Gate Guard</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>6</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>6</td>
</tr>
<tr>
<td>Scouts</td>
<td>-</td>
<td>-</td>
<td>19</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>20</td>
</tr>
<tr>
<td>Labourers</td>
<td>-</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td><strong>Total Staff Compliment</strong></td>
<td><strong>4</strong></td>
<td><strong>20</strong></td>
<td><strong>4</strong></td>
<td><strong>1</strong></td>
<td><strong>7</strong></td>
<td><strong>1</strong></td>
<td><strong>2</strong></td>
<td></td>
<td><strong>39</strong></td>
</tr>
</tbody>
</table>

Job descriptions for the senior staff and skill requirements are provided in the project review document prepared by Schuerholz (1996). Furthermore, it is assumed that the “Park Director” will be in overall charge of the Okavango National Park, and will be based at Buffalo.
3 INTEGRATED DEVELOPMENT PLAN FOR OKAVANGO NATIONAL PARK

The Integrated Development Plan for the Okavango National Park is to be implemented over a five-year period. The capital, recurrent and operational budget requirements have been gleaned from the Okavango Management Plan (Volume 2) and the project review documents prepared by Schuerholz (1996).

3.1 Capital Costs for the Development of the Okavango National Park

It is not clear from the management plan where the park headquarters is to be established. Therefore, for the purpose of this document, it is assumed that the headquarters will be constructed at Buffalo on the eastern side of the Okavango river. Staff will also be based at the entry gates to the park on the western side of the river.

The estimated capital costs take into consideration expenditures such as:

- Staff housing
- Other buildings (workshop, entrance gates etc.)
- Expansion of tourist facilities (hides etc.)
- Road and firebreak construction
- Construction of airstrip and boat jetty
- Procurement of equipment (vehicles, boats, water pumps etc.)
- Procurement of firearms
- Workshop/office equipment
- Water supplies
- Electrical power and fuel supplies

The following assumptions are used to derive the capital costs for the infrastructure development programme.

- Two Scouts will share a house with two bedrooms, central mess area and an external kitchen.
- Four labourers will be housed in one "barrack" unit.
- Senior staff (with the rank of Principle Ranger) is to be accommodated in a two-bedroom house with sitting room/dining room, shower and toilet.
- Gate Guards have the same style of house as Senior Rangers.
- Ablution blocks consist of three showers and three toilets and are intended to be shared by up to 25 people.
- The office complex provides space for all senior staff (Park Director, Ecologist, Support Zone Co-ordinator etc.). Junior staff would not necessarily enjoy a room to themselves. Clerks and Typists to have separate offices.
- The basic design of the entrance gate will include a lockable office, reception area and toilet facilities. Solar power will be optional.
- Provision is made for nominal office furnishing for each office.
- The number of 4 x 4 vehicles is calculated in the basis of 1 vehicle per management programme. All vehicles will be diesel powered.
- Each park and will be allocated at least one 5-tonne lorry. Parks greater than 500km² will be provided with an additional vehicle for every 500km² (i.e. a 1 000km² park will be allocated two lorries).
- Each park will be allocated one tractor, trailer and tow grader. Mowers and disc ploughs are optional. Parks greater than 500km² will be provided with an additional tractor/trailer combination for every 500km² or part thereof (i.e. a 1 000km² park will be allocated two tractor/trailers).
- The size of the workshop/storeroom complex has been made proportional to number of field staff scouts on station.
- A flat allowance is made to kit the workshop out with tools.
Provision is made for game water supplies for a number of boreholes plus pumps calculated on the basis of one unit to 500km$^2$ (this implies a radius of approximately 10km for each water point).

Provision is made to connect the housing and office complex to the national grid.

The capital costs are provided in Appendix III, and summarised together with the Recurrent and Operational Costs in Appendix VI.

### 3.1.1 Infrastructure Development Programme

#### Introduction

All infrastructure development in the Okavango National Park will be co-ordinated under this management programme. This includes construction of any buildings, staff accommodation, entry gates, signs, water (both domestic and game water supplies), power (including fuel supply), sewerage, fire breaks etc. Procedure guidelines on design, placement and construction of infrastructure developments are provided in Appendix VII. Where possible, the implementation of any major construction programmes will be out-sourced following an analysis of the most cost-effective options.

An Environmental Impact Assessment will be done prior to any major infrastructure development.

The current problems and Issues, and the proposed solutions to implement the following activities have been taken directly from the Okavango National Park Management Plan (Volume 2) with minor modifications to conform with recommendations provided under Phase II of the planning process.

**Activity 1:** Establish the central headquarters and staff accommodation for the Okavango National Park at Buffalo, and procure necessary equipment (vehicles, radios, firearms, uniforms etc.)

**Current problem and issues**

There are currently few buildings of high standard within the park. The proposed Park Headquarters in the Buffalo Section is in a state of advanced disrepair and the majority of buildings at Nova de Marc and the Mahango entrance are refurbished SADF buildings in poor condition. The development of new building infrastructure in the ONP is seen as essential to effective management in the future.

**Proposed solution**

A full evaluation of what building infrastructure is required must be conducted. It is recommended that this be done by a private contractor who will also be required to assess the potential for refurbishment and/or recovery of materials of current buildings. Motivate that the Department of Works, Ministry of Works, Transport and Communication relinquishes authority over the current buildings in the Buffalo Section, and that those not deemed recoverable are broken down and disposed of preferably by a private contractor to be appointed through a tender process. Clean up and rehabilitate all abandoned buildings within the ONP. This would include the rehabilitation of the sewerage works at Picapau.

New buildings are required for effective management of resources and visitors. The following lists of buildings required are provisional only, and should not be considered complete.
a  Park headquarters

Main entrance complex including an interpretation facility
Administrative complex
Research facilities
Storerooms and maintenance workshops
Housing for MET staff
Craft kiosk

b  Tourism facilities

Toilet facilities at all picnic sites, viewing platforms and reception centres
Viewing platforms at selected sites

c  Education facilities

Education centre at the old Staff Camp, Mahango
Convert, refurbish, and develop Nova De Marc as the regional environmental education centre

Housing and Other Specifications

To conform to the recommendations provided for the other North-East Parks, construction of staff housing is to be commissioned taking the following points into consideration:

- The area’s main climatic characteristics are heat and dryness. The area has a high intensity of direct solar radiation plus an added factor of high levels of reflected radiation from the ground. High diurnal and annual temperature ranges are prevalent.
- Low humidity levels and generally low precipitation are features of the local climate. The area has low average wind speeds contrasting with occasional violent wind storms. A large portion of the area has a sandy environment.
- Uncomfortable living and working conditions are created by the extreme heat and dryness. Flies, sand and dust storms need to be counteracted. All building must therefore be adapted to summer conditions i.e. protected from intense radiation from the sun, ground and surrounding buildings.
- Buildings are to be designed where reduction of heat takes precedence over air circulation during the daytime. Measures are to be taken to reduce glare and to prevent dust and insect penetration.
- Buildings are to be designed to take advantage of the prevailing weather conditions i.e. have courtyards, wide patios and large roof overhangs. No mechanical ventilation systems will be required.
- The largest dimensions and windows should face south. West faces of buildings should have no openings or windows. Eastern faces may have openings, but must be kept to a minimum. Non-inhabitable rooms (e.g. storerooms) should be located on the western side of the buildings to form a thermal barrier.
- Rooms are to be rectangular, with the narrow width as the external wall. They are to have high ceilings and ideally open on to a patio of indoor courtyard. Heat producing areas, such as kitchens, should be isolated and separately ventilated.
- Outdoor areas should contain plants and be shaded most of the day. Paved surfaces should be avoided wherever possible. Provision is to be made for outdoor sleeping (a patio screened with gauze is ideal).
- Windows are to be relatively small, particularly on outside walls and must be shielded from direct radiation and glare. Ventilation during daytime must be kept to a minimum, but designed for good ventilation at night.
- Direct sunlight on work spaces is to be avoided.
- Walls facing north and west (i.e. exposed to direct sunlight) must be thick and solid. They are to be shielded by large eaves and by vegetation. Generally walls of 600mm thickness is sufficient to provide heat sink capabilities.
- The exterior is to be painted white to make them as reflective as possible
• Roof should be thatched where possible. The ceiling space is to be open to allow for maximum ventilation.

The following specifications are provided as a guide for the construction of a purpose build 1-bedroom or 2-bedroom house.

a Construction

• Bricks or blockwork walls
• Floors – Cement screed
• Walls – Woodfloat cement plaster
• Steel frame windows and doors, and plasterboard ceiling.
• Limited electrical installation is to be installed to facilitate solar powered lighting.
• Kitchen installation to include a stainless steel sink, wooden shelving, one steel cabinet unit.

b Room sizes

<table>
<thead>
<tr>
<th>Room</th>
<th>Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>One-bedroom (with built in cupboard)</td>
<td>16m²</td>
</tr>
<tr>
<td>Two-bedroom (with built in cupboard)</td>
<td>13m²</td>
</tr>
<tr>
<td>Bathroom (possibly with shower only)</td>
<td>5m²</td>
</tr>
<tr>
<td>Toilet (with washbasin)</td>
<td>2m²</td>
</tr>
<tr>
<td>Living room (lounge/dining)</td>
<td>30m²</td>
</tr>
<tr>
<td>Kitchen (including pantry/storeroom)</td>
<td>12m²</td>
</tr>
<tr>
<td>Circulation/cupboards</td>
<td>6m²</td>
</tr>
<tr>
<td>Total</td>
<td>84m²</td>
</tr>
</tbody>
</table>

Veranda (optional) 18m²

c Sewerage and water reticulation

Sewerage disposal is to consist of septic tanks. A reliable water reticulation system is to be installed.

d Solid Waste Management

Provide adequate structures for waste collection at all public view points, picnic sites, entrance gates, offices, camps and viewing platforms. Structures should be designed to exclude baboons, monkeys and any other potential problem animal. Designs are widely available.

At all of the above sites, post notices requesting visitors to take their waste out of the park themselves.

Collect all waste on a weekly basis or as necessary. Care should be taken during the collection process that all litter is adequately packed in the collection vehicle and there is no loss of litter on the way to a disposal site. A heavy cover should be used to cover the litter on the vehicle.

Identify and develop a solid waste disposal site for each of the sections of the park. These should preferably fall outside the park (site to be developed in consultation with local communities), or, failing this, the waste disposal site should be peripheral to the park and preferably near the gate. The site should be enclosed with a high (five metres) wire mesh fencing to contain any windblown loss of refuses and should be electrified if deemed necessary. The top should also be covered if possible (i.e. form a cage). Heavy soils should be avoided as these often impede drainage and so pose a health risk during the wet season.
Waste should be burnt weekly or as required. In the dry season great care must be taken to ensure that wild fires do not result from poor burning practices. Establish a fire break around the waste disposal pit.

The removal and disposal of building rubble and waste is the responsibility of the contractor. The Regional Head must build this clause into any contract and ensure compliance.

The collection and removal of solid wastes from concessionary camps is the responsibility of the concessionaire, who may use the main disposal site managed by the park authorities. No waste of any kind may be disposed of at or near the concessionary camp (i.e. no other dumps may be developed within the park). The Regional Head must build this clause into any contract and ensure compliance.

Litter and refuse disposed of along the district road to Botswana is to be collected and removed once every two months or as required. This is a responsibility of the Department of Roads, but it is unlikely that this agency will be able to fulfil its responsibilities in this regard.

e  Electrical power supply

Currently neither the Buffalo Section or Mahango have power supplied. SWAWEK power is, however, supplied to Bagani Military Base (at the bridge) and connection should be possible. A major SWAWEK transmission line passes through the Mahango Section and follows the course of the main road to Botswana. Installation of the power supply should take the following into consideration:

- Power supply infrastructure and development should be designed to cause minimal visual and aesthetic impacts, within defined financial limits. Underground cables are preferred to overhead lines where feasible.
- All proposed out-stations to be provided with solar power units.
- Develop clear guidelines relating to conservation of power.
- Domestic power supplies should be separately metered and costs borne by occupants. Prepaid card metering systems are likely to be most effective in this regard.
- All electric fences should be connected to SWAWEK power supplies where possible.

f  Telecommunications

The current telecommunications infrastructure within the ONP is totally inadequate, with only one radio at Nova de Marc operational. Mahango staff is required to travel to Popa Falls to place phone calls. There is no internal system of communication for MET field staff. The headquarters in the Buffalo section can be serviced from the new telephone system installed to Katima Mulilo (digital switching). No extension of the current telephone system to Popa Falls is envisaged and so the Mahango Section will not be connected telephonically in the foreseeable future.

g  Workshop facilities

Basic workshop facilities incorporating a storeroom and overhead fuel tanks are to be constructed. The workshop facilities capable of undertaking simple engineering and mechanical works (welding, engine/pump repairs, vehicle repairs, carpentry etc.) are to be installed. A storeroom to protect bulk supplies (cement, building material and other hardware) not exceeding 15m x 25m is to be constructed within the vicinity of the workshop. Overhead fuel tanks are to be installed.

Implementation
The implementation of this building programme is to be co-ordinated by the Regional Warden in conjunction with the Park Director and officials from the Ministry of Works. Siting of the various facilities will be the responsibility of the Park Director, using the guidelines provided in Appendix VIII. Construction will be offered on contract to the private sector wherever possible.

**Activity 2: Construct entry gate for the Mahango Section, including tourism facilities (hides, picnic sites etc.)**

**Current problem and issues**

The Entry Gate into the Mahango section is in a poor state and requires refurbishment. In addition, there are no accommodation facilities for staff that enable staff to collect entry fees or distribute promotional information.

**Proposed solution**

An entrance gate is to be constructed that conforms to the standard design applicable to all North East Parks. The design shall incorporate a reception and entrance complex (including an interpretation facility) and lockable weatherproof office. The office will be equipped with a radio to communicate with the headquarters at Buffalo, and other stations in the Kwando-Linyanti Conservation Area and Kalahari Conservation Area. Logbooks, tourist receipts and tourist information is to be available at all times.

In addition to the above, staff accommodation is to be constructed as part of this complex for staff manning this gate.

Tourism facilities (such as hides, viewing platforms etc.) are to be constructed at selected sites throughout the park. The purpose of these facilities is to reduce the level of vehicle traffic in the park. As a guide, the following parameters should be taken into consideration when selecting game viewing sites:

- The approach to the hide (either by vehicle or by foot) should not be visible (*i.e.* vehicles and people should be able to approach and leave the hide with minimal disturbance to animals).
- The hide should be sited down wind from the viewing area.
- Hides should not be visible either from the game viewing roads or from other hides.
- Hides should not be sited in open areas.
- Hides should only be constructed on one side of the river/pan so that the vista is not spoiled.

Each particular site will have unique attributes that will require a specific design. Depending on the topography, location, wind direction and vegetation, the hides can either be raised above ground to various heights, constructed at ground level or even below ground level if the situation calls for this. The design and construction will therefore be left to the discretion of the Park Director with the proviso that:

- The hides are not constructed above the tree line.
- Only natural material is used in the construction (tree logs, reeds, palm fronds, thatching grass *etc.*).

**Implementation**

This activity will be co-ordinated by the Regional Warden in conjunction with the Park Director. Construction of the entrance gate and associated staff accommodation will be outsourced.

**Resources required**
Activity 3: Construction of access roads and firebreaks.

Current problem and issues

There are a number of different types of roads, tracks, trails and paths (existing and planned) within the ONP. The majority of these fall under the jurisdiction of the MET and access, maintenance and costs are controlled by the MET. The exception to this is District Road D3404, which runs through the Mahango Section and is a major transit route to Botswana. As this road is a proclaimed public right of way, the MET has no jurisdiction as to access, speed limits and maintenance. The main tarred road from Bagani to Kongola runs along the northern boundary of the Buffalo Section. There are currently no trails or paths formally laid out within the ONP, but several interpretative trails are planned for educational purposes.

Proposed solution

a  The current road system:

Any roads, tracks, trails and paths no longer in use must be reclaimed to prevent erosion. The annual assessment of roads needs to address whether the road under review is achieving its communication/tourism objective, whether the road in question is causing negative environmental impacts and what the rehabilitation requirements are. For example, the track running from Kwetche to the Game Capture facilities in the Mahango Section, is not required for effective management and should be closed, reclaimed and rehabilitated.

b  Maintenance programme:

All current roads, tracks and paths should be mapped and subdivided into different units. Each subdivision should be numbered and detailed comments should be recorded on a subdivision record sheet.

All roads, tracks, trails and paths should be inspected annually and condition rated according to the scale outlined in Section 4.1.2 (Volume 2, Okavango National Park Management Plan). The rating of condition will determine priority of maintenance and rehabilitation for an annual programme. The replacement and costing of new signage along all roads needs to be done at this time as well.

All maintenance and rehabilitation work will be built into the monthly work plan for the ONP and all details of work done, costs and time requirements are to be filed on subdivision record sheets to be filed in the Park Warden’s Office.

Fire-break tracks and routes are to be maintained according to the burning policy.

c  Construction of new roads, tracks, trails and paths:

No new roads, tracks, trails or paths may be constructed without a comprehensive planning process being undertaken and followed by an environmental impact assessment. The results of the EA are to be submitted to the Planning Committee for review and approval.

Responsibility for ensuring compliance with the recommendations of the EA rests with the Regional Head. The routing of the new access road must be done in consultation with the Conservation Scientist.
New tourist roads should subscribe to the following general limitations. They should be a single track, should be surfaced where appropriate and financially possible, must be surfaced, not be greater than three metres wide, can be upgraded (subject to an EA), should not have a developed road reserve, should not be designed with bus or caravan use in mind, should have a speed limit of 40 km/h, must be designed with proper drainage structures such that local hydrology is not interfered with. Where possible they should be designed to carry one way traffic only. All view points, parking areas and lay-by/picnic areas should be hardened and clearly demarcated.

New service roads for park management should subscribe to the following general limitations. They should be single-track, unsurfaced, ungraded by heavy machines and should be appropriately sign-posted to limit tourist access. Maintenance of these tracks (including fire breaks) should be limited to the mowing and slashing of vegetation. Heavy plant should only be used to eliminate site specific road hazards.

New fire-breaks (there are none currently established) should subscribe to the following standards. They should not be more than 9 m wide inside the park, but can be up to 18 m wide on park boundaries (nine metres on either side of the park fence) and the size of fire-breaks will be reviewed subject to results of fire monitoring programmes; they should be cleared and maintained according to the burning policy for the park; should be unsurfaced and cannot be maintained with chemical control agents. The routing of the fire-breaks must be designed in conjunction with the Conservation Scientist and should reflect realistic ecological boundaries where possible.

Establishment of interpretative trails should be preceded by a planning process involving all sections of park management. Interpretative trails should be unobtrusively marked, should not require major clearing of vegetation to be effective, name tags and plates for trees, etc. should be of the standard supplied by the Dendrological Society of Southern Africa (green with white writing, approx. 5 x 10 cm) and should be placed in areas where users would not impinge on the main tourist road routes.

d  Roads, tracks, trails and paths available for use by concessionaires:

Concessionaires within the park must be informed in writing as to which routes may be used by them. No roads may be developed by concessionaires without prior approval and should be limited to developing an access route to the concessionary site only. These routes will be the sole responsibility of the concessionaire, who will be liable for all development, management and maintenance costs for these routes.

e  Proclaimed roads within the park or on park boundaries

The following actions are recommended:

- Establish a joint committee with the Roads Superintendent responsible for the area and the Regional Head, such that development issues can be planned for pro-actively. Current concerns are the possible upgrading of the road through the Mahango Section to a tar surface, the supply of road surfacing materials for the upgrading of the Divundu-Kongola road on the northern boundary of the Buffalo Section and the rehabilitation of quarry sites within the Buffalo Section. Issues such as the clearing of road reserves within the ONP, speed limits and jurisdiction can be discussed and resolved through such a committee.

- At all points of entry and along the sections of proclaimed roads within the ONP, information signboards should be clearly placed so as to inform users of the fact that they are entering a conservation area, there are hazards in the form of wildlife and they should subscribe to lower speed limits (suggested speed 60 km/h). Within the Mahango Section rights of access to park roads and tracks needs to be clearly stated (i.e. post permit requirements and no entry signage clearly).
f  Signage within the ONP

All signboards should be of a standard design and colour. Signboards should be of a rustic design based on carved lettering in wood.

On official park roads it is suggested that masonry beacons constructed with local stone and sufficient to withstand elephant damage are established at all road junctions. Information to be included on such beacons should include:

- right of access (permit holders, no-entry, etc.)
- destination names
- distance to destination
- directional arrow (unambiguous) and vehicle use designation (e.g. four-wheel drive only).

This type of signage has been successfully established in a number of parks in southern Africa (notably the Kruger National Park) and the design specifications can probably be obtained from these agencies.

Along proclaimed roads it is suggested that the Ministry of Works, Transport and Communication are approached for the establishment of information signage for transit users. The establishment of information notice boards (containing information of a general, ecological, interpretative nature) along tourist roads is not recommended, because of the high maintenance costs (elephant damage) and obtrusive nature of such signage. Such information boards should be provided only at entrance gates and visitor reception areas only.

A maintenance programme to keep signboards in good repair must be scheduled in the monthly work plan.

Implementation

This activity is to be implemented by the Park Director in conjunction with input from the Senior Conservation Officer. Aerial photographs will be used to determine the exact route, and the proposed route will be physically checked before construction commences.

The actual construction of the firebreak shall not involve the removal of large trees (i.e. trees greater than 20cm diameter). The final routes therefore need not necessary follow a straight line. The exception will be the eastern border road between the Bwabwata Multiple Use Area and the Buffalo Core Area.

Resources Required

Global Positioning System
Aerial photographs
Contract labour to clear track
Tractor/trailer to transport staff
Tools (shovels, picks, axes)
Camping gear and allowances.
Material to construct signs
Hire of heavy earth moving equipment

Activity 4: Construction of airfield, slipway and jetty

Current problem and issues

There are currently no airfields or helipads established within the ONP. The only airfield in the area is at Bagani. This site is maintained by the Ministry of Works, Transport and Communications and is a registered, all-weather strip over 1000 m long. With the requirement for regular game counts, the value of aircraft in anti-poaching patrols and monitoring work,
there is a demand for an airfield and helipad within the ONP. Additionally, once the tourism concessions are opened within the park there will be a demand from concessionaires for the use of such facilities.

Similarly the long river frontage and the central importance of the Okavango River in the ONP, determine that boats are required for effective management of the ONP. The placement of a slipway and/or jetty is problematic as there are few sites suitable for this. Kwetche within the Mahango Section, and the barrack lines area and the old pump station site in the Buffalo Section are the only easily accessible sites within the ONP.

**Proposed solution**

The design specifications for an airfield in the area need to take into consideration the type of aircraft the MET is likely to operate. For the purposes of this report it is assumed that there would be a requirement for a strip in excess of 1000 m long.

The best current site identified is on the sand plain to the north-east of the proposed park headquarters at Buffalo Camp. This site is peripheral, is situated in an area of degraded *Burkea* woodland and there are open borrow-pits with sufficiently high grade surfacing materials situated near by. The construction of an airfield is not recommended within the Mahango Section.

It is recommended that a helipad be constructed in both the Buffalo Section and the Mahango Section. Potential sites would be the proposed airstrip at the proposed headquarters in the Buffalo Section and at the northern entrance gate of the Mahango Section.

Identify potential slipway and jetty sites within the ONP, preferably one in each section. A slipway site exists just outside the park boundary on the west bank of the river about 20 m north of the Mahango Section boundary.

**Implementation**

This activity is to be implemented by the Park Director in conjunction with the Department of Works. It is recommended that the possibility of outsourcing this activity be investigated.

**Resources required**

- Transport
- Labour
- Hire of heavy machinery
- Metal pontoons for jetty

**Activity 5: Installation of game water supplies at one or more major pans**

**Current Problems and Issues**

The Okavango River is the major source of water for wildlife within the ONP and this natural supply is supplemented seasonally by numerous small pans and depressions which fill with rainwater. There is currently only one functional artificial water point within the ONP (at Sengwerugweru). Artificial water points are, however, considered to be a valuable tool in wildlife management and there is considerable interest amongst current MET staff to increase the number of artificial water points within the park. Artificial water points are seen as providing secure permanent water sources for wildlife (particularly during periods of drought) and as providing mechanism by which certain species can be attracted into low density areas from high density areas (*i.e.* population manipulation through water point management). There is, however, little evidence to suggest that artificial water points do provide the functions suggested, and it is recommended that development of artificial water points be approached with extreme caution.
Proposed solutions

- Ensure that adequate measures are taken to allow unhindered access to the Okavango River by all water dependent species within the ONP.

- Ensure that adequate measures are taken to protect the natural hydrological regime prevailing in the Okavango River and in all ephemeral aquatic systems (e.g. pans).

- The Department of Water Affairs should be approached to install gauging plates in the river at the Park Headquarters, and a monitoring programme developed to record annual and seasonal fluctuations in water flow.

- The provision of artificial water points within the ONP must be preceded by an EIA in which the ecological framework for that supply must be given the fullest consideration.

- If artificial water points are to be installed they should be placed at existing water sources such as pans, such that water supply is supplementary rather than an entirely new supply. This, however, is open to debate as some authorities suggest that using such sites will lead to the destruction of the pan.

- The potential for tourism use should be a factor in planning artificial water points as they have the potential to increase the tourism experience in the park and hence increase income for the park. The use of water points as a method of manipulating wildlife populations aiming at improving the tourism product in the park, is permissible.

- Artificial water points must not be constructed near (<1 km) the ONP boundaries, where there is a potential for conflict with surrounding communities or land-uses. The distance from the boundary will, to a large extent, be determined by the EIA for the water point.

- No barriers or obstructions of any type may be built on drainage’s within the ONP.

- A comprehensive monitoring and maintenance programme for all artificial water supplies must be developed and implemented. A service roster must be developed and built into the monthly work plan. Rest Water Levels should be checked monthly before pumping. Extraction/pumping limits should be based on recharge rates.

- All water supply infrastructure must be installed in a way as to make it as unobtrusive as possible.

- Given the perceived importance of artificial water points in manipulating wildlife populations (especially in attracting animals away from the river) a monitoring programme must be developed at each water point. Game species and numbers, seasonality of use and the effects on vegetation (at varying radii around the water point) should all be assessed in terms of whether the water point is achieving a stated management objective.

- Adequate protection measures against damage and theft must be developed for installations.

Trough design

Design of the trough must take into consideration the affects of evaporation. The design of the troughs should therefore minimise the surface area of the water. As a guide oblong troughs measuring (at a minimum) 6m x 1.5m x 1.5m should be constructed using reinforced concrete (up to 20cm thick to withstand elephant damage) and set into the ground so that the top is at ground level. The trough should be “V” shaped and include steps to facilitate the escape of small animals that accidentally fall into the trough. The outlet pipe is to be set in concrete to prevent destruction by animals.
Theft of solar panels

The theft of solar panels is a serious problem in the Park. To mitigate against this, it is recommended that the panels be clearly engraved to indicate that they are the property of the Park. In addition, the panels are to be enclosed in a steel frame that is firmly concreted in the ground. A heavy fine (equal to double the cost of replacing the panel) is to be imposed on offenders caught in possession of stolen panels, and a reward offered for information leading to the recovery of any stolen panels.

Implementation

The Park Director, in conjunction with the Conservation Scientist, will visit all the major pans to prepare an inventory of the pumping units, and determine the level of utilisation by wild animals. The Park Director will develop the management and maintenance strategy for the game water supply programme, and procure sufficient stock to replace breakdowns speedily. All equipment will be standardised (engine model, pump model, pump base frame, pulley and fanbelt sizes, solar units, solar pumps etc.) to facilitate maintenance and repairs.

Regular maintenance patrols to ensure a steady supply of water will be the responsibility of a maintenance team equipped with a vehicle (preferably a tractor/trailer combination) that can carry labour and spares. The proposed pumping regime should extend from as early as March until the first rains.

The use of reservoirs and ball valves to control water supply is to be avoided. Instead, a pumping regime is to be established that will maintain water levels in the natural pans at a pre-determined level. The pumping regime will be modified according to demand, but may involve pumping continuously for periods of up to 10 days at the height of the dry season. Within reason, natural pans should not be permitted to dry out completely before supplementary pumping is initiated.

Resources required

Drilling rig
Pumping unit
Piping
Building materials (to construct concrete water trough)

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2 The option of contracting out the maintenance of the boreholes and pumps should not be discarded.
3.2 Estimated Recurrent Costs for Okavango National Park

The recurrent and operational budgets for the Okavango National Park have been derived based on the staffing structure of the park and an analysis of the management plan prepared by EIS. These costs are usually met under the recurrent expenditure of government funding. The assumptions used to derive these costs are provided, together with the costs of the various inputs. The Basic Recurrent Costs consider:

- Staff salaries
- Field allowance
- Equipment (uniforms, camping, radios etc)
- Mileage
- Training

The assumptions used to develop the recurrent costs for the Okavango National Park are:

- Field scouts are expected to be on patrol for up to 25 days per month. Labourers may accompany them. A field allowance is to be paid as an incentive to ensure proper patrolling.
- Officers are expected to spend up to 10 days per month in the field. Junior officers are to lead patrols. Both are entitled to the field allowance.
- All staff is to be provided with patrol rations. This is calculated at N$360/man month.
- Uniforms are treated as consumables because they are generally worn out after one year.
- Camping equipment is written off after two years.
- One VHF radio is to be provided for every five scouts, and each officer should have a radio. Radio handsets to be replaced every four years.
- A lump sum is provided for base station and repeater links.
- Every scout and every officer should be armed.
- A lump sum is provided to cover costs for implements for labourers (picks, shovels etc.).
- An allowance of 2 500km per month for each 4 x 4 vehicle will provide for all necessary travel within the park and allow one trip to a major centre per month.
- The mileage allowance for the 5-tonne lorry will be limited to 1 000km per month. This includes one trip per month to a major centre to collect materials.
- The provision for the tractor assumes it will be used on average 100 hours per month.
- The mileage provision for reporting to the Regional and Head Office will be shared amongst senior officers, including travelling for training.
- The provision for boat patrols assumes 50 hours per month.
- A lump sum is allocated for vehicle repairs/maintenance.
- The cost/kilometre includes depreciation.
- The running cost for diesel-powered borehole pumps and generators assumes that this equipment will operate 6 hours per day.
- Each station will receive a bulk fuel supply (up to 10 000 litres). Frequency and volume of supply will depend on number of vehicles on station.
- A lump sum provision is provided for all routine house maintenance (painting, plumbing, electrical repairs etc.).
- Provision is made for all scouts to undergo 14 days training either in service or elsewhere in Namibia once annually.
- Provision is made for senior officers to undergo 28 days training annually. This could involve travel to outside of Namibia but within the southern African region.

Maintenance of firebreaks, road construction and rehabilitation

The total length of road in the “Buffalo” Section of the Okavango National Park will be increased over the next five years through the construction of additional access roads and firebreaks. The eastern, southern and northern boundary will double as the major external firebreak for the park. A 100m strip will be burnt on alternate sides of the boundary each year.
• All tourist roads will be maintained to a standard which most tourists are prepared to endure in a vehicle exceeding 1800cc capacity (preferably 4 x 4), and which allow staff to carry out their daily duties. No major mechanical equipment inputs are envisaged, nor construction of major earth works, culverts, bridges etc.

• Such roads will be maintained by a labour gang using normal implements (pick, shovel, grass cutter) and aided by a tractor/trailer/tow grader.

• Firebreaks will be cleared sufficiently to allow easy travel by 4 x 4 vehicle.

• The cost of road maintenance is based on the assumption that a contract labour gang of 15 people can clear one kilometre of road in one day. The cost for a year of operation is as follows:

<table>
<thead>
<tr>
<th>Inputs</th>
<th>Annual Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wages: 15 labourers @ N$200/month</td>
<td>N$ 36 000</td>
</tr>
<tr>
<td>Field allowance: N$6/day x 15 labourers x 365</td>
<td>N$ 32 850</td>
</tr>
<tr>
<td>Ration allowance: N$6/day x 15 labourers x 365</td>
<td>N$ 32 850</td>
</tr>
<tr>
<td>Implements: 15 labourers @ N$200 each</td>
<td>N$  3 000</td>
</tr>
<tr>
<td>Tentage: 3 x 5-man tents @ N$3 000 each</td>
<td>N$    9 000</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>N$113 700</strong></td>
</tr>
<tr>
<td><strong>COST/KM/YEAR</strong></td>
<td><strong>N$311</strong></td>
</tr>
<tr>
<td><strong>ADJUSTED FOR 15% DOWN TIME</strong></td>
<td><strong>N$360</strong></td>
</tr>
</tbody>
</table>

• The cost of installing firebreaks assumes that a contract labour gang can prepare 10km of roads/firebreaks per day. The cost/km is therefore calculated at N$37/km.

• Mileage is provided to transport labourers, and for use of tractor.

• Provision is made for the hire of a grader or bulldozer for those portions of the road/firebreak which are beyond the capacity of hand labour.

A summary of the basic recurrent costs are provided in Appendix IV.
3.3 Estimated Operational Costs for Okavango National Park

The management plan prepared by EIS does not subdivide the various management activities according to the eight management programmes identified under Phase II of the planning phase. Furthermore, there are approximately 30 activities than can be regarded as being local policies or regulations rather than specific management activities. For example, Chapter 5.9 (page 46, Volume 2) discusses the actions required and provisional guidelines related to *Vegetation in staff camp and lodge gardens* while others refer to *Notifiable diseases* and *Sick and Injured Animals*.

Therefore, to prepare the estimated operational costs, the list of “management activities” identified in Volume 2 has been analysed, and an attempt made to group them under one of the eight management programmes (Table 3). Those activities that cannot be assigned to a category have been excluding of the analysis (Table 4).

The **Operational Costs** required to implement the individual management programmes are identified, including the assumptions used to derive the operational budgets. These are presented in a spreadsheet format (see Appendix V).
Table 3: Analysis of the management activities identified in the Okavango National Park Management Plan. Chapter numbers refer to Volume 2 – Okavango National Park Management Plan (EIS, 1996).

<table>
<thead>
<tr>
<th>Management Programme (as identified under Phase II)</th>
<th>Management Activities identified in the ONP Management Plan</th>
</tr>
</thead>
</table>
| **1. Administration Programme**                     | 1. Negotiate the proclamation of Okavango National Park (See Chapter 3.1.3)  
2. Concessions (see Chapter 20)  
3. Tariff Structures (see Chapter 21) |
| **2. Protection Programme**                          | 1. Prepare fire management programme (see Chapter 5.3)  
2. Law enforcement (see Chapter 22) |
| **3. Research and Monitoring Programme**             | 1. Baseline vegetation inventories established (Chapter 5.2)  
2. Monitor status and trends of wildlife populations in ONP (see Chapter 6.2)  
3. Develop research and monitoring programme (see Chapter 13.2) |
| **4. Tourism and Visitor Programme**                 | 1. Tourism development and management (see Chapter 24.2) |
| **5. Support Zone Programme**                        | 1. Consumptive utilisation of vegetation (see Chapter 5.8)  
2. Parks and neighbouring community relations. Involves 9 activities (see Chapter 12) |
| **6. Education, Communication and Public Relations Programme** | 1. Environmental education services. Four activities identified in management plan (see Chapter 25) |
| **7. Infrastructure Programme**                      | 1. Water supply for animals (see Chapter 8.3)  
2. Park headquarter development (see Chapter 14.2)  
3. Telecommunications (see Chapter 15.4)  
4. Airfields and helipads (see Chapter 15.5)  
5. Slipways and jetties (see Chapter 15.6)  
6. Installation of electrical power (see Chapter 17.2) |
| **8. Maintenance Programme**                         | 1. Rehabilitation of quarry and borrow pits (see Chapter 4.2.2)  
2. Solid waste management (see Chapter 9.3)  
3. Maintenance of park infrastructure and movable assets (see Chapter 14.3)  
4. Maintenance of roads, tracks and signage (see Chapter 15.2) |
Table 4: Activities identified in the Okavango National Park Management Plan that have not been assigned to one of the eight management programmes. Chapter numbers refer to Volume 2 – Okavango National Park Management Plan (EIS, 1996).

<table>
<thead>
<tr>
<th>Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Define the activities allowed within each of the zones (see Chapter 3.2.3)</td>
</tr>
<tr>
<td>2.</td>
<td>Develop an erosion map of ONP (see Chapter 4.1.2)</td>
</tr>
<tr>
<td>3.</td>
<td>Management of Indigenous Problem Species (see Chapter 5.4)</td>
</tr>
<tr>
<td>4.</td>
<td>Control of alien species (see Chapter 5.5)</td>
</tr>
<tr>
<td>5.</td>
<td>Re-establishment and introduction of plant species (see Chapter 5.6)</td>
</tr>
<tr>
<td>6.</td>
<td>Priority species – Vegetation (see Chapter 5.7)</td>
</tr>
<tr>
<td>7.</td>
<td>Vegetation in staff camp and lodge gardens (see Chapter 5.9)</td>
</tr>
<tr>
<td>8.</td>
<td>Plant – herbivore dynamics and management (see Chapter 5.10)</td>
</tr>
<tr>
<td>9.</td>
<td>Population control (see Chapter 6.3)</td>
</tr>
<tr>
<td>10.</td>
<td>Indigenous problem animals (see Chapter 6.4)</td>
</tr>
<tr>
<td>11.</td>
<td>Control the movement of wildlife and domestic stock (see Chapter 6.5)</td>
</tr>
<tr>
<td>12.</td>
<td>Re-establishment and introductions (see Chapter 6.6)</td>
</tr>
<tr>
<td>13.</td>
<td>Priority species – wildlife (see Chapter 6.7)</td>
</tr>
<tr>
<td>14.</td>
<td>Control of alien species – wildlife (see Chapter 6.8)</td>
</tr>
<tr>
<td>15.</td>
<td>Notifiable diseases (see Chapter 6.9)</td>
</tr>
<tr>
<td>16.</td>
<td>Pets and Domestic animals (see Chapter 6.10)</td>
</tr>
<tr>
<td>17.</td>
<td>Sick and injured animals (see Chapter 6.11)</td>
</tr>
<tr>
<td>18.</td>
<td>Survey and designate cultural and archaeological sites (see Chapter 7.2)</td>
</tr>
<tr>
<td>19.</td>
<td>Water supply management for humans (see Chapter 8.2)</td>
</tr>
<tr>
<td>20.</td>
<td>Water pollution (see Chapter 9.2)</td>
</tr>
<tr>
<td>21.</td>
<td>Human waste management (see Chapter 9.4)</td>
</tr>
<tr>
<td>22.</td>
<td>Unique, valuable and sensitive features (see Chapter 10.1)</td>
</tr>
<tr>
<td>23.</td>
<td>Place names (see Chapter 11.1)</td>
</tr>
<tr>
<td>24.</td>
<td>New Names (see Chapter 11.3)</td>
</tr>
<tr>
<td>25.</td>
<td>Current registered projects (see Chapter 13.3)</td>
</tr>
<tr>
<td>26.</td>
<td>Future Research Projects (see Chapter 13.4)</td>
</tr>
<tr>
<td>27.</td>
<td>Temporary structures (see Chapter 14.4)</td>
</tr>
<tr>
<td>28.</td>
<td>Transport (see Chapter 15.3)</td>
</tr>
<tr>
<td>29.</td>
<td>Equipment (see Chapter 16)</td>
</tr>
<tr>
<td>30.</td>
<td>Management of water (see Chapter 17.3)</td>
</tr>
<tr>
<td>31.</td>
<td>Maintenance of fencing (see Chapter 18)</td>
</tr>
<tr>
<td>32.</td>
<td>Domestic Regulations (see Chapter 19)</td>
</tr>
<tr>
<td>33.</td>
<td>Security (see Chapter 23)</td>
</tr>
<tr>
<td>34.</td>
<td>Tourism management (see Chapter 24.3)</td>
</tr>
<tr>
<td>35.</td>
<td>Organisational structure, staffing and placements (see Chapter 26)</td>
</tr>
<tr>
<td>36.</td>
<td>Financial management (see Chapter 27)</td>
</tr>
</tbody>
</table>
3.4 Summary of Capital, Recurrent and Operational Costs

Assuming that the entire programme is implemented, it is estimated that approximately N$26.8 million will have to be invested in the park over the 5-year period or approximately N$5.36/year (see Summary of Costs, Appendix VI). The Basic Recurrent Costs account for almost 50% of these costs (N$13.8 million), primarily as a result of the high staff salaries and associated transport costs (see Appendix IV). The construction of staff housing, other buildings and procurement of vehicles accounts for the bulk of the capital costs (N$6.5 million, Appendix III). The operational costs (N$3 million) accounts for 11% of the overall costs (Appendix V). Most of these investments will occur in the first three years (65%). The overall cost/km$^2$ varies from N$4 438 to N$7 395/km$^2$ (or US$740 – US$1 233$), with an average cost of N$5680/km$^2$/year (US$946/km$^2$/year) over the 5-year period.

These very high costs are a result of the staffing structure proposed in the management plan, and the need to provide the necessary equipment in order to implement the management programmes.

---

3 Assumes an exchange rate of US$1 = N$6.00
## 4 PLANNING MATRIX FOR OKAVANGO NATIONAL PARK

### OVERALL GOAL
To protect the biological, environmental and biodiversity of the Okavango National Park through improved conservation status and sustainable economic development.

### OVERALL OBJECTIVE

<table>
<thead>
<tr>
<th>INDICATOR</th>
<th>MEANS OF VERIFICATION</th>
<th>ASSUMPTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>National Park gazetted</td>
<td>Statutory instrument</td>
<td>Park accepted politically</td>
</tr>
<tr>
<td>Boundary of park respected</td>
<td>Record of incursions from patrol reports</td>
<td>No natural catastrophes (droughts, fire)</td>
</tr>
<tr>
<td>Wildlife numbers increase</td>
<td>Ground and aerial survey reports</td>
<td>Botswana Government agree to lift border fence</td>
</tr>
<tr>
<td>Local and regional authorities integrated in management and development of ONP</td>
<td>Support Zone annual reports</td>
<td>Namibia government agree to internal fence alignment and “cattle free” zone</td>
</tr>
</tbody>
</table>

### RESULTS

<table>
<thead>
<tr>
<th>INDICATORS</th>
<th>MEANS OF VERIFICATION</th>
<th>ASSUMPTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Legal integrity of Okavango National Park established</td>
<td>Public notification of proclamation</td>
<td>Political support for park at local level</td>
</tr>
<tr>
<td></td>
<td>Legal instruments</td>
<td></td>
</tr>
<tr>
<td>2. Staff permanently based in the Park with the necessary infrastructure, equipment and budgets to carry out their mandate</td>
<td>Staff permanently resident in the park</td>
<td>MET able to recruit staff</td>
</tr>
<tr>
<td></td>
<td>Annual budgets</td>
<td>Adequate recurrent budgets provided</td>
</tr>
<tr>
<td></td>
<td>Staff housing in place</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Support infrastructure in place</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Competent staff in place</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Annual reports</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Physical inspection of infrastructure</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Vehicles maintained, equipment functional</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Level of illegal activity reduced</td>
<td>Patrol reports indicate 80% reduction in poaching in Year 3 compared to Year 1</td>
<td>Park boundary gazetted</td>
</tr>
<tr>
<td></td>
<td>Annual reports</td>
<td>Appropriate records kept by Park Director</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Incidence of wild fires reduced</td>
<td>Firebreaks in place</td>
<td>Staff adequately equipped and trained to deal with wild fires</td>
</tr>
<tr>
<td></td>
<td>Annual report indicate extent of areas burnt</td>
<td></td>
</tr>
<tr>
<td>ACTIVITIES</td>
<td>MEANS</td>
<td>RESOURCES</td>
</tr>
<tr>
<td>---------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------</td>
<td>------------------------------------------------</td>
</tr>
<tr>
<td>1 Establish the central headquarters and staff accommodation for the</td>
<td>• Removal of building rubble</td>
<td>• Design of buildings</td>
</tr>
<tr>
<td>Okavango National Park at Buffalo, and procure necessary equipment</td>
<td>• Rehabilitation funds</td>
<td>• Building contractor</td>
</tr>
<tr>
<td>(vehicles, radios, firearms, uniforms etc.)</td>
<td>• Construction of staff housing</td>
<td>• Borehole/pump</td>
</tr>
<tr>
<td></td>
<td>• Installation of water reticulation system</td>
<td>• Electrical equipment</td>
</tr>
<tr>
<td></td>
<td>• Construction of sewerage system</td>
<td>• Fuel storage tanks</td>
</tr>
<tr>
<td></td>
<td>• Construction of workshop/storeroom</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Installation of power generator</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Installation of fuel storage</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Design of buildings</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Building contractor</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Radio and solar power equipment</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Construction of tourism facilities</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Building contractor</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Radio and solar power equipment</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Building materials for tourism facilities</td>
<td></td>
</tr>
<tr>
<td>2 Construct entry gate for the Mahango Section, including tourism</td>
<td>• Construction of entrance gate to approved design</td>
<td>• Design of building</td>
</tr>
<tr>
<td>facilities (hides, picnic sites etc.)</td>
<td>• Install radio equipment</td>
<td>• Building contractor</td>
</tr>
<tr>
<td></td>
<td>• Construct staff accommodation</td>
<td>• Radio and solar power equipment</td>
</tr>
<tr>
<td></td>
<td>• Construct tourism facilities</td>
<td>• Building materials for tourism facilities</td>
</tr>
<tr>
<td>3 Construction of access roads and firebreaks.</td>
<td>• GPS</td>
<td>• Contract labour</td>
</tr>
<tr>
<td></td>
<td>• Aerial photographs</td>
<td>• Tractor/trailer</td>
</tr>
<tr>
<td></td>
<td>• Transport for road construction material</td>
<td>• Tools</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Field equipment (tents etc)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Ration allowances</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Implements (shovels, picks)</td>
</tr>
<tr>
<td>4 Construction of airfield, slipway and jetty</td>
<td>• Selection of site for airfield and jetty/slipway</td>
<td>• Earth moving contract</td>
</tr>
<tr>
<td></td>
<td>• Heavy machinery to clear runway</td>
<td>• Contract to construct and install pontoons for</td>
</tr>
<tr>
<td></td>
<td>• Materials to construct floating jetty (pontoons etc).</td>
<td>jetty</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
5 ESTIMATE OF POTENTIAL REVENUE

Total gross expenditure on tourism generated in the North-East Region is estimated at approximately N$ 25 million (N$1996). This represents the total value of tourism in the region to the country as a whole (see: Tourism Development Planning Framework for the Caprivi Region, 1996). Only a portion of this money stays in the region with the bulk, estimated at about 80%, moving out of the region as a result of "leakage"s into other areas of the country.

Expenditures remaining within the region can be viewed at two different levels (see: The Value of Non-Agricultural Land Use in Some Namibian Communal Areas: A Data Base for Planning, 1995). One is the net contribution of resource use activities to the regional economy (resulting in additional economic benefit and induced employment through the multiplier effect) and the second is the contribution of these activities to local community income.

Table 5 shows the estimated current and potential aggregate net economic contribution to the regional for the Caprivi and Northern Kalahari Regions.

Table 5: Comparison of estimates of the current and potential contributions of non-agricultural land use to regional income in the Caprivi and Northern Kalahari Regions (N$ 1994)

<table>
<thead>
<tr>
<th>Item</th>
<th>Caprivi Region¹</th>
<th>Northern Kalahari Region²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extent (sq. km.)</td>
<td>18,800</td>
<td>21,718</td>
</tr>
<tr>
<td>Estimated current contribution</td>
<td>4,886,466</td>
<td>260,616²</td>
</tr>
<tr>
<td>Estimated potential contribution</td>
<td>8,274,234</td>
<td>1,541,978⁴</td>
</tr>
<tr>
<td>Potential magnitude of increase</td>
<td>1.7</td>
<td>5.9</td>
</tr>
</tbody>
</table>

¹entire Caprivi District; ²former Bushmanland plus Khaudum N.P.; ³extrapolation based upon N$12 per km² for Bushmanland alone (Barnes, 1995); ⁴extrapolation based upon N$ 71 per km² for Bushmanland alone (Barnes, 1995).

Assuming that in future the economic potential of the Caprivi and Northern Kalahari regions is realised it would total approximately N$ 10 million. Applying the 80% "leakage" figure discussed above to this amount suggests that the overall potential to the national economy is approximately N$ 50 million (N$1996).

The economic values discussed above are measures of the value of tourism to the region and the nation. These are impressive amounts of obvious importance to national and regional economies. They do not, however, reflect direct benefits to neighbouring communities. This is best measured by the contribution of these activities to local community income. Table 6 shows estimated current and potential income to communities (conservancies) from non-agricultural, natural resource land use inside and outside protected areas within the Kwando-Linyanti, Okavango and Kalahari Conservation Areas.
### Table 6. Comparison of estimates of current and potential community income from non-agricultural natural resource use in land inside and outside protected areas in the North-East Region (N$ 1994).

<table>
<thead>
<tr>
<th>Item</th>
<th>Kwando-Linyanti C.A.</th>
<th>Okavango C.A.</th>
<th>Kalahari C.A.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Protected¹</td>
<td>non-protected²</td>
<td>Protected³</td>
</tr>
<tr>
<td>Extent (sq. km.)</td>
<td>2,640</td>
<td>3,665</td>
<td>1,200</td>
</tr>
<tr>
<td>Estimated current Community income</td>
<td>92,400</td>
<td>505,770</td>
<td>42,000</td>
</tr>
<tr>
<td>Estimated potential Community income</td>
<td>683,760</td>
<td>967,560</td>
<td>310,800</td>
</tr>
<tr>
<td>Potential magnitude Of increase</td>
<td>74</td>
<td>1.9</td>
<td>7.4</td>
</tr>
</tbody>
</table>

¹Mamili, Mudumu and proposed Kwando N.P.; ²proposed/potential adjacent conservancy areas; ³proposed Okavango N.P.; ⁴potential conservancy area north of the Trans-Caprivi Highway; ⁵Khaudum N.P.; ⁶Nyae Nyae Conservancy; ⁷assumes same ratio between inside and outside protected areas as in Caprivi.

Information contained in Table 6 illustrates that these areas generate income to communities which, although moderate at present, has significant growth potential if natural resources are properly managed. Additionally, such things as locating tourist lodges and campgrounds just outside the parks would provide for joint venture partnerships between conservancies and the private sector. Also, issuing trophy hunting quotas to conservancies rather than within parks would enhance conservancy revenue earning potential. Yet another possibility for increasing revenues and improving neighbour relations is the sharing of gate receipts between the Ministry and conservancies.

#### 5.1 Potential Income from the Okavango National Park

EIA (1996) provides the following summary of the issues affecting the tourism potential of Okavango National Park (see Volume 1).

"Only the Mahango Section of the park is officially open to tourism and it is poorly known amongst most tourists travelling in the North-East. There has been no development of the Buffalo Section and there are no tourism facilities in this section of the park. Tourism facilities within the park are therefore limited.

There are currently about 42 kilometres of roads developed specifically for tourism, of which only 14 km are accessible by two-wheel drive vehicles. There are two picnic sites, one at the Giant Baobab and the other at Kwetche. There are no functional toilet facilities. Currently, there are no campsites or any other form of accommodation within the park. The only airstrip close enough to serve the park is near the Bagani Clinic on the West bank of the river, about 12 km from the Mahango Section. Concessions to operate boats and other river craft have been granted to private operators in the past. These concessions have allegedly been withdrawn by the MET, although some operators were still using the section of the river down to Kwetche in December 1994.

Tourism development is largely based outside the park and there are a number of facilities that service the park between Divundu and the northern boundary of the Mahango Section. There are currently two high-cost lodges (Suclabo and Ndhovu), one campsite (Ngepi) with basic facilities and Popa Falls Rest Camp controlled by the MET and servicing both campers and accommodated guests.

Other tourism services outside the park are limited. Game-drives and boating are offered by both lodges on request, but there are no other tour operators in the area. Both lodges run restaurants and bars. The small shop at Popa Falls sells a variety of basic goods as do a number of small shops at Divundu. There is an erratic supply of fuel at two fuel stations at Divundu. The demand for services is currently low, hence the erratic and low level nature of
the supply. As such, it is unlikely that tourism contributes significantly to the local economy at present.

**Tourist numbers**

There are no recent statistics available on the numbers of tourists entering the park. Gate receipt books from the Mahango Section are the only source of these data and no analysis is done by the MET at present. No control register or entry permit system is used in the Buffalo Section, but numbers of tourists visiting this area are negligible.

Figures from 1993 indicate that nearly 3 000 people (in 829 cars) visited the Mahango Section in a year. The majority of tourists were from South Africa and Namibia (56%), with small numbers of people from Europe (10%) and Africa (4%) - the other 30% did not specify where they were from. No figures on expenditure could be found and the actual value of gate receipts is not known. Visitor statistics show that tourism in the area is highly seasonal. The majority of tourists visit the area between May and September, with a significant dip in numbers in June (a phenomenon found throughout Namibia). Numbers are evenly distributed between Namibia, South Africa and northern hemisphere origins. The majority of tourists visiting the area in summer months are from Namibia and South Africa.

Given the above scenario, the potential income for Okavango National Park is provided in Table 7. The assumption here is that a high volume concession will be allocated in the Buffalo section together with a number of low volume concessions along the river. Tourism development in the Mahango Section will be confined to the periphery of the Park (see Vision Statement). No commercial sport hunting will take place in the park.

**Table 7: The potential income from the Okavango National Park using best case and worst case scenarios.**

<table>
<thead>
<tr>
<th>Park Activity</th>
<th>Fee Schedule</th>
<th>Occupancy Best case scenario</th>
<th>Occupancy Worst case scenario</th>
</tr>
</thead>
<tbody>
<tr>
<td>Park entry</td>
<td>N$20/day/person (No people)</td>
<td>45% (6 570)</td>
<td>25% (3 650)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>N$131 400</td>
<td>N$73 000</td>
</tr>
<tr>
<td>Overnight camping</td>
<td>N$1 200/3 days X 4 persons</td>
<td>No 3-day Parties</td>
<td>26</td>
</tr>
<tr>
<td></td>
<td></td>
<td>N$31 360</td>
<td>N$23 520</td>
</tr>
<tr>
<td>Mobile Tour Operators</td>
<td>N$7 500/year</td>
<td>No operators</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>N$37 500</td>
<td>N$22 500</td>
</tr>
<tr>
<td>High Volume Concession</td>
<td>N$25 000/year</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>N$25 000</td>
<td>N$25 000</td>
</tr>
<tr>
<td>Low Volume Concession</td>
<td>N$10 000</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>N$10 000</td>
<td>N$10 000</td>
</tr>
<tr>
<td>Potential Income (N$)</td>
<td>N$235 260</td>
<td>N$154 020</td>
<td>N$88 630</td>
</tr>
<tr>
<td>Income/km²</td>
<td>N$249</td>
<td>N$163</td>
<td>N$94</td>
</tr>
<tr>
<td>Income US$/km²</td>
<td>US$41</td>
<td>US$27</td>
<td>US$18</td>
</tr>
</tbody>
</table>

Assumptions used to derive these data are as follows:

---

4 Between 1993 and 1997 the number of foreign tourists arriving in Namibia grew, albeit from a low base, by around 15% per annum. Tourist arrivals in the full year 1997 were 502 000. Approximately 75% came from neighbouring countries of Angola, Botswana, South Africa, Zambia and Zimbabwe. The remaining 25% came from overseas, with 55 000 from Germany and 12 500 from the UK being the only overseas sources producing over 10 000 tourists in 1997. Preliminary statistics for calendar year 1998 indicate a growth of tourists to 550 000.
• Occupancy: Maximum of 10 vehicles/day with 4 people/vehicle for 365 days = 10 x 4 x 365 = 14,600 visitors to the park. Therefore, 45% occupancy = 6,570 people. The most recent data suggests that 2.2 vehicles visit the park per day.

• Overnight camping: One camp occupied for a maximum of 3 days by 4 people = 3 days x N$100 x 4 people = N$1,200/camp. Two camps are occupied between March and September. This represents 28 weeks or a maximum of 196 days/camp = 392 camping days. Therefore, the maximum number of parties = 392/2 camps = 131. Occupancy set at 20%, 15%, 10% and 5% respectively.

• Tour operators: concessions will be given to mobile commercial tour operators.

• Concession: Annual concession fee paid by resident concessionaires.

5.2 Financing of the Development and Management Programme

The projected potential income for the Okavango National Park will not be sufficient to meet the running costs of the Park, nor will this money meet any of the capital costs.

The gap between potential income and capital and recurrent expenditure will therefore have to be met from Government allocations. It must be accepted that it is unlikely that the Okavango National Park will ever be financially self sustainable in the short to medium future.
6 SCHEDULE OF IMPLEMENTATION

A schedule of implementation is provided in Appendix VII, and assumes a 5-year period. Some of the tasks are "once off" activities while others will occur throughout the implementation phase.

6.1 Notes on the Implementation Programme

The following considerations are to be taken into account regarding the timing of the implementation programme.

- The project year will run from January to December
- The duration of each activity is indicative.
- A project startup period is envisaged. During this time, an Inception Report is to be prepared, together with the first Annual Work Programme that includes the annual budget.
- The formalisation of the park boundary is on the critical path, and is to be completed before any of the other project tasks are implemented.
- All staff housing and related infrastructure development is to take place within the first three years of the project.
- Law enforcement and fire management programmes recur each year throughout the project.
- Routine maintenance is conducted throughout the period of the project on an "as required basis".
- Specific research and monitoring activities are to begin in the second quarter of the second year.
- Similarly, all activities associated with the Tourism and Visitor programme and the Education, Communication and PRO programme are to commence in the second year once the basic infrastructure is complete.

The overall implementation programme is to be re-appraised annually and adjusted according to the previous years' progress and changing priorities.

This schedule is designed to facilitate the low input required to manage the Okavango National Park to achieve four objectives. These are:

- Establish new headquarters at Buffalo
- Facilitate an improved tourist use
- Improved law enforcement
- Maintain and improve relations with adjacent communities.
- Reduce the incidence of fire in the park.

Other activities will focus on routine maintenance of infrastructure, particularly the road network, and implementation of basic monitoring programmes.

6.2 Project Start-up Phase

The implementation of this Integrated Development Plan will be preceded by a Project Start-up Phase. The purpose of this phase is to appoint a Project Co-ordinator who will be responsible for implementing the IDP. The Project Co-ordinator can be appointed either from within MET or provided by a donor.

He/she will be responsible for:

- Setting up the Project Accounts
- Preparing an Inception Report
- Procuring the necessary equipment (vehicles etc)
- Procuring building contractors
• Preparing the Annual Work Programme for Year 2
• Fulfilling the role of co-ordinator between MET, Regional Office and Field Staff
APPENDIX I

NORTH-EAST PARKS PROJECT

MINISTRY OF ENVIRONMENT AND TOURISM

MISSION STATEMENT AND CONSERVATION GOALS
Ministry of Environment and Tourism - Mission Statement and Conservation Goals

The vision statement for Khaudum National Park is tempered by the mission and conservation goals of the Ministry of Environment and Tourism. These state:

It is the mission of the Ministry of Environment and Tourism...

“To maintain and rehabilitate essential ecological processes and life support systems, to conserve biological diversity and to ensure that the utilisation of natural resources is sustainable for the benefit of all Namibians, both present and future, as well as for the international community.”

— Mission Statement and Mandate of the Ministry of Environment and Tourism, May 1994 —

Further to this mission...

“It is the policy of the Ministry of Environment and Tourism to ensure adequate protection of all species and subspecies, of ecosystems and of natural life support processes, by means of:

1. inventories, monitoring and appropriate research,
2. education and extension,
3. managing, and assisting and advising in the management of land and natural resources in Namibia,
4. legislation,
5. co-operation with local, national, regional and international organisations working for biotic diversity and habitat protection.”

— Conservation of Biotic Diversity and Habitat Protection, May 1994 —

Additionally, the Government of the Republic of Namibia recognises “the key role that protected areas play in the conservation of ecosystems, essential ecological processes and biological diversity. The Government also recognises that these are the primary objectives for the establishment and management of protected areas,” and within this context it is the policy of the Government to:

“Manage protected areas in ways which are sensitive to the needs and aspirations of people whose lives are impacted or affected by these areas, giving particular attention to promoting their socio-economic development, promoting communication and consultation and providing preferential opportunities in order to meet obligations for the establishment of mutually compatible land uses on an equitable basis particularly with regard to people removed from their land or denied access to key resources through the establishment of a protected area.”

— Parks and Neighbours: A policy for linking Namibian protected areas with neighbouring people and sharing protected areas with resident communities, January 1998 —

With the promulgation of this mission and clarifying policies the Government has defined the criteria for protected area management in Namibia and set the stage for the establishment and prioritisation of the goals for the development and management of the North-East Parks...

Through the promulgation of its mission and policies the government has established that the primary purpose of the North-East Parks is to act as conservation areas. Secondary is the recognition that these parks can also serve to enhance local economies and increase the quality of life in neighbouring communities. In addition, they are a tourism product, playing a
role in the national economy and serving as a window through which the world views Namibia’s conservation ethic (Table 1).

**Table 1: Primary and secondary conservation goals for Namibian National Parks.**

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<th>1. To maintain and, where necessary, rehabilitate areas or features essential to the functioning of ecological processes.</th>
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<td></td>
<td>2. To conserve biological diversity.</td>
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<td>3. To conserve and manage renewable natural resources for sustainable production.</td>
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<td></td>
<td>4. To provide opportunities for expanding understanding of biological diversity, ecological processes and the effects of management actions.</td>
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<tr>
<td>Secondary Goals</td>
<td>1. To provide opportunities that increase awareness, appreciation, positive relations, economic benefits and compatible land uses in neighbouring communities.</td>
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<td>2. To facilitate, promote, develop, administer, co-ordinate and/or manage a range of opportunities to enhance visitor experiences with Namibia’s natural environments and optimise economic returns from these resources.</td>
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<td>3. To provide Namibian citizens the opportunity for aesthetic, educational and recreational experiences at affordable cost.</td>
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ESTIMATE OF CAPITAL COSTS

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ESTIMATE OF RECURRENT COSTS

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APPENDIX V

ESTIMATE OF OPERATIONAL COSTS

OKAVANGO INTEGRATED DEVELOPMENT PLAN
INSERT SPREADSHEET OF OPERATIONAL COSTS HERE
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SUMMARY OF CAPITAL, RECURRENT AND OPERATIONAL COSTS

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SCHEDULE OF IMPLEMENTATION

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APPENDIX VIII

NORTH-EAST PARKS PROJECT

PROCEDURE GUIDELINES ON INFRASTRUCTURE DEVELOPMENT
PROCEDURE GUIDELINES FOR INFRASTRUCTURE DEVELOPMENT

Procedure guidelines on design, placement and construction of firebreaks:

Firebreaks on park boundaries are to be at least eighteen metres in width (this is a double firebreak). Internal fire-breaks are to be at least nine metres in width. Internal fire-breaks should follow natural features or ecotones which may act as natural fire-breaks. Road locations should be considered in the context of roads also serving as fire breaks.

Fire-breaks should be cleared and/or burnt annually as early in the calendar year as possible but no later than July. For the maintenance and monitoring of fire-break condition see policies on roads, tracks, trails and paths.

Heavy machinery may be used to establish fire-breaks, but should not be used in fire-break maintenance.

A fire officer will be appointed from existing staff and a fire duty roster for co-ordinating operations maintained during the main fire season (April to October).

Park staff will initiate co-operative programmes and actions with other fire control authorities, adjacent communities and neighbouring landowners.

Conservation scientists will provide for the recording of fire history in the parks.

Procedure guidelines on buildings, temporary structures, power supplies and equipment:

All buildings will be designed and placed in line with the primary objectives of the park and the level of facility development shall be in accord with park plans.

All structures will be designed and placed as unobtrusively as possible so as to not detract from the natural landscape, scenic beauty or ecological integrity of the parks. Whenever possible, natural barriers will be used to screen facilities from general view.

All buildings will be assigned a registration number and a maintenance record kept by the Warden.

All buildings will be inspected annually by the Warden.

Annual maintenance priorities will be assigned, motivated and budgeted. Buildings will be prioritised as follows:

- Staff housing and accommodation
- Administrative buildings and stores
- Plant buildings and structures (e.g. pump house)
- Workshop and maintenance areas.

Where appropriate the Warden will consider annual service contracts to the private sector for building (and other capital items) maintenance. This will be done on the basis of an analysis of the most cost-effective options for maintenance.

Power supply infrastructure and development will be designed to cause minimal ecological, visual and/or aesthetic impact. Underground lines are to be utilised in preference to overhead lines where feasible.

Domestic power supplies will be separately metered and the costs borne by occupants.
The Warden will ensure that temporary structures are removed on completion of the task for
which they were constructed. Additionally, he or she will ensure that the site is fully
rehabilitated and cleaned after completion of assigned tasks.

The Warden will designate sites within the park (consistent with the park zonation scheme) to
specific tasks which are repeated regularly (e.g. game capture). These sites, activities, or
structures will not conflict with park goals and objectives.

Equipment will be issued to individuals who will be held responsible for the items and their
maintenance and servicing.

Training in the use of sophisticated equipment is compulsory for all users.

**Procedure guidelines on potable water for parks staff:**

No toilets, ablution facilities or water-based service facilities are to be positioned within 100m
of a borehole or other primary water source.

Game capture pens and bomas must not be placed within 100 m of a borehole or other
primary water source.

Water quality testing is done by NamWater, Private Bag 13389, Windhoek. A one litre sample
of the water to be tested must be delivered in a closed glass container.

**Procedure guidelines on water supply management:**

The Warden will ensure that all water abstraction infrastructure is unobtrusive and blends in
with the surroundings as best possible. Every effort should be made to suppress exhaust
noise at installations using diesel or petrol engines. Solar installations should be used where
possible.

No water abstraction for non-park purposes is permitted.

The provision of artificial water points for wildlife within the parks must be preceded by an
Environmental Assessment in which the ecological framework for that supply must be given
the fullest consideration.

Artificial water points for wildlife must not be constructed near (<2 km) park boundaries
where there is a potential for conflict with surrounding communities or land-uses.

No barriers or obstructions of any type may be built on drainage’s.

A monitoring programme must be developed at each artificial water point for wildlife. Wildlife
species and numbers, seasonality of use and the effects on vegetation (at varying radii around
the water point) are to be assessed in terms of whether the water point is achieving a stated
management objective.

Adequate protection measures against damage and theft must be developed for installations.

Development of water sources for wildlife carries with it the responsibility to ensure that these
sources do not fail the wildlife which becomes dependent upon them. All sources of water for
wildlife will be inspected, and maintenance performed if necessary, at least weekly throughout
the dry season (or year round during droughts).

**Procedure guidelines on sewage disposal facilities:**
Soak pits for waterborne sewerage should not be built within 100 m of a borehole or water source to avoid contamination. Developments on the river margin must ensure that pits do not cut through the permanent water table.

No chemical toilets will be allowed within the park. Concessionaires should be made aware of this restriction.

No direct discharge of human wastes into any of the parks’ perennial or seasonal rivers are allowed under any circumstances.

No open water, evaporation pan sewerage treatment systems are allowed within the parks.
# POTENTIAL INCOME OF OKAVANGO NATIONAL PARK

## Area

<table>
<thead>
<tr>
<th>Activity</th>
<th>Fee Schedule (N$)</th>
<th>Best Case Scenario</th>
<th>Worst Case Scenario</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>45%</td>
<td>25%</td>
</tr>
<tr>
<td>Park entry</td>
<td>20 pp/day</td>
<td>131,400</td>
<td>73,000</td>
</tr>
<tr>
<td>No visitors</td>
<td>6,570</td>
<td>3,850</td>
<td>1,460</td>
</tr>
<tr>
<td>Overnight camping</td>
<td>1,200 per 3 day x 4 people</td>
<td>31,360</td>
<td>23,520</td>
</tr>
<tr>
<td>No parties (20%)</td>
<td>26</td>
<td>20</td>
<td>13</td>
</tr>
<tr>
<td>No parties (15%)</td>
<td>22</td>
<td>16</td>
<td>10</td>
</tr>
<tr>
<td>No parties (10%)</td>
<td>20</td>
<td>13</td>
<td>7</td>
</tr>
<tr>
<td>No parties (5%)</td>
<td>18</td>
<td>12</td>
<td>6</td>
</tr>
<tr>
<td>Mobile Tour Operators</td>
<td>7,500 per year</td>
<td>37,500</td>
<td>22,500</td>
</tr>
<tr>
<td>High Volume Concession</td>
<td>25,000 per year</td>
<td>25,000</td>
<td>18,750</td>
</tr>
<tr>
<td>Low volume Concession</td>
<td>10,000 per year</td>
<td>10,000</td>
<td>10,000</td>
</tr>
<tr>
<td><strong>Potential Income (N$)</strong></td>
<td>235,260</td>
<td>154,020</td>
<td>88,630</td>
</tr>
<tr>
<td><strong>Potential Income (US$)</strong></td>
<td>39,210</td>
<td>25,670</td>
<td>14,772</td>
</tr>
</tbody>
</table>

## Income/km² (N$)

|          | 249 | 163 | 94 | 42 |

## Income/km² (US$)

|          | 41 | 27 | 16 | 7 |

### Maximum Assumptions:

- Visitors
- Max Occupancy: 14,600
- Vehicles: 10 per day
- People/vehicle: 4
- Days: 365

### Notes:

- **Max Occupancy:** 14,600
- **Vehicles:** 10 per day
- **People/vehicle:** 4
- **Days:** 365

### N$ per camp:

1. **No days:** 3 days
2. **No people:** 4
3. **Cost per person:** 100
4. **No days:** 196
5. **No camps:** 2
6. **Max No camping days:** 392
7. **Max No 3-day parties:** 131
   - 5%: 7
   - 10%: 13
   - 15%: 20
   - 20%: 26

### 2. Overnight camping:

- **No days:** 3 days
- **No people:** 4
- **Cost per person:** 100
- **No days:** 196
- **No camps:** 2
- **Max No camping days:** 392
- **Max No 3-day parties:** 131
  - 5%: 7
  - 10%: 13
  - 15%: 20
  - 20%: 26