Consultancy for the Review of Wildlife Management Areas (WMA) Regulations and the Community, Wildlife & Natural Resources and Tourism Lease Agreements

FINAL

GUIDELINES

June 2009

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Prepared For

Okavango PROJECT
Building local capacity in Biodiversity Management

Submitted by

NRP Natural Resources & People
Sustainable Environmental Solutions

June 2009

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ACRONYMS

BOD	Biological Oxygen Demand
BOGA	Botswana Guides Association
BOS	Bureau of Standards
CBNRM	Community Based Natural Resources Management
COD	Chemical Oxygen Demand
CHA	Controlled Hunting Area
DEA	Department of Environmental Affairs
DFRR	Department of Forestry and Range Resources
DoT	Department of Tourism
DWC	District Wildlife Coordinator
DWNP	Department of Wildlife and National Parks
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
GIS	Geographical Information System
HATAB	Hotel and Tourism Association Botswana
HOORC	Harry Oppenhiemer Okavango Research Centre
IUCN	International Union for Conservation of Nature
NWDC	Northwest District Council
ODIS	Okavango Delta Information System
ODMP	Okavango Delta Management Plan
ODRS	Okavango Delta Ramsar Site
PS	Permanent Secretary
SADC	Southern Africa Development Committee
SEA	Strategic Environmental Assessment
TGLP	Tribal Grazing Land Policy
TSS	Total Suspended Solids
WMA	Wildlife Management Area
WMARG	Wildlife Management Area Reference Group

OVERVIEW

1.1 Introduction

The Origins of WMAs in Botswana

1.1.1 "In the 1970s there was a growing concern over the large increase in the number of cattle in Botswana, particularly in respect of the serious dangers that they posed to the environment. The number of cattle was estimated to be about 3 million (this gave four cattle to every Motswana). The need to sink more boreholes resulted from the increase in the herd of cattle. An unfortunate outcome was that some form of "land-grabbing" emerged. Concern was raised with regard to the possibility of the rich few taking control over the whole land." (Source: Kwame Frimpong)

1.1.2 Concern was also outlined in a speech in 1975 by the then President, the late Sir Seretse Khama:

1.1.3 "The time has come to tackle a subject about which there has been a lot of talk but no action - the better use and development of our land. As our human population and the numbers of our cattle and other livestock increase there is a growing danger that grazing will be destroyed by uncontrolled use of communal grazing areas by ever growing numbers of animals. Once grazing has been destroyed it is extremely difficult to get grass re-established. And under our communal grazing system it is in no one individual's interest to limit the number of his animals."

1.1.4 And that demand informed the introduction of the Tribal Grazing Land Policy (TGLP) which indicated that land should be set aside as 'Reserves' for future use. This was later picked up in the Wildlife Conservation Policy of 1986, which commented on them as follows in the various Sections:

1.1.5 Section 3.3.1 The concept of Wildlife Management Areas (WMAs) arose from Botswana's Tribal Grazing Land Policy (TGLP). Three zoning categories for land, namely: Commercial Farming Areas, Communal Grazing Areas and Reserved Areas. Reserved Areas divided into two categories: areas reserved for future use by those with only a few cattle and areas reserved for alternative uses such as wildlife, mining and cultivation. The Wildlife Management Areas can therefore be considered as a form of zoning of land for wildlife utilization within the Reserved Areas category as differentiated by the TGLP.

1.1.6 Section 3.3.5 For those Wildlife Management Areas that have been identified and approved by the appropriate Boards and Councils the following steps are required:

- establish the legal status by publication of the boundaries in the Gazette;
- develop and legislate appropriate WMA Regulations;
- draft a management plan for each area;
- implement a policy of sustained wildlife utilization appropriate to each designated area.

1.1.7 Section 3.3.6 Wildlife utilization plans will include hunting, game ranching and farming, live capture and venison processing. Regulations will address themselves to such matters as the control within WMAs of hunting, capturing, photography,

filming, research, entry, erection of buildings, grazing and the keeping of livestock.

1.1.8 Section 3.3.8 The Wildlife Management Areas are still rich in wildlife. Some, such as those in the Okavango, are unique and important for tourism development. Wildlife utilization and management will be the recognised primary form of land use in these designated Areas. In some of the WMAs the exploitation of wildlife, including tourism, may well yield a higher economic return to the nation than some of the more conventional industries, including agriculture.

1.1.9 Section 3.3.9 The policy aims especially to promote commercial utilization of wildlife while at the same time assisting the poorer rural dwellers to increase their incomes and hence improve their standard of living. In many remote areas, wildlife is the only resource available.

1.1.10 Section 3.4.1 Wildlife Management Areas will differ from National Parks and Game Reserve in that Parks and Reserves are, as previously stated, primarily preservation areas: total preservation of the wildlife resource is practised. In WMAs, on the other hand, sustained wildlife utilisation will be actively encouraged. Some WMAs adjacent to NPs/GRs will act as buffer zones to prevent conflicts between the latter and areas of more intensive agricultural uses. Others will provide protection to migrating wildlife by safeguarding migratory corridors.

1.1.11 Section 3.4.2 In WMAs, wildlife utilization will be the primary land use. Other land uses will be permitted only if they are compatible with it.

Gazetted WMAs

1.1.12 As a result of the inclusion of the WMAs in the Wildlife Conservation Policy of 1986, a number of WMAs were identified and discussed at various levels of government and in various national forums (See Diagram 1). Some of these were later approved by publication in the Government Gazette. These were:

1. Kwando
2. Okavango
3. Ngamiland Statelands
4. Nunga
5. Nata Statelands
6. Southern district
7. Matlho-Phuduhudu
8. Okwa
9. Quago

1.1.13 However some of the areas were seen to be contentious and attracted further consideration and debate. These – although identified as possible areas have never been formally approved as WMAs. These include the following areas:

Identified possible future WMAs

1.1.14 The following areas were identified but never formally approved through publication in the Gazette:

1. Kgalgagadi 1
2. Kgalgagadi 2
3. Kgalgagadi 3
4. Kweneng
5. Qwihaba
6. Boteti

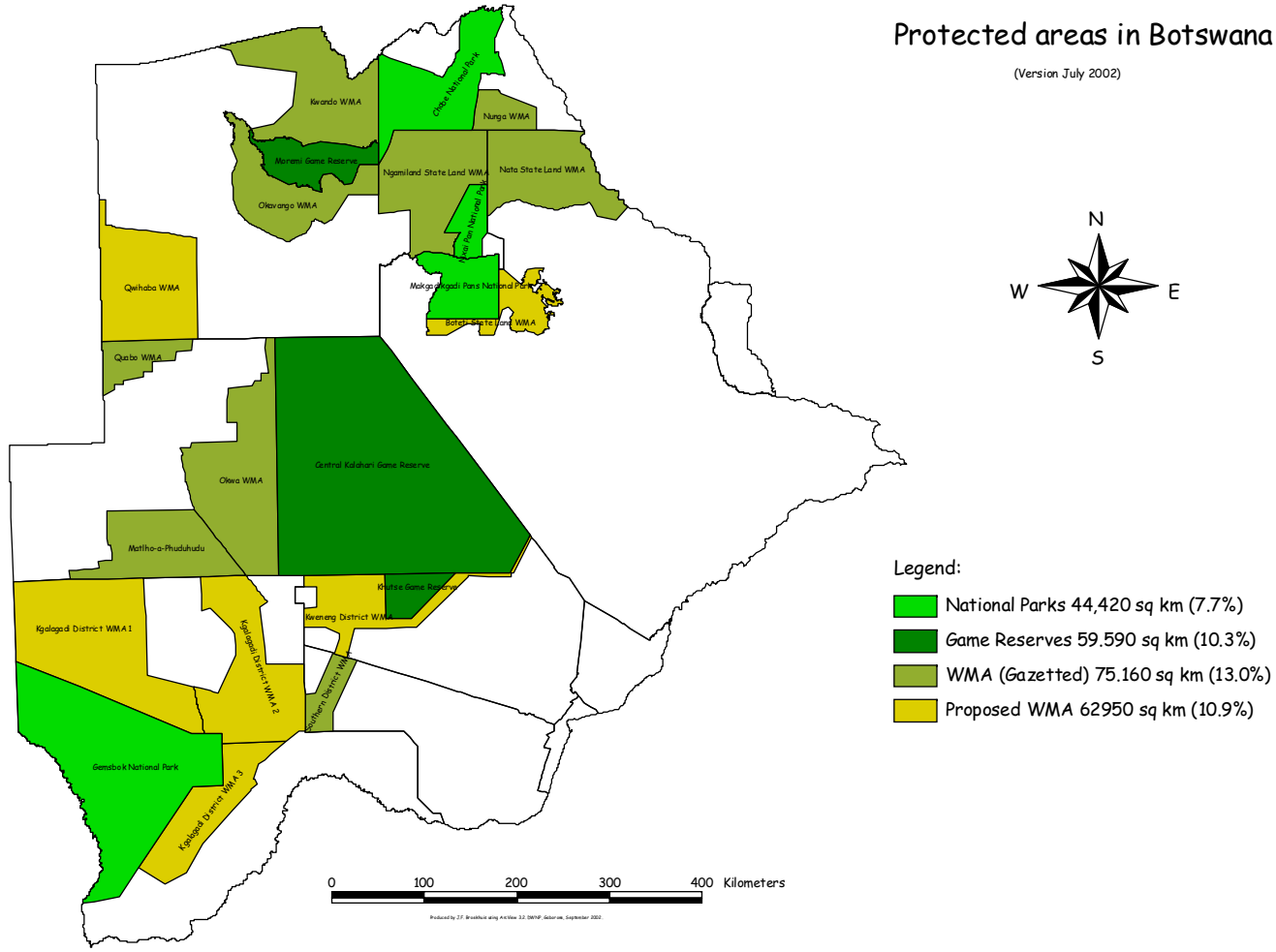


Figure 1: National Parks, Game Reserves and Wildlife Management Areas in Botswana

1.2 Objectives

1.2.1 The objectives for these guidelines are as follows:

- To ensure biodiversity considerations are incorporated into natural resource legal regulatory management tools;
- To provide an approach which integrates environmental and natural resource planning across wildlife management, concession and development area planning
- To assist integrating the relevant management authorities requirements into one document to facilitate development without incurring delays to potential developers

1.3 Challenges

1.3.1 The main challenge to the organizations responsible for implementing government policy and legislation relating to environmental and natural resources management, is the identification of an approach that may be implemented consistently, over sufficiently long periods, to assess the impact of Botswana's environmental and natural resources related policies and legislation. Much of the economic activities in Botswana depend upon renewable and non-renewable natural resources, so the impact of environmental and natural resources policy would appear to be critical. This challenge is further complicated by concerns over climate change and uncertainty of what impact it may have on the status of natural resources in Botswana.

1.3.2 To date there is limited evidence of the organizations meeting these challenges[1]. Management plans have not been approved, so consequently few recommendations have been implemented. There is concern that the status of the resources may be changing without sufficient awareness of these changes and with appropriate measures in place to respond to them.

1.3.3 The fragmented and un-harmonized natural resource, land and agriculture policies and legislation implemented by agencies that often do not directly interact over management issues, is not unique to Botswana. However, until a recognizable forum for integrated management to effectively coordinate responses is functioning, the ultimate challenge will be to ensure that even agencies operating largely independently of each other, are able to fulfill their mandates in a manner that when taken in their entirety, represents an adequate response to current and future environmental and natural resource management issues.

1.3.4 These guidelines recognized these challenges and therefore in the face of limited technical skills in interpreting results, do not recommend 'comprehensive', 'ecosystem based' or 'adaptive' management approaches where there is no historical evidence of them being implemented or apparent current capacity to adopt them. Botswana's approach to natural resources management is largely a legal and regulatory approach. Even regulation enforcement has often not been able to keep pace with changes and requirements in dynamic areas such as biodiversity based tourism development.

[1] See DEA presentation to NBSAP Workshop, February 2008, Rustenburg, South Africa

1.3.5 The proposed approach to meet these challenges is to wherever possible, to streamline the requirements of agencies and prospective developers so that they may have sufficient time and resources available to focus on implementing the required activities. Therefore an integrated single-purpose lease is proposed. A set of WMA regulations has been developed that do not propose to intervene in areas that are the statutory requirements of other agencies. The preparation of a single set of streamlined guidelines covering the requirements for operating in WMA follow to assist in the implementation of what is still largely a regulatory approach to management.

GUIDELINES

1.3.6 These Guidelines are a consolidated set of guidelines in one document as a means of ready reference.

1.3.7 As noted in the previous section, these guidelines seek to streamline the regulatory requirements potential developers and the relevant technical authorities are required to consult in order to assist in the provision of a 'one stop' source for information related to implementation of activities in the *gazetted* Wildlife Management Areas. The guidelines cover all WMAs in Botswana, but are cognizant of the fact that the majority of development and concern over continued development focuses on the two WMAs in Ngamiland within the Okavango Delta Ramsar Site.

1.3.8 As much as possible, these guidelines seek to mirror actual practices of the relevant agencies so as to fit in existing workflows relating to the individual agencies statutory requirements, where they exist. This is most evident in Ngamiland were inspection and oversight is well established at the level of human resources through the Departments of Labour and Immigration. Natural resource based economic activities, through the District Council, Land Board and Department of Tourism for the inspection, licensing and permitting of tourism enterprises. What has existed in written format, but has suffered in its translation to actual field-level, is implementation of area based plans for WMAs and Concession Leases. These guidelines seek to address this concern through the clear establishment of linkages between the requirements of the concession lease which recognizes the WMA Regulations and specifies compliance against what is currently a pass or fail scorecard. The scorecard may be expanded to provide actual scores if seen as necessary to demonstrate status or quality of an enterprise performance.

1.3.9 The following sections provide concise guidelines for the:

- WMA Regulations;
- Incorporation of Environmental Assessments into WMA Management Plans through the use of Strategic Environmental Assessments;
- Development of WMA Management Plans that are informed by the SEA;
- Development of Concession Area Management Plans that are spatially linked and informed by both the WMA Management Plan and its SEA thus limiting the need for detailed concession level EIAs;
- Handling, transportation and storage of hazardous materials in WMAs
- Guidelines for solid and liquid waste management within WMAs

1.3.10 As can be seen from the above list, a clear effort has been made to directly link the relationship between regulations that guide management planning from the WMA to the Concession Area and ultimately, in the case of tourism development, at the footprint or development area. Spatially linking the plans through the regulations across scales will help ensure considerations of the potential social and cumulative impacts that may not be recognized by solely focusing at the level of the impact of the enterprise as has largely been the case for the past decade, or when agencies act based on their own independent statutory requirements.

1.3.11 This approach should ensure considerations of biodiversity and the environmental are planned for at the beginning of development planning and not as an after thought, or add-on through the requirement of an EIA. The requirements for social and environmental considerations during the lifespan of the lease are captured the social and environmental management plan sections of the WMA and Concession area plans which are included as Annexures to the lease agreement. This will result in the requirements to maintain Botswana's natural resource based economy are central to planning and subsequent implementation.

1.3.12 To address the challenge of limited implementation capacity, the roles and responsibilities for environmental and natural resources management through this arrangement are spread from government at the level of the WMA and effectively sub-contracted out through the requirements of implementation attached to the lease at the concession area level.

Table 1: Roles and Responsibilities by Spatial Scale

Role	WMA Responsibilities	Concession Area Responsibilities	Development Area Responsibilities
Government	Plan Development, Oversight and Implementation	Plan Oversight / Inspection	Plan Oversight / Inspection
Parastatal		Administration	Administration
Private Sector		Plan Development, Implementation and Monitoring	Plan Development, Implementation and Monitoring
Academia	Analytical Framework and Data Analysis	Analytical Framework and Data Analysis	Analytical Framework and Data Analysis
Other	Species specific research and management issues		

2 GUIDELINES FOR USE OF WMA REGULATIONS

2.1.1 The use and implementation of the WMA Regulations shall be premised upon the intention that a fundamental component of the WMA Regulations is the development of a Management Plan for each WMA, and that to the greatest degree possible the objectives of the Regulations are achieved pro-actively through the implementation of the Management Plan. The structure of the Regulations is such that it drives towards a spirit of cooperation and collaboration between Lessees operating within a WMA, communities resident in a WMA, interested and affected parties, and the government, as custodians of the land and its natural systems and resources. The Regulations are not intended to be used in an antagonistic mode but rather as a last resort to ensure compliance and good management on behalf of the DWNP who is mandated to manage and protect biodiversity, ecosystems, natural resources and especially wildlife in each WMA.

2.1.2 In this regard it is necessary that through the requirements of the Regulations, a Strategic Environmental Assessment (SEA) shall be carried out for each WMA, as a means of identifying all important and critical issues, factors and aspects of each WMA in terms of environmental, social and economic considerations. This assessment will indicate which important areas, sites, ecosystems, habitats, species and wildlife populations exist in the WMA and should make recommendation as to their management and protection, whilst also weighing up the social and economic needs and issues of the nation as a whole, the District as a functioning planning unit of Government, and the local stakeholders who either have leases in that WMA, who may reside in the WMA or who have some claim or 'stake' within the WMA.

2.1.3 The second major approach to the successful use of the Regulations is that of having a well developed and constructed Management Plan for each WMA as a framework or tool to support the management of a WMA by its local DWNP Regional or District Wildlife Officer as the case may be. Where a WMA Management plan has been developed in a transparent, inclusive and participatory fashion, then it would be expected that all of the stakeholders would want to cooperate and collaborate in implementing the plan. With the Plan in place each role player will know their responsibilities and duties, and should by rights comply willingly and without coercion or duress.

2.1.4 The third important approach is that of creating a district level WMA Reference Group for each WMA, comprised of key stakeholders who relate to a particular WMA. The mandate of this WMA Reference Group (WMARG) will be to assist and advise the local DWNP Regional or District Wildlife Officer in the management and implementation of the WMA Management Plan. It is intended that this WMARG will only meet once a year and review all of the management activities that were undertaken in ensuring that the Management Plan was implemented efficiently and effectively. It will point out and make recommendations on areas of weakness, where adaptive management aspects need to be considered, how management approaches and practices may be improved and how the Plan itself may be improved to achieve the objectives of the Plan. The group's tasks will include:

- Reading and familiarizing themselves with the WMA Management Plan;
- Review WMA progress reports from the DWNP for each preceding year;
- Identify what strengths and weaknesses there were in terms of the DWNM managing the WMA Management Plan;

- Recommending what should be improved or done differently;
- Providing occasional advice and input into issues that the DWNP local office encounter with regard to aspects of managing and using the Management Plan.

Strategic Environmental Assessment

2.1.5 This is an essential part of the management process for WMAs and needs to be carried out assiduously and meticulously to ensure that all important environmental, social and economic aspects are identified and assessed as to their weighted importance. These weightings will enable each WMA to individually place more importance upon some factors above others – however, always keeping in mind that *the weighting shall favour the management and protection of biodiversity, ecosystems, habitats, natural resources and in particular wildlife as a priority.*

2.1.6 The responsibility to ensure that the SEA is carried out shall rest with the DWNP, and should be carried out by an independent body such as a neutral contractor chosen through the normal Government tender processes and systems.

WMA Management Plan

2.1.7 The Management Plan required for every WMA should be developed and implemented according to the information provided in Section 5.3 of this document. The Plan should be based upon the information provided in the SEA carried out for that WMA.

2.1.8 Importantly, the WMA Management Plan should be carried out as transparently, inclusively and with a broad a basis of stakeholder participation as possible.

2.1.9 The WMA Management Plan should also be developed in such a manner as to operate as a management support tool to aid the implementation of the WMA Regulations, and therefore should provide as much management information as is reasonable and workable. In this context Strategic Adaptive Management should be the fundamental management approach that will be used. Monitoring shall therefore be a critical management activity that shall be incorporated into the plan and shall wherever possible be assigned as a responsibility to the landholder, resident or Lessee.

2.1.10 Zonation should also be a key feature of the WMA Management Plan as a means of differentiating activities and mitigating, reducing or avoiding conflict and tension.

Sustainable use of the WMA and its Natural Resources

2.1.11 Both consumptive and non-consumptive use of the land and its natural resources are permitted in a WMA. Where areas in a WMA are recognised to be of sufficient potential to be used for tourism purposes, then these shall be considered as a priority activity. In this regard, some sub-areas of WMAs such as CHAs may be exclusively dedicated to such activities where this is seen to contribute to the national economic strategy or plans. Thus a WMA may have a mosaic of different activities zoned to make the best use of the natural attributes of the area.

2.1.12 In other areas hunting, game ranching and mixed livestock-game farming may be considered to be priorities.

2.1.13 Access to areas of WMAs for the purposes of harvesting natural resources may be allowed under managed or controlled conditions. Generally all harvesting of natural resources such as veldt products shall be carried out according to the Wildlife Conservation and National Parks Act of 1992 and its associated regulations, as well as according to other related legislation such as the Agricultural Resources Conservation Act 1975; Forest Act (2002); and the Herbage Preservation Act 1975.

2.1.14 Where hunting may be permitted within a WMA then all of the normal legislation governing such activities under the mandate of the DWNP, shall apply and be used.

Problem Animal Control

2.1.15 Although the management of Problem Animal Control issues is authorized under Section 46 of the *Wildlife Conservation and National Parks Act of 1992* efforts should be made through the Regulations to involve communities and Lessees in the actual management activities as a means of reducing the burden upon the DWNP. This will be effected through the following:

- Activating the DWNP Community Extension and Outreach Division to interact with all communities in a WMA and to identify areas of potential PAC conflict in the future;
- Using current related legislation covering PAC, assign levels of responsibility and authority to communities and lessees to carry out approved actions to manage *in situ* PAC incidents as they emerge;
- Require all incidents of PAC carried out under this devolved relationship to be reported within 24 hours to the nearest DWNP office or Regional/District Office.

Alien and Invasive Species

2.1.16 Alien and invasive species may impact significantly upon ecosystems and plant or animal populations. As a strategy the pro-active involvement of resident communities and Lessees should be promoted as a means of firstly preventing the introduction of such problems species, and secondly as a means of managing and controlling the spread and impact of these problem species. In this regard the following shall be addressed:

- Communities and users of the WMA shall be educated on the problems and impacts of introducing alien species to the WMA ;
- Lessee and local communities should be made aware of the necessity of reporting the existence of alien or invasive species as soon as possible to the DFFR or DWNP so that they may jointly decide on how to address the issue;

Filming and Research

2.1.17 The economic and intellectual value of the land, natural resources, landscapes and other attributes – especially charismatic wildlife species such as elephant, lion, buffalo, leopard etc. cannot be underestimated in a WMA. In this regard all filming or video-photography carried out in a WMA that shall use this potential for commercial gain in terms of making films, documentaries, videos, DVDs etc. shall

be only done after paying a fee that shall be specified from time to time by the DWNP. This filming shall also conform to the criteria, conditions and specifications outlined in the permit that may be issued authorising such activities. All filming shall be carried out on an ethical basis that does not inherently change the behaviour of animals being filmed, infringe on the rights of other legitimate users of the area or space, or destroy or degrade the landscape, ecosystems or natural resources of the area used for filming.

2.1.18 Similarly all research shall be carried out in a similar fashion to that outlined above for filming. In addition all research carried out should be on the condition that the results and analysis of any research carried out shall be made known and made available to the DWNP or relevant Government Agency such as the Botswana Tourism Board.

Roads and Vehicle Access

2.1.19 Roads and vehicle access can have a significant negative impact upon any natural area. The development of roads and method of controlling vehicular movement within any WMA is of critical importance, not only in terms of the actual impact of roads and tracks made, but in transporting people to areas where the subsequent activities of these people may be negative.

2.1.20 WMA Management Plans and Lease Management Plans should clearly described criteria for roads development and how such roads and tracks may be managed to minimise negative impacts. In the case of accessing bodies of water of waterways in WMAs by boat, such activities may be controlled or restricted by the Director of the DWNP where necessary, in order to ensure that the objectives of the WMA Regulations and the relevant WMA Management Plan are achieved. Such controls and restrictions may differ from WMA to WMA depending upon the specific conditions and needs of each area – especially in terms of managing and protecting biodiversity and important wildlife habitats.

2.1.21 Licensing of boats and vessels fall under the jurisdiction of the Department of Water Affairs, and their legislation and regulations apply. However, where a boat or vessel is operating to carry out commercial activities within a WMA, this shall require that a special permit or letter of authorisation shall be obtained from the DWNP wherein whatever special conditions and controls over such commercial activity may be described. The Director of DWNP shall indicate what specific conditions or controls shall be put in place from time to time.

2.1.22 In terms of the construction and development of airstrips in a WMA, such developments shall be only developed after significant consideration of the impacts of the airstrip in terms of visual pollution (from the air) and in degrading the wilderness or natural character of the area.

Existence of Domestic Animals in WMA areas and Grazing

2.1.23 This is an important human activity that needs to be considered in the implementation of any WMA Regulations, especially with regard to ensuring that wildlife management remains the priority land-use activity in any WMA.

2.1.24 In its initial context this issue shall be managed according to the zonation plan of the WMA Management Plan. Where this intent in any Plan becomes difficult to achieve, then the WMA Regulations need to be invoked.

General Human Access to WMAs

2.1.25 Human access to WMAs for the purpose of harvesting or extracting natural resources should initially be controlled through the WMA Management Plan which shall spell out the required access mechanisms and protocols. However, where a concession or lease over a portion of a WMA (i.e. a CHA or a site within a CHA) is given to a specific person or body, then conditions of access shall be managed through a 'Community Access Agreement' between the Lessee and the Traditional Authority or Kgosi that the person or group belongs to or has allegiance to.

2.1.26 This mechanism is intended to facilitate a better working arrangement between Lessees in WMAs and communities' access to such areas for the traditional subsistence harvesting of natural resources. It is important to note the definitions of 'traditional' and 'subsistence' in the definitions section of the WMA Regulations to guide what activities may be carried out and which may not. The principle involved here is that of requiring the two key parties to manage the access and harvesting in a spirit of collaboration – thereby reducing the dependency upon the Land Board or DWNP to intervene in such activities. However, it is essential that all natural resources should be harvested sustainably. Access to such lease sites for the commercial harvesting of natural resources does not fall under the definition of 'traditional rights'.

2.1.27 Where no lessee exists in a WMA then the DWNP shall be deemed to be the Lessee and the Community Access Agreement shall be entered into between the relevant Kgosi and the DWNP on behalf of his or her people.

Physical Developments

2.1.28 Physical developments can detract from a WMA's natural character or sense of wildness, and needs to be purposefully managed according to the specifications of a WMA Management Plan.

2.1.29 In the context of fencing, the principle that should apply in this Section is that of only permitting small fenced containments, and that extensive, long stretches of fencing that may impede the natural movement of wildlife shall not be permitted. This means that the erection of fences to create large paddocks and dividing up large areas to manage or delineate grazing areas is not allowed as this could prevent wildlife from carrying out their normal behaviour of migrating (whether locally or extensively) in search of better grazing, browse or water.

Cultivation

2.1.30 Cultivation shall only be allowed in the areas specified in the WMA Management Plan, and should conform to the legislation governing agriculture in the land. However the management of the actual activity being carried out shall be the responsibility of the relevant Government Agency - especially where this relates to conformance to such legislation pertaining to the use of herbicides, insecticides or inorganic fertilizers. Where such actions contravene the related agricultural or environmental legislation, the Regional Wildlife Officer or District Wildlife Coordinator should report such infringements to the relevant agency in terms of the following legislation: *Agriculture Resources (Conservation) Act (CAP 35:06 of 1973); Forest Act (CAP. 38:03 of 1976); Tribal Land Act (CAP. 32:02 of 1970); Water Act (CAP. 34:01 of 1962); Waterworks (CAP. 34:03 of 1962); Noxious Weeds (CAP. 35:04 of Date); Herbage Preservation (Prevention of Fires) (CAP.38:02 of 1978)*.

Tourism Activities and Leases

2.1.31 All tourism activities in a WMA shall only be carried out in the areas designated within the WMA Management Plan and as described in the Concession Lease Management Plan. Where any tourism activities may be carried out in a WMA, then all necessary permits to operate a tourism enterprise or a business shall be obtained from the necessary agency. Where this is done in accordance with a lease, the lease shall include specifications for monitoring and evaluating

performance according to agrees standards.

2.1.32 All tourism developments and activities should be carried out under the principle of maintaining the area in as pristine or natural state as possible, and therefore all constructions should conform to aesthetic standards that may be described in the WMA Management Plan or Concession Management Plan. Likewise all tourism activities should not detract from the natural or 'wildness' quality of the area.

Boreholes

2.1.33 Boreholes may be a key mechanism to manage the natural character of a WMA. Where it may be necessary to drill and operate a borehole to enhance natural resource or wildlife management then shall form an integral part of the WMA Management Plan. Where the drilling and operation of a borehole may result in the objectives of the WMA Management Plan not being achieved i.e. that livestock may overrun or displace wildlife in the WMA then the authorization of this shall be very carefully considered and refused if necessary.

Waste Management

2.1.34 Waste management shall be the responsibility of the DEA and District Authorities and shall be managed by those agencies. All locally required conditions shall be stated in the Lease Agreement and should allow for future requirements to be imposed as new knowledge of waste management emerges.

Transport, Storage and Disposal of Toxic Substances

2.1.35 The storing or transferring of any fuel, petroleum products, or toxic substances shall be carried out in accordance with the guidelines set out in these Guidelines.

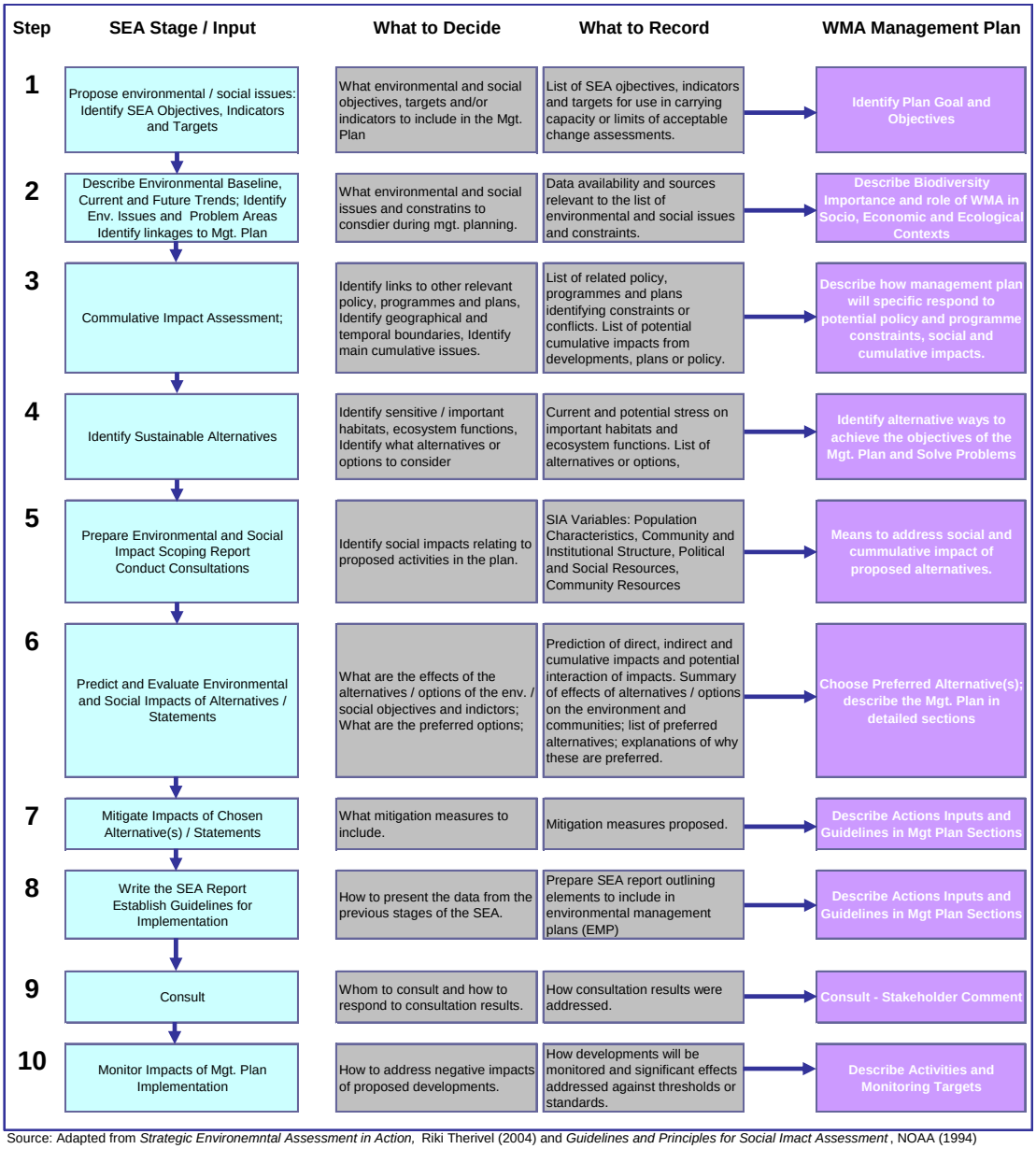
Environmental Impact Studies

2.1.36 Activities that have the potential to cause or result in a significant adverse impact to biological resources including wildlife and wildlife habitat as well as on any visual or aesthetic aspects of landscape shall require that an Environmental Impact Assessment shall be carried out before any development or activity shall be permitted. The responsibility of having EIAs managed and assessed shall be that of the DEA, and shall be guided by Section 5.2 below.

3 GUIDELINES FOR INCORPORATING ENVIRONMENTAL ASSESSMENTS IN WMA PLANNING

3.1.1 With the passage of the EIA Act in 2005, Botswana developed the capacity and basis for a legally mandated requirement for the incorporation of environmental considerations into development planning. EIAs are methodologically suited for identification of environmental issues at the project or development level. They are not as well suited for assessing potential cumulative impacts from multiple developments occurring in isolation of each other. Strategic environmental assessments are methodologically suited to assess the impact of policy, programmes and the cumulative social and environmental impacts of isolated projects.

3.1.2 The EIA Act refers to SEA but does not provide a specific framework for linking the outputs of a SEA to natural resource management planning in a manner that ensures implementation of environmental management plans (EMP). What follows is a method of how this will be achieved in WMAs with no management plans or WMAs with long outstanding implementation issues and concern over the current impact largely from ongoing tourism development.



Source: Adapted from *Strategic Environemntal Assessment in Action,* Riki Therivel (2004) and *Guidelines and Principles for Social Imact Assessment* , NOAA (1994)

Figure 2: Framework for Incorporation of Environmental and Social Impacts into WMA Planning

3.2 Elaboration of the SEA / WMA Framework

3.2.1 The SEA process works best when it is fully integrated into the development planning process from the beginning of the planning activities. It can act as an educational tool, help to ensure the plan is as robust and environmentally friendly as possible, and help to make subsequent implementation faster and smoother. The following is based on Therivel's (2004) quality assurance checklist for SEA following the steps in Figure 2.

Step One – Objectives - Propose Environmental and Social Issues

- The area covered, timescale and objectives are given.
- The SEA objectives are given, linked to indicators and targets based on

existing and funded monitoring networks. In the case of tourism development this will identify appropriate limits of acceptable change indicators, standards and targets.

- Environmental and social visions, issues and problems are adequately considered in developing the objectives, indicators and targets.

Step Two – Baseline Information

- Environmental / biodiversity and social characteristics of areas likely to be significantly affected are described in more detail using existing datasets provided by the environmental authority (in the case of the ODRS this includes HOORC and the Okavango Delta Information System)
- The SEA objectives and indicators cover an appropriate range of environmental / biodiversity and social topics including populations, human health, fauna, flora, soil, water, air, climate factors, material assets, cultural heritage, landscape and their interrelationships
- The objectives link environmental, social and economic issues covering equity and resilience.
- The SEA objectives and baseline data updating are mutually reinforcing.
- The methods used to investigate the affected baseline are appropriate to the size and complexity of the assessment task and the capacity of the relevant stakeholders to implement.

Step Three – Cumulative Impact Assessment

- Identify past, present and future sources of incremental impact from the proposed developments and explain how sources and trends have been identified
- Identify likely future actions and developments.
- Identify pathways between the activities and sensitive / important components.
- Predict likely indirect, cumulative and secondary impacts and their interactions in terms of magnitude, likelihood, duration, frequency, sensitivity, and recoverability.

Step Four – Identify Sustainable Alternatives

- Alternatives are considered (international, regional, national, etc) that are appropriate to the scale of decision-making.
- Alternatives are considered that deal with the issues identified as a result of the baseline assessment.
- Alternatives include the ‘do nothing’, ‘do minimum’ and ‘most environmentally beneficial’ alternatives.
- Reasons for eliminating alternatives from further consideration are given.
- The environmental and social effects of each alternative are identified and compared.

Step Five – Scoping and Social Impact Assessment

- Environmental authorities advise on the scope and level of information which must be included in the SEA Report
- The SEA focuses on significant issues and disregards less significant ones. Reasons for eliminating issues from further consideration are documented. (Specifically important for social issues)

- Technical, procedural and other difficulties encountered (such as lack of capacity or know how for complex decision-making) are discussed; assumptions and uncertainties are made explicit.

Social Impact Assessment (SIA)

- Identify and involve all potentially affected groups and individuals
- Clearly identify who will win and who will lose and emphasize vulnerability of under-represented groups
- Deal with issues and public concerns that really count, not those that are easy to count
- Describe how social impact assessment is conducted, what assumptions are used and how significance is determined.

Step Six – Impact Prediction

- The likely significant social and environmental impacts are identified and evaluated.
- Appropriate impact prediction and evaluation techniques have been used.
- Impact evaluation is carried out in relation to relevant, accepted standards, regulations, and thresholds where appropriate.
- Step Seven – Impact Mitigation
- The measures envisaged to avoid, reduce, repair, compensate and/or enhance any significant impacts of implementation are indicated.

Step Eight – SEA Reporting

- Identifies the decision-maker and who carried out the SEA, and their competences;
- Is clear and concise in its layout and presentation, is presented as an integrated whole, and uses maps and other illustrations where appropriate;
- Use simple, clear language and avoids technical jargon;
- Describe the methodology used in the SEA, including who was consulted and how;
- Focuses on the big issues;
- Acknowledges external sources of information, including expert judgment and matters of opinion;
- Contains a non-technical summary which includes an explanation of the overall approach to the SEA; the objectives of the proposed developments; the main alternatives considered, and how the proposed developments were changed by the SEA
- Is written without bias in an impartial and open manner

Step Nine – Consultation

- The SEA is conducted as an integral part of the decision-making and informing process, starting with the identification of objectives and continuing through the decision-making process.
- An appropriate range of ‘environmental authorities’ and public are consulted, ‘stakeholder consultation strategy’ is included in the terms of reference.
- Draft and final SEA report are made available for comment to the public and those who were consulted.
- Views of the public and stakeholders are summarized and responded to

Step Ten – Monitoring

- Measures for monitoring of impacts using proposed indicators are explicit through inclusion of requirements for environmental management plans;
- Links to project EIA, if deemed necessary, are made explicit;
- Monitoring framework proposed is linked to provision of future baseline data.

3.3 Relation of Strategic Environmental Assessment to WMA Regulations and Lease Agreements

3.3.1 The SEA is included in the WMA Regulations under Part III – Management of Wildlife & Natural Resources Section 5.1, noting *"that each WMA shall have a Strategic Environmental Assessment carried out covering the extent of the designated area and its surrounding or adjacent environment of influence". The environmental and social and potential cumulative impacts identified from the SEA will be used to inform the preparation of the WMA Management Plan."*

3.3.2 The Memorandum of Agreement of Lease refers to Strategic Environmental Assessment through the following Annexures:

- Annexure E – the WMA Regulations, prior to signing of the lease, specifying the requirements for the SEA.
- Annexure F – the Concession Area Management Plan includes a section containing the Environmental Management Plan informed by the requirements of the SEA and
- Annexure G – Contract with Local Communities forming an agreement on resources and related social issues with a provision for dispute resolution signed by an *ad hoc* Committee or Board setup by the Lessor.

3.4 Role of Environmental Assessment in Conservation of Biodiversity and Natural Resources Management

3.4.1 As can be seen from the preceding paragraphs, the SEA will assist in mainstreaming environmental, social and biodiversity issues in the planning process by providing guidance to planners in determining what particular areas of concern should be focused upon i.e. 'thresholds of potential concern'; rare, threatened or endangered species or habitats; and sensitive areas in terms of biodiversity, cultural heritage, landscape, habitats. This will influence the development of Limits of Acceptable Change (LACs) where these might apply.

3.4.2 The SEA will reduce the level of burden required in researching macro level issues in subsequent lower level or site specific EIAs that will need to be carried out when leases are offered for particular activities, such as the development of tourism lodge sites.

3.4.3 Figure 2 outlines a generic framework of a ten step best practices approach to completion of an SEA that is elaborated to specifically ensure that both social and cumulative impacts are identified as part of the SEA process at the level of scoping and consultation. The figure further includes columns that may be incorporated into the SEA requirements of what must be decided and recorded as *SEA outputs* that subsequently become *inputs* for the WMA Management Plan. Using this framework as a guide will ensure that even if the SEAs and WMA management plans are completed at different times, the results of one inform the other and ensure that options to address environmental and social issues are planned for in the WMA Management Plan.

3.4.4 The WMA Management Plan will provide subsequent guidance for the completion of the Concession Area Management Plans which will specifically outline implementation activities to respond to the area specific environmental and social issues at the concession level. The concession area management plan will be a contractual requirement attached to the concession lease. For this process to work to maximum effectiveness, SEAs need to have been completed before the WMA Management Plan is developed, to ensure that the greatest amount of macro level issues are taken into consideration in constructing the Management Plan – thus allowing it to be as comprehensive and inclusive as possible.

3.5 Roles and Responsibilities in Strategic Environmental Assessment

3.5.1 The following roles and responsibilities are envisioned for the effective integration of environmental and social impacts into natural resource management planning in the WMAs.

	Level / Scale		
Role	**WMA Responsibilities**	**Concession Area Responsibilities**	**Development Area Responsibilities**
Government	• Development and provision of SEA terms of reference providing a framework for consistent incorporation of environmental and social impacts into WMA planning. • Funding broad scale SEA that are cross-cutting and not specific to one type of development policy or programme. • Input on development of the analytical framework and provision of suitable data sources for subsequent updating and monitoring.	• Provision of SEA outputs to be incorporated into Concession Area management plans as the environmental management plan (EMP). • Annual inspection of the concession area monitoring in relation to SEA indicators with updates to scorecard for assessment of license / lease compliance.	• Annual inspection of the development area in relation to SEA environmental and social indicators with updates to scorecard for assessment of license / lease compliance.
Parastatal	• SEA type specific funding (i.e. tourism expansion and diversification).	• Conduct eco-certification and reporting of status of enterprises	Conduct eco-certification and reporting of status of enterprises
Private Sector		• Development of Concession Area Management Plans reflecting input from SEA and WMA Management Plan • Implementation of monitoring programme to collect data relevant to SEA indicators • Implementation of	

Level / Scale			
Role	**WMA Responsibilities**	**Concession Area Responsibilities**	**Development Area Responsibilities**
		management plan reflecting requirements from social impact assessment. • Species specific research and management issues.	
Academia	• Input to analytical framework and assistance with data analysis and reporting.	• Input to analytical framework and assistance with data analysis and reporting.	• Input to analytical framework and assistance with data analysis and reporting.
Other	• Species specific research and management issues		

Figure 3: Roles and Responsibilities in Implementing SEA Framework

3.6 Recommended Content and Structure of Strategic Environmental Assessment

3.6.1 The recommended structure of the SEA report is provided in numerous documents and generally follows a format as outlined in Figure 4.

Structure	Information to Include
Summary and Outcomes	• Non-technical summary of the SEA report • Key findings of SEA process
Methodology	• Who carried out the SEA, when, • Who was consulted
Background	• Purpose of the SEA • Strategic development objectives • Links to other policy, programmes, development activities • Baseline environmental and social data • Environmental and social visions and problems • Difficulties in collecting data and limitation of the data
Plan Issues and Alternatives	• Significant environmental and social impacts of the proposed developments • Why the preferred alternative(s) were selected, including how environmental and social considerations were taken into account in the choice • Mitigation measures that have been taken • Reason why other proposed mitigation measures were not accepted
Implementation	• Links to WMA Management Plan, guidance on Environmental Management Plans requirements, need for more detailed EIAs (if necessary), etc. • Proposed monitoring requirements

Figure 4: Recommended Structure of SEA

4 GUIDELINES FOR DEVELOPING WMA MANAGEMENT PLANS

4.1.1 Developing WMA Plans requires a range of activities to be carried out in order to ensure that the managers of the area have as comprehensive a document as possible to work from and to be guided by.

4.2 Principles and Approaches

4.2.1 Although the Management Plan may be developed and constructed with the greatest degree of care and detail, it is really the approach taken in implementation that will enable the plan to become successful. If a rigid, conservative, inflexible approach is taken to implementation then this will discourage participation, enquiry, experimentation, cooperation and collaboration – and the plan will very likely fail or become ineffective.

4.2.2 If however a more open, transparent and flexible approach is taken that values enquiry, curiosity, participation, dialogue and a willingness to test and modify aspects and elements of the plan, incrementally and reasonably over time, then the plan will have a great chance of succeeding and achieving its objectives.

4.2.3 Strategic Adaptive Management is a management approach that should be adopted in the implementation of each WMA Management Plan. This should be driven by the Regional or District Wildlife Officer within DWNP in conjunction with the local WMA Reference Group, and where possible supported by the Lessee who will carry out *in situ* monitoring and evaluation and with the understanding and acceptance of the DWNP carry out some management activities such as burning specified areas according to a plan or clearing fire-breaks.

4.3 Role WMA Management Plan in Conservation of Biodiversity and Natural Resources Management

4.3.1 Given the definition of Wildlife Management Areas in the Wildlife Conservation Policy (1986) or WCP 1986, as: "Wildlife utilization and management will be the recognised primary form of land use in these designated areas" - WMAs are essentially areas within Botswana identified to be of particular national importance to biodiversity, wildlife and natural resources, such that the use of the land, its natural resources and biodiversity needs to be managed in such a way as to ensure the wellbeing of any natural resources, wildlife and biodiversity in them. This will require that any human access to such areas is managed to minimise negative impacts upon the natural environment, the use of natural resources (including wildlife) is managed to be within sustainable levels, and that all natural processes such as wildlife movements and migrations, water-flows, etc. are protected from undue human influence and that ultimately, biodiversity is adequately managed and protected within each WMA.

4.3.2 The WCP 1986 however implies that other forms of land use may be permitted within WMAs under managed and controlled conditions, and specifically refers to the use of WMAs for commercial hunting purposes as a preferred form of utilisation.

4.4 The context of developing WMA Management Plans

4.4.1 Any Management Plan to guide the management of an area of land is influenced

by a range of international, regional, national, and local policy instruments and legislation. These instruments guide the nature of the plan and its implementation.

4.4.2 An outline of the legal basis of the WMAs is provided in diagrammatic form, showing how a Strategic Environmental Assessment could provide the foundation for the WMA Management Plans for each WMA. See Figure 1.

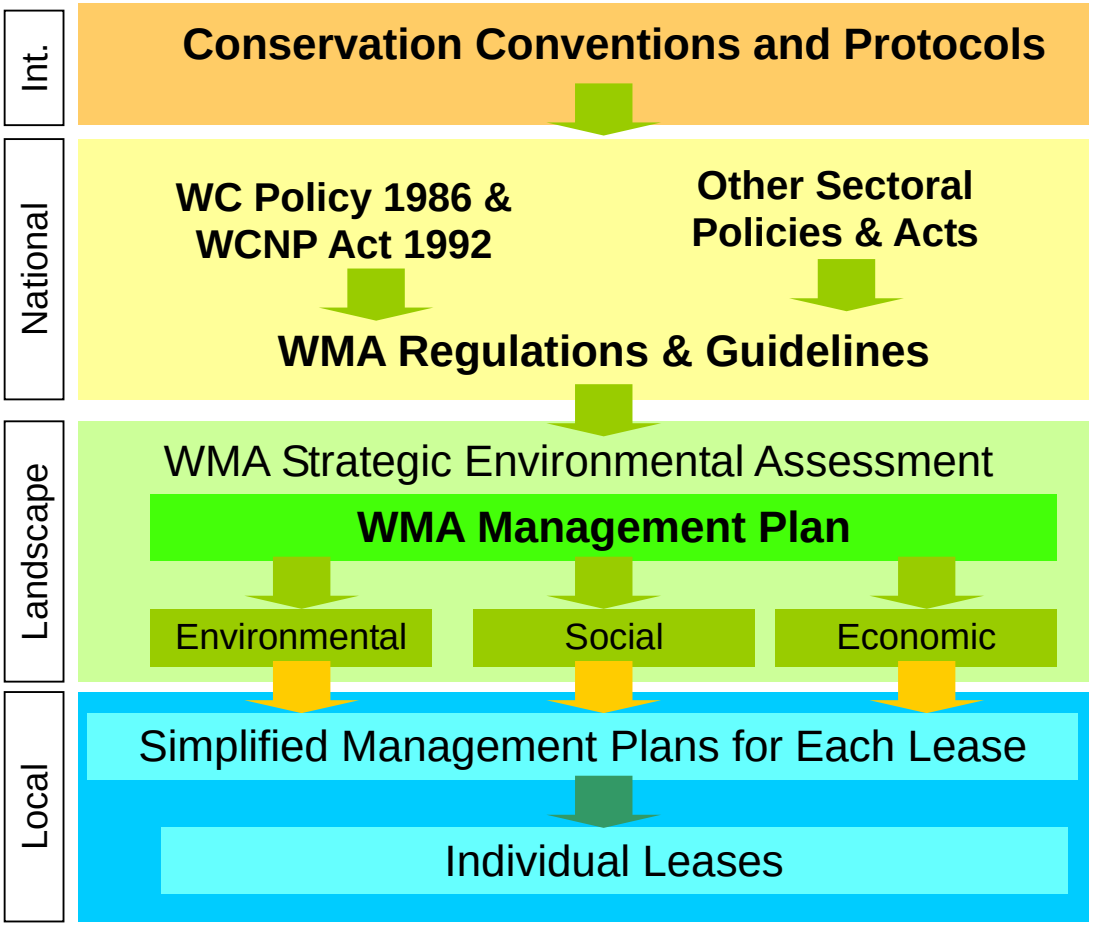


Figure 2: Outline of Legal Framework of WMA Processes and use of SEAs.

4.4.3 The SEA will be a key component of the WMA Management Planning approach and is a pre-cursor to the development of the plan.

4.5 Purpose and formulation of the park management plan

4.5.1 The purpose of a management plan is:

- To provide a **holistic view** of where the WMA is and where it is going in the short and long term.
- To **inform management** at all levels, from the DWC, to the Director of DWNP, the PSs and the Minister.
- To **streamline** management procedures where possible.
- To provide a **sound motivation for decision making** and, where necessary, to take corrective action.
- To **build accountability** (internally and externally) into the management of the WMA.
- To **provide for capacity building** and future green and developmental

thinking.

- To enable the management authority to run the WMA in line with all **relevant legislation and policies.**

4.6 Relation of Management Plan to WMA Regulations and Lease Agreements

4.6.1 Section 3.3 of the Wildlife Conservation Policy (1986) requires that WMAs should be created and that regulations specific to WMA should be developed as a means of empowering the state to manage such areas appropriately. This authority was subsequently provided for in Sections 15 and 92 and in the Third Schedule of the National Parks and Wildlife Act of 1992 a list is provided of the WMAs formally approved by being published in the Government Gazette.

4.6.2 For those Wildlife Management Areas that have been identified and approved each has had its legal status established by the publication of their boundaries in the Gazette.

4.6.3 WMA Regulations have been developed and will be put in place to manage and control all of the gazetted WMAs, and their management plans. Although the WMA Regulations will have primacy over any WMA Management Plans in terms of legal authority, the integrated structure and nature of the WMA Management Plans will form the basis around which the Regulations will be applied. The purpose of this approach is to allow the particular characteristics of each WMA to be addressed according to its specific needs, without having to have a myriad of detailed regulations that would be necessary to cover all eventualities across all the diverse WMAs. This not only simplifies the WMA Regulations but also puts in place a more user-friendly management tool that will encourage cooperation and collaboration rather than compliance.

4.6.4 Wherever possible the day-to-day aspects of managing a particular WMA will be covered in its own Management Plan. This Plan will guide and direct the management activities of local responsible DWNP Officer who will be accountable to achieve it objectives. It is intended that through this approach and good planning, the WMA Regulations will not be invoked unless any serious infringement or persistent deviation from the plan in contravention of the regulations, is carried out.

4.6.5 In addition, prior to the formulation of the Management Plan, as required by the Regulations, a Strategic Environmental Assessment (SEA) will have been carried out and completed covering the WMA under consideration, and that this will form the basis upon which the WMA Management Plan will be based – especially the background elements relating to the biophysical, social, economic and developmental context.

4.7 Recommended Content and Structure of WMA Management Plan

4.7.1 The following is an outline of the process to be followed in developing the Management Plan for any WMA.

- An understanding of important biophysical issues and areas of concern, including the identification of any drivers of change;
- A description of what management activities need to carried out to manage the WMA in order to achieve its objectives (structured in the form of a plan of action;

- An indication of how al of the important activities and issues in the plan will be monitored and evaluated.

4.7.2 For a more complete listing of the Sections and elements that should be included in the Management Plan, see Appendix 1.

4.7.3 The following sections explain in more detail what aspects should be covered in a typical management plan.

Introduction and Background to the WMA

4.7.4 This section should include an outline and overview of the WMA in terms of its biodiversity, ecosystems, natural resources and biodiversity; its socio-economic context – including any known cultural heritage concerns; and the state of development (or lack thereof) in the area in terms of bulk-infrastructure, settlement, and other impacts of human activity.

Objectives of WMA Management Plans

4.7.5 The Objectives of any WMA Management Plans should contain statements relating to the need to:

- Protect and manage biodiversity, ecosystems and in particular any wildlife populations that occur in WMAs, as well as the associated natural habitats that are needed for the wellbeing of that wildlife;
- Allow for the introduction of adaptive management approaches to the management of the use of area, the land, its biodiversity, ecosystems, natural resources and especially any wildlife with its associated habitat requirements;
- Provide for a systematic and regular review of management and operations relating to any WMA and the activities that are allowed to take place there;
- Rehabilitate or restore wildlife populations and their associated natural habitats in WMAs where these have been found to have been reduced or degraded through previous land use practices – understanding that any 'optimal' status is dynamic and dependant upon a range of factors.
- Support the reasonable requirements that provide for the livelihood needs of the land-holders or incumbent communities.

4.7.6 Each WMA may have slightly different objectives based upon the particular needs or special concerns arising in that area.

Climate and Physiography

4.7.7 A description of the physiography and climate of the area should be given to provide a context to subsequent planning processes, all of which are dependent upon these elements.

Note: Depending on the approach adopted by the relevant authorities, the Resource Inventory, Drivers of Change and Sensitivity Analysis sections listed below may not be necessary if a SEA was conducted using the approach included in these guidelines. The environmental baseline, description of current and future trends, environmental issues and problem areas, refer to Figure 2.

Resource Inventory

4.7.8 The Resource Inventory should include an inventory of existing biodiversity, natural resources and human activities as a baseline of future research and management processes, including:

- A description of vegetation types
- A description of the fauna in the area
- A description of any unique, endangered, rare or threatened species that may exist in the area;
- A description of unique, special or important habitats such as heronries; breeding grounds etc.

4.7.9 Where necessary this inventory should be supported by data, statistics, maps and diagrams to provide the context of the inventories provided i.e. where important sites are in the area etc.

Drivers of change

4.7.10 Participatory processes should be used to determine what are the key drivers of change in the WMA in terms of impacts upon natural systems, changes in species diversity, changes in population numbers, changes in habitats, changes in home-ranges etc.

4.7.11 Where necessary tools such as Concept Modeling may be used to assist in determining the cause-and-effect relationships, and any particular threats that may exist that result in changes (see Margoluis and Salafsky, 1998).

4.7.12 Where particular drivers of change are identified, then these will be incorporated into the Sensitivity Analysis process to determine where such changes relate to sensitive elements.

Sensitivity Analysis

4.7.13 Using the information from the Resource Inventory, a sensitivity analysis should be carried out to identify important areas spatially on a map. The sensitivity-value process has been developed within SANParks in South Africa to ensure that land-use, development and zoning decisions within national protected areas are based on best possible landscape-level biodiversity informants.

4.7.14 The sensitivity-value process is a decision support tool for spatial planning that is designed to integrate best available biodiversity information into a format that allows for defensible and transparent decisions to be made. The process is expert based and is geared at providing acceptably robust answers within tight planning deadlines. The process is based on the principle that the acceptability of development at a site is based on the site's conservation value (evaluated in terms of its contribution to the national conservation estate) and its sensitivity

(vulnerability to a variety of types of disturbance). The sensitivity-value approach to biodiversity analysis, and a consensus based zoning approach should wherever possible be considered within WMAs. (Holness and Skowno, 2008).

4.7.15 Two key points need to be emphasized:

- The sensitivity-value analysis and the zonation plan are all part of an adaptive management system. Although they are strategic documents - once accepted and officially approved as part of the management plan of the reserve, they will grow and change with time as the WMA develops and an understanding of the landscape and system improves.
- The analysis is at a fairly broad scale, and in no way replaces the need for detailed site and locality planning, as well as full EIA compliance.

Guiding Principles of Sensitivity analysis

- Show relative conservation values within an area
- Use best available data – the main purpose is to support use zone creation
- The process is based upon expert assessment, experience and site knowledge
  - Use precautionary principle when unsure
- Reasoning and values should be carefully documented

The Sensitivity Analysis Process

Stage one: Data synthesis and compilation

- A systematic evaluation of available and required datasets

Stage Two: Layer interpretation

- An expert based process that forces specialists to make assessments based on best available information and experience

Stage Three: Sensitivity-value analysis

- This stage involves the iterative exploration of the input layers, using a variety of different weightings and options.
- Different weightings and combinations need to be explored and the robustness of the analyses needs to be examined.
- An overall understanding of spatial patterns of biodiversity across the landscape need to be reached.

Stage Four: Workshops of first draft zonation

The workshop process involves using the outputs of the sensitivity-value analysis as well as a range of other inputs from land-use plans, DWNP officials, District Land Board Planning Officers etc. to compile a preliminary zoning. A system of zone definitions should be used i.e. Natural Area; Tourism Area; Livestock Grazing Area; Cultivation Area; Settlement or Development Area etc. The draft zonation should be developed with DWNP staff under direction of the Regional or District Wildlife Officer and including representatives from the Research Divisions, Park Management Divisions and Community Extension and Outreach Division. The following underlying decision making rules should be used in the zonation process:

1. The zonation process is aimed a striking a balance between environmental protection and development required to meet the broader economic and social objectives of the WMA.
2. The zoning process takes into account existing development footprints and tourism access routes.
3. Where existing community development nodes, tourist sites and access routes occur in areas with high sensitivity-value, then the broad use zoning aims to keep the development footprint as small possible.
4. Where possible, sites with high biodiversity sensitivity-value are put into stronger protection zones.
5. Peripheral development is favoured, although it is understood that this is not always practical in some situations. However peripheral development should be the first consideration before moving to alternative options.

Stage Five: Refinement of draft zonation

The draft zonation should be refined by the WMARG and circulated for comment from all the stakeholders involved in the process.

Stage Six: Final zonation.

A final zonation should be prepared, incorporating comments from Stakeholders. It should be noted that the product can only be considered to be complete when it is formally accepted as part of the WMAs Management Plan.

4.7.16 Biological and Ecological Values

The following biological values will be considered and determined:

Habitat Value Determination

- The habitat unit as defined by a particular vegetation community and is used as a broad proxy for biodiversity (See Holness and Skowno. 2008).
- Usually the best available summary of the distribution of distinct subsets of biodiversity across a landscape are used
- These dataset allows targets and assessments to be used as the basis for habitat value determination

Special Habitat Values

- Where any habitat is determined to be of high significance i.e. preferred habitats for species such as sitatunga, heronries etc., it should be specially ranked to reflect this and to ensure that it receives adequate consideration in subsequent zonation.

Topographic Sensitivity

- Determination of any important terrain features that need to be considered where these might be influential in key processes within ecosystems and natural processes i.e. specific landforms that create special habitats; areas that are critical to water flows where the interference of human activity could divert or block channels etc. A good example of this is the important nature of the topography in the southern pan-handle area of the Okavango Delta, where dredging, clearing vegetation etc. could change the course or direction

of water flows in channels and impact on ecosystems downstream.

Soil Sensitivity

- Determination of the presence of any particular soil types that are important and influence habitat structures and species diversity; or that are particularly prone to being impacted from human activity i.e. highly erosive etc.

Hydrological Sensitivity

- As in 5.2.1.3 above, determining if any area has particular hydrological characteristics that influence the nature of ecosystems and which are dependent on the existence of water and or water flows, and which if adversely impacted could change the nature of those ecosystems, species diversity and or distribution, creation of important habitats etc. Examples of this are the breeding grounds of crocodiles and skimmer birds in the pan-handle area of the Okavango Delta.

Vegetation vulnerability to Physical Disturbance

- Here the susceptibility of any particular vegetation to be adversely affected through human activity should be measured, including the impact of vehicle traffic on floodplain areas; clearing of areas for cultivation; harvesting of fuelwood and other veldt products; construction of roads, dams, boreholes, berms, settlements etc.

Aesthetics

Visual Sensitivity

- In this case the visual features of an area are evaluated in terms of the potential impact that human activity might have on a natural feature or preferred state of appearance. This will particularly apply in terms of tourism and the demand for visitors to visit wild, natural or unmodified areas, especially in conjunction with the viewing of wildlife. The impact of human activity such as the construction of buildings, siting of bulk infrastructure (roads, telecommunications infrastructure, electricity lines etc.) and management of vehicle or aircraft traffic etc. is of utmost importance in such situations. Sites or areas such as the Tsodilo Hills or places required to portray a wilderness or pristine character may be particularly susceptible to impacts from human activity.

Heritage Value

- The Heritage Value of an area or site is based upon the significance or cultural meaning that certain people place on it for religious, spiritual, historical, traditional or other important social purposes. The value of such areas or sites may be of local, tribal, national or international importance, and may be evaluated and considered as such in a sensitivity analysis.

Human Development Needs

4.7.17 Existing and future WMAs exist in a context of human activity and the national need for rural development. In some cases areas of WMAs contain areas of important commercial value for uses such as tourism, whilst others might have communities resident in some areas within them, who need to carry out livelihood activities to survive.

4.7.18 Such human uses of WMAs need to be identified up-front so that the particular needs of any activity might be identified and factored into the Management Plan. Transparent and participatory processes should be carried out to identify the various categories of need and resulting activity levels. Where Government has designated particular areas such as CHAs or subsections of CHAs for tourism, hunting or multipurpose use, then these areas may have particular restrictions placed upon them in terms of access, use of natural resources (whether consumptive or non-consumptive) and these need to be considered in the overarching WMA Management Plan.

4.7.19 Examples of such human activities include: cultivating land for crops; rearing livestock; harvesting veldt products; hunting wild animals and carrying out tourism activities. In order to prevent conflict between such activities it is important to separate as many of these activities as possible, spatially, and it is important to identify where these activities need to be carried out for any particular reason i.e. existence of good soils for cultivation; prime grazing for livestock etc.

Zonation

4.7.20 Once the Sensitivity Analysis has been carried out and all of the other human need requirements have been identified then the two components may be spatially overlaid in GIS programmes to identify where overlapping land-use practices or biodiversity needs exist.

4.7.21 A process should be carried out with stakeholders to negotiate the 'best-fit' of the competing land-use factors, where some degree of compromise might need to be made on both sides in order to obtain a satisfactory outcome.

4.7.22 Once agreement has been reached, then the various land-use practices may be zoned spatially on maps to indicate where these are, and to allow the DWNP to manage the WMA accordingly.

4.7.23 The zones may form the basis of written agreements and undertakings amongst stakeholders, to collaboratively manage the area and minimise conflict.

4.7.24 Examples of zones are:

- "Cultivation Areas": Areas for agricultural cultivation located within the boundaries declared as "population areas" according to these regulations.
- "Community Harvesting": Collection of traditional veldt products by citizens of Botswana for subsistence or commercial purposes as designated, shall be allowed; may also include areas designated for specific resources such as community timber harvesting
- "Development Free Areas": Locations within the WMA to be void of any sign of permanent human development, including cattle posts, water installations, housing, etc.; or, where existing developments shall be removed or allowed to fall into disrepair.
- "Livestock Free Zones": Areas to be void of livestock.
- "Bulk Infrastructure Development": Easements or servitudes allowing for the construction of linear developments such as transmission lines and telecommunication lines.
- "Settlement Areas": Specific geographic regions within a WMA dedicated according to these regulations to the maintenance of in situ human populations.

- "Subsistence Hunting Areas": Regions where only non-commercial, domestic use hunting activities by citizens of Botswana shall be allowed; may designate specific categories of citizens allowed to hunt within such areas.
- "Traditional Hunting Areas": Hunting allowed only with the use of traditional weapons.
- "Wildlife Recovery Areas": Areas set aside for the recovery of species in decline.
- "Commercial Hunting Areas": Areas set aside or where commercial hunting is permitted.

4.7.25 After designating such areas, the Director may suspend all activities or categories of activities, including hunting and infrastructure development, as necessary and without liability, to minimize disturbance to species habitat.

Management of the WMA

4.7.26 The implementation of the WMA Management Plan often requires that the responsible agency i.e. DWNP, should interpret the requirements of the Plan in such a manner that the intended activities are carried out as efficiently and effectively as possible. The following sections provide some guidance in this regard.

Non-consumptive use (tourism)

4.7.27 One of the important uses of areas within WMAs (CHAs and sub-areas) is that of tourism. Where major potential exists for tourism, leases have been and may be issued to operators to carry out their particular activities under conditions set out in the lease and according to the WMA Regulations.

4.7.28 However, it is most efficient if many of the planned activities for such tourism conforms to the overarching objectives of the WMA and its sub-components i.e. use of natural resources; management of land and water; management of waste and toxic substances etc. Where a WMA Management plan outlines particular requirements, practices and parameters, then these may be taken to be automatically part of any lease issued or may actually be included in the lease itself and in the site specific Management Plan tied to that lease. The overarching authority of the WMA Management plan will apply over the lease and its associated Management Plan. The Lease and its Management Plan may not include practices, activities or requirements that exceed the parameters of the WMA Management Plan.

4.7.29 All of the tourism activities carried out shall be monitored and evaluated on a systematic and regular basis, and the data or information obtained from these activities used to better manage the overall WMA.

4.7.30 All tourism activities carried out within the context of the WMA Management Plan should also conform to associated or relevant national or district legislations. The relevant government agent should be responsible for ensuring that any lease holder carried out its operations in accordance to the required standards and norms.

Hunting

4.7.31 All hunting in the WMA shall take place in areas that are zoned for such activities (see Sections 4.3.2 and 4.7.24 above) and under conditions spelt out in the Wildlife Conservation and National Parks Act (1992) as read with the Wildlife Conservation (Hunting and Licensing) Regulations (2001) and with the WMA Regulations as they be.

4.7.32 All conditions of entry, permissions and licenses necessary shall be conformed to.

Management of illegal hunting of wildlife

4.7.33 The extent to which the management and control of illegal hunting (poaching) in a WMA will be managed by the DWNP Anti-poaching or Law Enforcement Units and what local community based assistance might be expected should be spelt out. Where the DWNP Law Enforcement Unit will be used on an extensive basis, then the needs and expectations of this Unit should be factored into the Plan in terms of provision of sites for camps, interaction with communities etc.

4.7.34 Where the assistance of communities may be negotiated, then the needs of such processes and activities will also have to be factored into the plan in terms of mechanisms of collaboration, authorities etc.

Harvesting of natural resources (consumptive use)

4.7.35 The use and harvesting of natural resources or natural areas is a key component of a WMA. Where communities have access and harvesting rights over certain natural resources such as veldt-products, then the management and control of such activities should be described in the WMA Management Plan, and included in any zonation where possible.

4.7.36 The WMA Management Plan should refer to related national legislation covering such activities, and require that these laws and regulations are implemented and policed by the relevant Government body or agency.

Management of fires

4.7.37 The WMA Management Plan shall clearly indicate the approach that will be followed to manage official management fires set by the DWNP or with permission by a Lessee and that to be followed in cases of wild fires that may arise from different causes.

4.7.38 The Plan shall indicate how often 'official' management fires shall be set, how many people shall be in attendance; what equipment and type of vehicles would be needed; what techniques and methods will be used to manage the various stages of the fire as well as the type of burn and intended purpose of the fire i.e. patch-work or mosaic fires; cool slow fires, hot fast fires etc.

Water use and conservation plan

4.7.39 The WMA Management Plan should also contain requirements for all users of water in a WMA to conform to particular, local standards and norms, as described in related national or local legislation governing the matter.

Access

4.7.40 Although access rights into WMAs are described in the WMA Regulations, where possible the WMA Management Plan should contain requirements covering the mode of access and the conditions of access. These requirements should aim at having lease holders and persons with access and use rights collaborating to such a degree that the WMA Regulations are rarely used to resolve any conflicts resulting from such access.

4.7.41 Although the WMA Regulations will have primacy over the WMA Management Plan, the plan should described what mechanisms, systems and processes should be developed to manage traditional access rights in a manner that does not disrupt the operations and livelihoods of lease holders unreasonably and unduly.

Management of Human Settlements

4.7.42 In some WMAs communities may be resident and are an integral part of the WMA fabric. However, as required by legislation, their presence and livelihood activities need to be managed and considered within the WMA Management Plan. The factors that need to be described in the Plan should cover:

- Human settlement establishment, management and growth.
- Management of domestic animals and livestock, including: adherence to zoned livestock grazing areas; adherence to stocking rates; management of range to prevent over-grazing; maintenance of grazing and browsing productivity.
- Access to and provision of water, including the status and numbers of boreholes and other water installation schemes.
- Designation of areas for cultivation, including which areas are zoned for different types of crops raised; where irrigation may be practiced; what types and quantities of fertilizers and pesticides, if any may be used.
- Introduction and cultivation of alien and invasive plant or animal species.
- This section will also indicate in each of the categories above which government agency will be accountable to manage each responsibility.

Developments

4.7.43 Although WMAs inherently have an objective of maintaining some level of naturalness, wildness or wilderness character within which wildlife can exist freely, it may be necessary in some WMAs to allow certain levels of development to take place, whether in relation to a tourism operation or in terms of local settlements or villages. These will have in most instances have been described in the zonation process carried out earlier in the planning process.

4.7.44 What is further required in the WMA Management Plan would be a description of what level of development may be permitted and under what circumstances. The description should be detailed enough to preclude confusion and ambiguity, and prevent later conflict where a lessee or local resident may be inclined to 'bend-the-rules' or push the boundaries beyond reasonable limits and thus defeat the purpose of the zoning or are in conflict with the objectives of the WMA Management Plan.

Infrastructure

4.7.45 The WMA Management Plan should also clearly describe what infrastructure exists in the WMA and indicate what further types and extent of infrastructure may be permitted, and in which areas or places. This includes both bulk infrastructure[2] that has the potential to severely impact upon the natural character of the WMA , as well as localised infrastructure within a development zone such as a settlement i.e. height and size of buildings etc.

4.7.46 The Plan should also indicate any particular standards and requirements where infrastructure may be allowed i.e. provision of underground cables or wires in visually sensitive areas; disguising towers etc. This may relate to the requirement of having tourism or other infrastructure built in suitably aesthetic material to match the natural context of the area i.e. use of local natural building material such as rocks, poles, thatched roofing etc.

Carrying capacities & LAC

4.7.47 Where tourism activities are permitted or allowed, according to designated use zones, then the WMA Management Plan should described any particular carrying capacity necessary in order to protect both the environment and the quality of the marketed tourism experience. This may take the form of limiting the number of beds or rooms that a tourism facility might develop and offer, or limiting the number of visitors to any one site at a time.

4.7.48 Where possible the Limits of Acceptable Change process should be used to guide and manage such carrying capacity processes. Where possible the private sector or lessee should be required to carry out relevant data collection and monitoring activities to be able to better manage their areas or sites using such information.

Liquid and Solid Waste Management

4.7.49 Liquid and solid waste has the potential to severely pollute any area, and especially natural areas such as WMAs. It is important that the WMA Management Plan clearly describes all procedures, systems and protocols necessary to manage such waste safely and within the defined national or district norms and legislation. The plan should suggest methods and means of minimising or mitigating potential disasters or problems, and require that these aspects are regularly and thoroughly monitored by the relevant Government Agency.

Transport, handling and storage of hazardous materials

4.7.50 The WMA Management Plan should clearly describe all procedures, systems and protocols necessary to manage the transport, handling and storage of hazardous material safely and within the defined national or district norms and legislation. The plan should suggest methods and means of minimising or mitigating potential disasters or problems, and require that these aspects are regularly and thoroughly monitored by the relevant Government Agency.

[2] Bulk infrastructure is considered to be: roads, electricity lines, telecommunication structures, water provision structures etc.

Renewable energy (e.g. solar power, wind)

4.7.51 Where possible each WMA Management Plan should require the greatest level of use of renewable energy, not only in an attempt to contribute to the reduction in global warming, but as a means of reducing the need for electricity – whether generated by generators or supplied by power lines. Such approaches will reduce visual impacts on landscapes and reduce auditory pollution and ensure that a more natural environment exists in terms of the objectives of the WMA Management Plan.

Screening and visual integration with land forms

4.7.52 Where necessary the WMA Management Plan shall require that any development or activity that has the potential to disturb the natural character of an area or site on a long term basis, should construct suitable screening and camouflage to reduce any impacts.

Mitigating landscape disturbance

4.7.53 Although possibly identified in the Sensitivity Analysis, the WMA Management Plan shall describe how landscapes and land forms are not impacted upon due to human activities or developments. This will require that EIAs are carried out where such developments are proposed, to determine the potential for such impact and identifying alternative options i.e. underground cables etc.

Introduction of Alien or Invasive plants or species

4.7.54 It is a recognised fact that many alien or invasive plants or animals have the potential to seriously degrade natural habitats and to impact upon natural ecosystems. The WMA Management Plan shall describe how such plants and animals shall be managed and controlled, especially preventing the introduction or spread. It should also describe what management responses should be taken when such plants and animals are found in a WMA.

Problem Animal Control

4.7.55 Although the stated intention or objective of WMAs is to ensure that wildlife management is the primary form of land use in the area, where communities may be resident in a WMA, it is inevitable that wildlife animals will come into conflict with local residents.

4.7.56 The WMA Management Plan shall clearly describe how PAC or the more proactive form - Problem Animal Management (PAM), will be managed and implemented in the WMA. PAM shall be promoted by obtaining the collaboration of local residents by ensuring that they are educated and kept well informed of techniques and approaches to livestock husbandry and crop protection as a starting point. Where persisting conflict arises then communities will be encouraged to manage their own conflict situations within the prevailing national legislation that relates to the issue.

Research and Monitoring

4.7.57 Although it will be the DWNP's primary responsibility to carry out biologically and ecologically related research and monitoring processes in a WMA, the WMA Management Plan shall describe how lessees, locally resident communities and

other associated Government agencies shall also collaborate in such activities. The use of Management Oriented Monitoring Systems (MOMS) will be promoted and systems and procedures will be described in the Plan as to how data collection shall take place, how data and information shall be shared and analysed, and how this information shall contribute to Strategic Adaptive Management approaches used in managing the WMA, under the leadership of the DWNP. In principle though the lessee shall carry out the following monitoring in terms of ensuring that biodiversity is protected and managed in their areas:

- Through their Concession Management Plans identify all important fauna and flora in their areas – inventories;
- Based upon the Concession Management Plan and identified management needs use MOMS to develop relevant monitoring data collection cards and check-sheets, so that appropriate data on wildlife and related issues such as poaching, problem animal management, rare, endangered and threatened species management may be collected;
- Analyse the MOMS data and interpret the information to be able to use it to better understand their area and to understand what action needs to be taken in response to the information obtained i.e. increasing anti-poaching patrols, improving communications and relations with neighbouring communities etc,
- Using the data and interpreted information to improve dialogue with DWNP and to compliment their research and management activities;
- Provide annual reports to DWNP on the biodiversity and wildlife management of their area, and to use this to stimulate dialogue on how the area may be better managed;
-

Community relations and liaison

4.7.58 Where communities reside within any particular WMA or where neighbouring communities impact upon the management of a WMA the WMA Management Plan should describe how DWNP shall ensure that good relations are fostered and maintained with them and how they can cooperate and collaborate in the management of the WMA. This should include the development of a Communications and Extension Strategy that the DWNP's 'Community Extension and Outreach Division' (CEOD) shall implement under the leadership of the Regional or District Wildlife Officer, as the case may be.

Social considerations

4.7.59 Where appropriate the WMA Management Plan shall also consider the following social issues and factors within locally resident communities or in adjacent communities that possibly impact upon the management of the WMA:

- Skills development in natural resources related enterprises to enable communities to diversify their livelihoods;
- Health and safety
- Recognition of local traditional & cultural factors
- Safeguarding of Indigenous Knowledge and Intellectual Property Rights
- Poverty alleviation
- Tourist and visitors' code of conduct whilst in a WMA

- Community empowerment through the use of scorecard

Economic considerations

4.7.60 Where appropriate the WMA Management Plan shall also consider the following economic issues and factors within locally resident communities or in adjacent communities that possibly impact upon the management of the WMA:

- Economic contribution of activities and sustainable use practices to area
- The need to create employment where possible
- How economic benefits derived from the sustainable use of local natural resources (including tourism) should be shared and distributed within the locally resident communities
- How the Plan may assist in diversifying economic opportunities beyond subsistence agriculture
- What investment incentives may be offered to attract appropriate business operations within the WMA i.e. ecotourism etc.

4.7.61 The following additional economic considerations should be considered whilst developing any WMA Management Plan:

- How resource use royalties should be determined and implemented
- How Leases should be allocated or renewed so that the best use of the WMA may be obtained
- That Fair Employment practices are promoted within enterprises operating in the WMA
- Local community involvement in enterprises and businesses operating in the WMA – including shareholding in such businesses
- Promotion of local cultural craft and in the Buy Botswana campaign
- How the economic activities in the area may contribute to the conservation and management of biodiversity in the WMA

WMA Management Plan - Annual Action Plan

4.7.62 In order to ensure that the Management Plan is successfully implemented, it is necessary that an Action Plan is developed that outlines what activities need to be carried out, at what time and by whom. This is best structured in the form of a table or matrix, using the various categories indicated above as the Main Areas of Work, and sub-activities indicated below each. An example of such an Action Plan is provided.

5 GUIDELINES FOR DEVELOPING CONCESSION MANAGEMENT PLANS

5.1.1 Although each WMA should have its own Management Plan, where necessary sub-elements of the WMA (either in the form of leases over a CHA or leases for various sites within a CHA) are also required to have their own Concession or Lease Management Plans that detail how the Lessee will manage the area or site according to an agreed structure, system and process. This is intended to ensure that:

- The Lessor has a defined set of parameters against which to monitor and hold the Lessee accountable to carry out certain activities according to agreed sets of standards;
- The Lessee has a detailed set of guidelines upon which to base management activities so that these can be implemented according to agreed parameters, schedules and standards.

5.2 Principles and Approaches

5.2.1 As explained above, the intention of having a Management Plan for each Concession or Lease, is to have a formally agreed outline of how the Lessee will manage the area that is assigned to them, and for what purposes.

5.2.2 All of the Principles and Approaches used or considered within the overarching WMA Management Plan should apply when developing the individual Concession or Lease Management Plans. In particular the following Principles and Approaches should be used:

- The overarching WMA Management Plan has primacy over the Concession or Lease Management Plan, and all of its objectives, intentions, requirements and specifications apply to the contents and structure of the Concession or Lease Management Plan;
- The plan should outline the key requirements to be performed or adhered to in order to provide for the good management of the area or site, and contributing to the achievement of the objectives of the overarching WMA Management Plan – especially those relating to the management and protection of biodiversity, ecosystems, habitats, species and natural resource populations;
- The Concession or Lease Management Plan should clearly state the standards to which key requirements should be performed. This should be used to form the basis of the 'Scorecard' system of monitoring and evaluation of a Lease;
- The Lessee should be able to, and capable of, carrying out key activities to protect and manage the environment appropriately;
- The WMA Management Plan should be used as a means of facilitating constructive engagement between the Lessee, the Lessor and other Government Agencies that have authority over particular legal requirements.

5.2.3 Where appropriate, the Concession or Lease Management Plan should also incorporate elements of globally recognised principles and approaches such as:

- IUCN Ecosystems Management approaches;
- IUCN Sustainable Use Principles;
- Strategic Adaptive Management approaches

- Fair Trade Principles and Practices.

5.3 Role of Concession Management Plan in Conservation of Biodiversity and Natural Resources Management

5.3.1 As a lease is given over an area or site within a WMA, its associated Concession or Lease Management Plan should be constructed and developed in such a manner as to contribute to the achievement of the overarching Management Plan for that WMA. It is therefore logical that one of the key purposes of a Concession or Lease Management Plan will therefore be to ensure that the use of the land, its natural resources and biodiversity should be managed in such a way as to ensure the wellbeing of any natural resources, wildlife and biodiversity in them. This will require that *any human access to such areas is managed* to: minimise negative impacts upon the natural environment; to ensure that all use of natural resources (including wildlife) is managed to be within sustainable levels; that all natural processes such as wildlife movements and migrations, water-flows, etc. are protected from undue human influence; and that ultimately, biodiversity is adequately managed and protected within each WMA.

5.3.2 The Concession or Lease Management Plan should therefore contain the greatest deal of detail about key factors and requirements that will pro-actively identify all issues to be addressed and activities to be carried out to achieve the objectives of the Concession or Lease Management Plan without having to continually rely upon the use of the WMA Regulations and other compliance mechanisms. The Concession or Lease Management Plan will therefore allow the Lessee the greatest degree of responsibility and authority to carry out the essential management functions to meet the objectives of the Plan, as devolved through the Plan by DWNP.

5.4 Relation of Concession Management Plan to WMA Regulations and Lease Agreements

5.4.1 The relationship of any Concession or Lease Management Plan to the WMA Regulations is that of being a management tool to enable the DWNP Regional or District Wildlife Officer to manage the related WMA efficiently and effectively alongside other Government agencies that have authority over specific pieces of legislation that apply to human use of a WMA. The WMA Development Framework is illustrated graphically in Figure 5 shows the relationship between management planning at different scales and levels to the lease and annual inspections to verify compliance and performance using an integrated scorecard system.

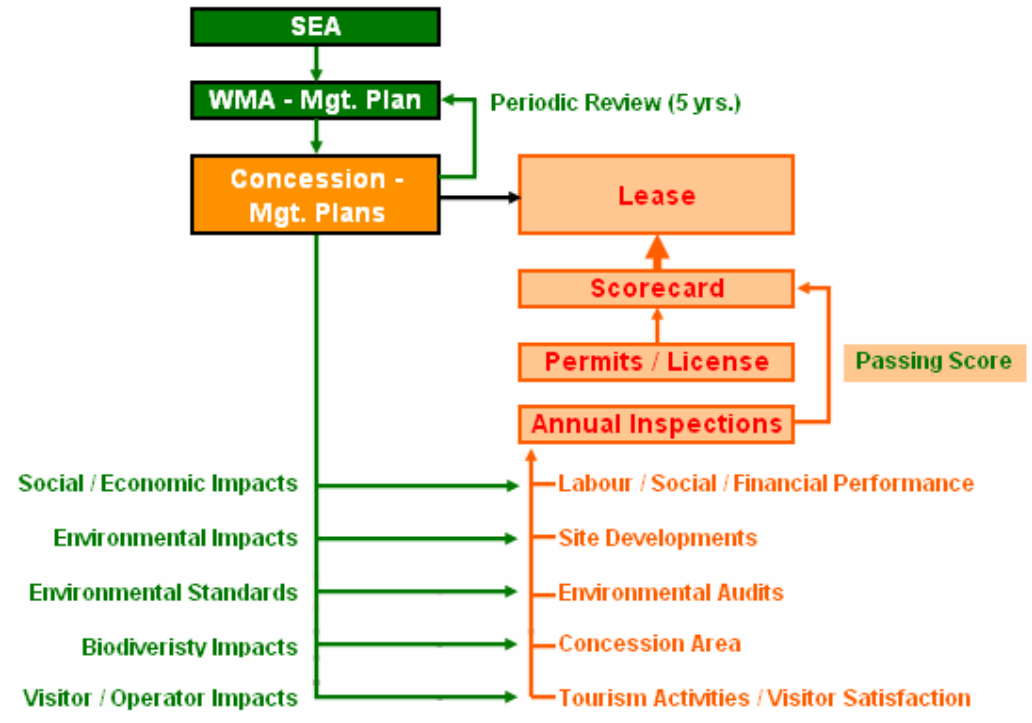


Figure 5: WMA Development Framework

5.4.2 WMA Regulations and each related WMA Management Plan provide an overarching framework to all of the Concession or Lease Management Plans that may exist in any particular WMA. Although the WMA Regulations will have primacy over any WMA Management Plans in terms of legal authority, the integrated structure and nature of the WMA Management Plans will form the basis around which the Regulations will be applied, and these in turn will form the basis upon which Concession or Lease Management Plan are implemented. The purpose of this approach is to allow the particular characteristics of each concession or lease area or site to be addressed according to its specific needs, without having to have a myriad of detailed regulations that would be necessary to cover all eventualities across all the diverse lease areas and sites in a WMA. This simplifies the management of Leases and puts in place a more user-friendly management tool that will encourage cooperation and collaboration rather than compliance.

5.4.3 Wherever possible the day-to-day aspects of managing a particular Lease will be covered in its own Management Plan. This Plan will guide and direct the management activities of the Lessee who will be accountable to achieve it objectives. It is intended that through this approach and good planning, the WMA Regulations (and other relevant national or district legislation) will not be invoked unless any serious infringement or persistent deviation from the plan is carried out.

Integration of License Inspections within Lease Agreements

5.4.4 License inspections form part of the lease agreements through the inclusion of a provision for a scorecard under Clause 6 – Rights of the Lessor. The scorecard is attached to the License Agreement as Annexure "D". *Requirements to be met by the lessee are listed in this annexure and include the requirements and guidelines of DWNP, the Department of Lands, the Fisheries Department and other statutory bodies may be set out for the conservation and sustainable use of the land and*

natural resources in the concession area.

5.4.5 Implementation of the inspections follows the workflows established by the relevant agencies to fulfill their mandates. Three annual inspections will typically be required based on the time requirements to complete the different inspections. The three inspections focus on specific sectors relating to human resources, including those for labour and immigration, concession area including DWNP and DEA and site development (footprint in the case of tourism enterprises), including tourism and environmental health. All three types of inspections are based on an existing or recently developed inspection forms and processes.

5.4.6 The scorecard follows the format of the three inspections and requires the lessee to have a pass for all three annual inspections relating to human resources, concession area management and site or development area.

5.4.7 Prior to receiving an overall pass, the lessee must demonstrate that all required permits are current. A summary sheet of all possible required permits is included with the scorecard.

5.4.8 The scorecard is detailed to the level of requirements by statutory body. This information also forms part of the inspection forms utilized by the relevant authorities during their annual inspections.

5.4.9 Do to the site specific nature of many tourism operations, and the lack of environmental standards covering specific sites, not all scorecard elements can be linked to statutory or regulatory requirements. Current efforts to develop environmental standards through eco-certification or ISO 14001 compliance are reflected in the site specific sections of the scorecard.

5.4.10 The approach taken to address the need of reflecting site specific compliance requirements is through the use of standard templates that are to be completed during or after the development of management plans or the proposal of the developer. One template allows for cumulative scores, i.e. allow for higher scores based on inclusion of developments beyond a minimum standard, as proposed in the eco-certification. They may contain contractual targets to address social and financial performance. Or they may contain management plan input sections that specify a proposed standard and variable that allows for management using a limits of acceptable change (LAC) approach to tourism development and biodiversity conservation.

5.4.11 A minimum of one annual sector inspection is expected, although through the lease agreement the lessor may access the concession area at any time with prior notification.

5.4.12 The annual sector inspections will be completed by the Departments of Labour and Immigration for human resource related requirements of tourism developments. The Department of Tourism and District Council for tourism related requirements of tourism developments acting at times on behalf of the relevant statutory body through the tourism enterprise license. The Departments of Wildlife and National Park and Environmental Affairs for the concession area requirements, acting at times on behalf of the relevant statutory body for environmental related matters, i.e. Department of Waste Management and Pollution Control or the Department of Water.

5.5 Proposed Scorecard

WILDLIFE MANAGEMENT AREA
LEASE AGREEMENT
SCORECARD

Version 1 – July 2009

CONTENTS

ENTERPRISE DETAILS

Business Contact Details

Registered Name _____
Trading Name _____
Postal Address _____
Physical Address _____
Physical Address 2 _____
Area / Location _____
Town / City _____

Communication Details

Phone 1 _____
Phone 2 _____
Fax _____
Mobile 1 _____
Mobile 2 _____
Email 1 _____
Email 2 _____
VOIP _____
Website _____

Enterprise Location Details

WMA Name _____
CHA No. _____
Lodge Name _____
Coordinates
Decimal Degrees (GCS WGS84)
S _____
E _____

File References / ID

DoL _____
DoT _____
BTB _____
DWNP _____
DEA _____
DoW _____
District Council _____
Land Board _____

SUMMARY SCORECARD

The purpose of this section of the scorecard is to provide the overall summary annual score of an enterprise to demonstrate compliance with regulatory requirements and site specific assessments carried out for labour, site and concession assessments.

Annual Inspections		Year	Score
Sector		20__	P/S/F
Human Resources - (Social)	Date		
Tourism Footprint - (Economic)	Date		
Concesion Area - (Ecological)	Date		
	Status		

Annual Inspections		Year	Score
Sector		20__	P/S/F
Human Resources - (Social)	Date		
Tourism Footprint - (Economic)	Date		
Concesion Area - (Ecological)	Date		
	Status		

Annual Inspections		Year	Score
Sector		20__	P/S/F
Human Resources	Date		
Tourism Site	Date		
Concession Area	Date		
	Status		

Annual Inspections		Year	Score
Sector		20__	P/S/F
Human Resources	Date		
Tourism Site	Date		
Concession Area	Date		
	Status		

Annual Inspections		Year	Score
Sector		20__	P/S/F
Human Resources	Date		
Tourism Site	Date		
Concession Area	Date		
	Status		

Annual Inspections		Year	Score
Sector		20__	P/S/F
Human Resources	Date		
Tourism Site	Date		
Concession Area	Date		
	Status		

LICENSE / PERMIT REQUIREMENTS

The purpose of this section is to identify and summarize the site specific license and permit requirements for an enterprise. The requirements for this section are that all license and permits must be current or an enterprise does not receive a passing score and may be subject for review of the lease contract for compliance. The number of permit required may vary by enterprise size and the activities undertaken and therefore will be completed at the time of licensing.

License / Permit	Required (Y/N)	Number	Issued	Expires	Renewed	Renewed	Renewed	Renewed
Company Formation & Registration								
Registration of Trading Name								
Tourism Enterprise License								
Work Permit(s)								
Residence Permit(s)								
Radio Licenses(s)								
Vehicle License (s) - Road Worthy								
PRDP License(s)								
Boat license(s)								
Guides License(s)								
Firearms license(s)								
Aerodrome License								

STATUTORY AND REGULATORY REQUIREMENTS

The following are the reference statutory and regulatory requirements specified in the acts and regulations of by Ministries and Departments of the Government of Botswana. Enterprise operators are required to be familiar with the specific requirements of the relevant act or regulations as they may be amended or updated by government. Compliance with this section of the scorecard is considered a straight pass or fail.

Level	Checklist / Sector Scorecard	P/ S/ F	License / Permit / Document	Responsible Authority	Act(s)	Regulation(s)	Notes
Human Resources			Health certificates (TB)	Department of Health			
Human Resources			Residence Permit (if necessary)	Dept. of Immigration	**Non-citizen Act**		
Human Resources	Basic Employment Standards		Labour Inspection Form LD/20 (1999)	Dept. of Labour	**Employment Act, Trade Dispute Act, Workmans' Compensation Act**	Employment Act contains regulations	
Human Resources	Safety and Health in the Workplace including Worker's Compensation		Labour Inspection Form LD/20 (1999)	Dept. of Labour	**Employment Act, Trade Dispute Act, Workmans' Compensation Act**		
Human Resources	Employee Personal Injury Insurance		Labour Inspection Form LD/20 (1999)	Dept. of Labour	**Employment Act, Trade Dispute Act, Workmans' Compensation Act**		
Human Resources	Unionisation, Localisation, Recuritment		Labour Inspection Form LD/20 (1999)	Dept. of Labour	**Employment Act, Trade Dispute Act, Workmans' Compensation Act**		
Human Resources	Non-citizen Employees - Wage Rates		Work Permit No. - Expiry Date	Dept. of Labour	**Employment Act, Trade Dispute Act, Workmans' Compensation Act**		
Human Resources	Citizen Employees - Wage Rates		Labour Inspection Form LD/20 (1999)	Dept. of Labour	**Employment Act, Trade Dispute Act, Workmans' Compensation Act**		
Human Resources	Counterpart Trainees		Labour Inspection Form LD/20 (1999)	Dept. of Labour	**Employment Act, Trade Dispute Act, Workmans' Compensation Act**		
Site	Radio Communication		Radio license	BTA			
Site	Tax Clearance Certificate		Tourism Enterprise License	BURS			
Site			Aerodrome License	Civil Aviation			
Site	Entrance and Lobby		Tourism Enterprise License	Department of Tourism	**Tourism Act, 1992**	Tourism Regulations, 1996	
Site	Conference Facility		Tourism Enterprise License	Department of Tourism	Public Health Act, Fire Services Act, Health & Safety Act	Tourism Regulations, 1996	
Site	Proof of Insurance		Tourism Enterprise License	Department of Tourism			
Site	Bathrooms		Tourism Enterprise License	Department of Tourism	**Tourism Act, 1992**	Tourism Regulations, 1996	
Site	Outside Appearance		Tourism Enterprise	Department of	**Tourism Act, 1992**		

Level	Checklist / Sector Scorecard	P/ S/ F	License / Permit / Document	Responsible Authority	Act(s)	Regulation(s)	Notes
			License	Tourism			
Site			Vehicle Licenses - roadworthy certificate	Department of Transport			
Site			PRDP License	Department of Transport			
Site	Bedrooms		Tourism Enterprise License	Environmental Health	**Public Health Act**, (CAP. 63:01 of 1981) Fire Services Act		
Site	Bathrooms		Tourism Enterprise License	Environmental Health	**Public Health Act**, (CAP. 63:01 of 1981) Fire Services Act		
Site	Kitchen		Tourism Enterprise License	Environmental Health	**Food Control Act, 2003**		
Site	Dinning Rooms		Tourism Enterprise License	Environmental Health	**Food Control Act, 2003**		
Site	Food Storage Facilities		Tourism Enterprise License	Environmental Health	**Food Control Act, 2003**		
Site	Garbage Disposal Area		Tourism Enterprise License	Environmental Health	**Waste Management Act**, (CAP. 65:06)		
Site	Public Cloakrooms		Tourism Enterprise License	Environmental Health	**Public Health Act**, (CAP. 63:01 of 1981) Fire Services Act		
Site	Staff Change Rooms and Dining Areas		Tourism Enterprise License	Environmental Health	Public Health Act, Fire Services Act, Health & Safety Act		
Site	Laundry		Tourism Enterprise License	Environmental Health	**Public Health Act**, (CAP. 63:01 of 1981) Fire Services Act		
Site	Company Formation		Certificate of Incorporation - Tourism License Application	Registrar of Companies			
Site	Company Registration		Registration of Trading Name - Tourism License Application	Registrar of Companies			
Site	Bars and Lounge		Tourism Enterprise License	Trade	**Trade & Liquor Act**		
Site	Air Charter Company Requirements		Air operators license	Civil Aviation			
Site	Air Charter Company Requirements		Air transport license	Civil Aviation			
Site	Air Charter Company Requirements		Pilots license	Civil Aviation			

Category	Checklist / Sector Scorecard	P/ S/ F	License / Permit / Document	Responsible Authority	Act(s)	Regulation(s)	Notes
Concession Area			Agriculture Resources Board (ARB)				
Concession Area			Agriculture Resources Board (ARB)				
Concession Area			Department of Environmental Affairs				
Concession Area			Department of Forest and Range Resources				
Concession Area			Department of Lands	**Tribal Land Act** (CAP. 32:02 of 1970): Controls land use rights and make provision for imposition of restrictions on Tribal Land.			
Concession Area		Boat / mokoro license (Certificate of Registratioin)	Department of Water Affairs	**Aquatic Weeds** (Control) (CAP.34:04 of 1971): Allows for the control of aquatic weeds mainly through the control of boat movement. Can affect wetlands by limiting boating and procedures used to control weeds. Eight plants are listed as weeds.			
Concession Area			Department of Water Affairs	**Water Act** (CAP. 34:01 of 1962): Defines ownership, rights and use of public water. Prohibits the pollution, fouling or poisoning of, interfernce with, or flow alteractionof public water.			
Concession Area			Department of Water Affairs	**Waterworks** (CAP. 34:03 of 1962): Provides for the prevention of the misuse and pollution of water through enforcement of penalties.			
Concession Area			Department of Water Affairs	**Aquatic Weeds** (Control) (CAP.34:04 of 1971) (34:71-72): Contains Declaration of Infested Waters Order for surface water areas infested with aquatic weeds.			
Concession Area		Guides License	DWNP	**Wildlife Conservation and National Parks** (CAP. 38:01) Enales gazettement of national parks, game reserves and Wildlife Management Areas (WMA) in which wildlife conservation and use is the primary land use.		Wildlife Conservation (Hunting and Licensing) Regualtions, 2001	
Concession Area		Firearms license	DWNP	**Wildlife Conservation and National Parks** (CAP. 38:01) Enales gazettement of national parks, game reserves and Wildlife		Wildlife Conservation (Hunting and Licensing) Regualtions, 2001	

Category	Checklist / Sector Scorecard	P/ S/ F	License / Permit / Document	Responsible Authority	Act(s)	Regulation(s)	Notes
				Management Areas (WMA) in which wildlife conservation and use is the primary land use.			
Concession Area			DWNP	**Fish Protection** (CAP. 38:05 of 1975)		Fish Protection Regulations, 2008	
Concession Area				**Noxious Weeds** (CAP. 35:04 of Date) Allows for the control of arable and aquatic weeds by making land owners or occupiers responsible for destruction of weeds.			

SITE SPECIFIC CONDITIONS

Site specific checklists for scoring follow the process or framework for development and implementation of a tourism enterprise. These are:

- The concession area management planning and implementation;
- Site or development management planning and implementation;
- Environmental standards and performance compliance;
- Human Resources and Financial Management of the tourism enterprise;
- Tourism activities or tour monitoring;

The sections are not standard across the WMA and vary at the concession or site level. These include specifics for individual concessions, site development plans, environmental standards, tour operations, financial performance and citizen empowerment they may be proposed by a tourism operator or stipulated in the WMA management plan. These conditions are not based on statutory requirements and therefore are not considered as pass / fail scoring and may be subject to weighting and scoring as a basis for the evaluation of performance.

The scorecard input that follows may be considered as a base for developing more specific certification or qualification. Input draws on some of the requirements proposed for eco-certification and are presented in a similar manner for scoring. The environmental standards section may be considered the initial basis for an enterprise seeking to be ISO 14001 certified through the development of an environmental management system based on an environmental management plan (EMP).

Tourism performance may be judged against limits of acceptable change using a standard and variable that is appropriate for specific visitor experience. The standards in the concession area plan draw on previous efforts to develop limits of acceptable change evaluation criteria.

The scorecard tables are developed as templates that will be completed during the enterprise application process using information drawn from the Strategic Environmental Assessments, Wildlife Area Management Plan and the Concession Area Management Plan. Scoring may be subject to desired site conditions and may be linked to contractual targets. Scoring may be cumulative, similar to eco-certification, for the scorecards that include multiple means or types of compliance, i.e. type of waste water treatment.

SOCIAL / FINANCIAL TARGETS

Ref	General Indicator	Weighting	Sub – Weighting	Contractual Target	Score	Specific Indicator
	Ownership					Percentage direct shareholding by **citizens** (including employee share schemes)
	Strategic Representation					**Citizens** as a percentage of board of directors
						Local citizens as a percentage of board of directors
						Citizens as a percentage of executive management
	Employment Equity					**Citizens** as a percentage of management
						Local citizens as a percentage of management (relates to eco-certification)
						Citizens as a percentage of supervisors and skilled employees (relates to eco-certification)
						Citizens as a percentage of total staff (relates to eco-certification)
						Local citizens as a percentage of total staff (relates to eco-certification)
	Skills Development					Total annual skills development spend on citizens
						Total annual skills development spend on **local citizens**
						Percentage of total skills development spend on **citizen employees**
	Preferential Procurement					Total annual procurement spend on **citizen-owned companies and individuals** (relates to eco-certification)
						Spend on **citizen-owned companies and individuals** as percentage of total annual procurement spend. (relates to eco-certification)
	Corporate Social Responsibility					Total annual corporate social investment spend on local education, community programmes, health, conservation, etc. (relates to eco-certification)
	Financial Performance					Percentage of total available bednights sold to total available.

CONCESSION AREA PLANNING INPUTS

Ref	Management Planning	Plan Specification	Standard(s)	Variable(s)	Status / Notes
	FLORA - VEGETATION RELATIONSHIPS				
	Endangered and Threatened Species	(Eg.) Significant populations of threatened *Acacia hebeclada subsp chobiensis* in the concession area established;	i) Populations monitored monthly; ii) Data entered into register bi-annually; iii) No more than 5% negative variation in a year;	The following variables affecting the category exist in the area: i) Drought effects; ii) Flood recession processes.	
	High Species and Habitat Diversity Areas				
	Alien and Invasive Species	(Eg) Salvinia molesta, giant salvinia or Kariba weed found in channels to the north of the concession area and may enter area through boat traffic or flood cycles. Major possibility of narrow channels in concession area becoming blocked.	i) Channels monitored monthly; ii) Data entered into register monthly; iii) No specimens tolerated in concession area; iv) Invasion incidents reported to DWNP or Water Affairs within 24 hours.	The following variables affecting the category exist in the area: i) Drought effects; ii) Flood recession processes.	
	Site Improvement / Rehabilitation				
	Harvesting / Sustainable Offtake Requirements	(Eg.) Area has significant sites with thatching grass (Cymbopogon excavatus) and reeds (Phragmites australis) that are harvested by the adjacent Tubu Community on an annual basis.	i) Community agreement negotiated with Kgosi; ii) Applications for harvesting from Kgosi received and responded to within two weeks; iii) Harvesting levels assessed against permits issued by DFFR; iv) No areas over-harvested.		
	Species Specific Protection / Management				
	FAUNA				
	Wildlife				
	Rare, Endangered and Threatened Species Management	(Eg.) Significant population of Sitatunga (*Tragelaphus spekei*) exists in the area: i) Sitatunga population numbers established (baseline as at [year]; ii) Distribution of	i) Populations monitored monthly; ii) Data entered into register bi-annually; iii) No more than 5% negative variation in a year;	The following variables affecting the category exist in the area: i) Drought effects; ii) Flood recession processes.	

Ref	Management Planning	Plan Specification	Standard(s)	Variable(s)	Status / Notes
		population across the concession area established; iii) Deaths, births, mortality or migrations monitored.			
	Unique Species Management				
	Wildlife / Vegetation Guidelines				
	Avian and Heronries				
	Breeding Sites				
	Livestock	Proposed grazing capacity from the management plan.		No. of grazing days by soil and vegetation condition.	
		Designated grazing area in association with watering points.			
	Biodiveristy Conservation				
	Seasonally / Intermittent flooded areas	(Eg.) The WMA Management Plan shows that the area contains portions that have a high biodiversity index from the seasonal nature of flooding in the area.	i) New roads in the seasonally flooded area are not created such that they form impediments to the flow of water; ii) No new roads or permanent tracks above 5% of the baseline distance of planned roads in the Concession Management Plan may be created each year, whilst 5% of the existing road or network shall be closed and rehabilitated ie. zero increase		
	Riparian Area				
	Introduced Species				
	Breeding Sites	(Eg.) Breeding sites for 'skimmers' exist within the concession area and shall be managed to protect their breeding needs.	i) All existing breeding sites to be identified and demarcated to show appropriately aesthetic markers to prevent entry; ii) No tourism based human activity to be allowed within 100m of the boundaries of the sites; iii) Visitors to be educated on the importance of the breeding sites; iv) Records of breeding activity to be kept and logged in a DWNP approved data		

Ref	Management Planning	Plan Specification	Standard(s)	Variable(s)	Status / Notes
			base.		
	Unique Species				
	FIRE REGIME				
	Controlled Burning				
	Infrastructure Protection Plan	(Eg.) Area found to be in high fire risk area and all buildings need to have specific fire protection plans for the camps and infrastructure, especially fuel storage facilities.	i) All buildings or built up areas to have fire-breaks cleared of at least 10m where populations of tall indigenous grass species exists or of 5m where naturally occurring grass populations only grow to a height of less than 200mm. ii) Fire extinguishers [type 'c'] to be placed in easily accessible protective housing within 10m of fuel storage tanks and to have been checked and certified to be operational within the last three months; iii) 1 x fire extinguishers of [type 'B' and to have been checked and certified to be operational within the last three months to be placed in or on outside wall of each camp accommodation or guest facility; iv) 1 x central main fire-management hose pipe of at least 50m, connected to high-pressure pump and to water tank of at least 2,000 litre capacity.		
	Habitat Management				
	Firebreak Development				
	Firebreak Management				
	Late Season Impact / Frequency	(Eg) Area is seen to have severe bush-encroachment due to excessive wild-fires and over-grazing, and needs to use quick, hot fires to reduce population of Acacia species	i) Areas identified in concession Plan where dense thickets of Acacia species occur, to be burned annually during Sep-Oct using mid-day burns under controlled and managed conditions; ii) 10m wide fire-breaks to be cleared		

Ref	Management Planning	Plan Specification	Standard(s)	Variable(s)	Status / Notes
			around designated Acacia thickets, preferrably using existing roads and tracks to minimise aesthetic impacts.		
	Early Season Impact / Frequency				
	INFRASTRUCTURE				
	Concession				
	Access				
	Year around access	(Eg.) The WMA Plan shows that this area was used historically by the for harvesting fish during all seasons of the year.	i) Community agreement negotiated with Kgosi; ii) Applications for harvesting from Kgosi received and responded to within two weeks; iii) Harvesting levels assessed against permits issued by DWNP; iv) No areas over-harvested.		
	Seasonal access	(Eg.) The WMA Plan shows that this area was used historically by the Community for harvesting grass during the period May-July of the year.	i) Community agreement negotiated with Kgosi; ii) Applications for harvesting from Kgosi received and responded to within two weeks; iii) Harvesting levels assessed against permits issued by DFFR; iv) No areas over-harvested.		
	Water crossing				
	Firebreaks				
	Tourism				
	Development Plan Improvement				
	Grease traps included in development plan				
	Landscape				
	Visual Impact and Aesthetics	(Eg.) The WMA Management Plan indicates that the concession area is situated in a wilderness zone and has a predominantly flat aspect (topography) with possibilities	i) Human constructions and developments to be confined to treelines and within well wooded areas; ii) Human constructions and developments to be		

Ref	Management Planning	Plan Specification	Standard(s)	Variable(s)	Status / Notes
		of human activities and structures having a high impact upon the landscape	constructed of aesthetically compatible materials and designs so as to blend in well with the surrounding vegetation, skyline, and natural context of the area - where possible natural material should be used to compliment the natural resources of the area; iii) Human constructions and developments should be of a nature such that they can be easily demolished and the area easily rehabilitated		
	Transportation				
	Signage				
	Roads and Safari Tracks	Soil & terrestrial habitat:	1. Less than 0.05 km of road or track used at least four times annually, per square kilometer of permanently dry land; 2. Two or less items of man-made litter per month present on land or roads/tracks in self-drive areas used by tourists and tour operators; 3. Two or less items of man-made litter per month present on land areas or within temporary camp sites used by tourists and tour operators.		
		Amount of (kms) of all season and seasonal roads specified	All roads networks mapped using GPS		
		Seasonal roads note flood plains and likelihood of annual flooding			
		Road network siting notes soil types and sensitive habitats			
	Utilities				
	Power				

Ref	Management Planning	Plan Specification	Standard(s)	Variable(s)	Status / Notes
	Sanitation				
	Water Supply				

SITE DEVELOPMENT PLANNING CRITERIA

Ref	Standard		Indicator	Value		Score		Notes	
	Management Planning								
	Basic site inventory and facilities map		Map with attribute tables					Relates to eco-certification	
	Inventory and map of tourism activities		Map with attribute tables					Relates to eco-certification	
	Natural, cultural, archaeological resource protection measures are incorporated								
	Management plan demonstrates the identification of natural, cultural, archaeological resources and documents monitoring and protection measures		Section of management plan, map identifying specific area and associated protection measures. Evidence of active monitoring.					Relates to eco-certification	
	Use of indigenous and drought resistant landscape vegetation								
	100% of planted vegetation is locally indigenous to the region and drought resistant							Relates to eco-certification	
	Energy Conservation Plan (ECP)								
	Basic energy conservation and management plan		Section of Concession or Development Plan – demonstration of energy management system(s)					Relates to eco-certification	
	Professional energy conservation and management plan		Real time metering or sub-metering for development of load profiles					Relates to eco-certification	
	Hot water pipes insulated to prevent heat loss		In all new-build or refurbished facilities, all the hot water pipes are insulated					Relates to eco-certification	
	Generator fuel use								
			Litres of fuel use by facility type					Relates to eco-certification	
	On-site gas use								
			Litres of gas use by facility type					Relates to eco-certification	
			Distance of storage from nearest structure.	30m					
			Evidence of firebreak around storage facility.						

Ref	Standard		Indicator	Value		Score		Notes	
	Generators		Location in relation to silencing						
			Exhaust silenced so that not detectable from a distance of 40m.						
	Inverter Systems								
			Room for inverters and batteries silenced so not detectable from 40m.						
			Signage to avoid combustion in inverter and battery room(s).						
			Battery bank located on impermeable surface.						
	Water Conservation Plan								
	Basic water conservation monitoring and management plan		Water consumption monitoring data, goals and targets					Relates to eco-certification	
	Professional water conservation monitoring with metering and management plan		Description of water system profile and all water conservation measures					Relates to eco-certification	
	Use of rain storage devices		Facility has at least 1 rain collection and storage system and uses the stored water within its daily operations					Relates to eco-certification	
	Regular leakage assessment program & reporting		Demonstrated monthly leakage and reporting method.					Relates to eco-certification	
			Demonstrated monthly leakage, reporting and repair response.						

ENVIRONMENTAL STANDARDS

Ref	Standard	Indicator	Value	Score	Notes
	TOURISM IMPACTS				
	Storage				
	Fuel	Storage facilities on impermeable base.			
		Fuel storage area protected from by brick wall or cleared 15m firebreak			
	Parafin	Parafin storage and refilling areas on impermeable base.			
	Used Oils	At least two 200l drums available for storage of used oils, leaving one in camp at all times.			
	Hazardous Materials				
	Disposal	40m minimum distance between water source and nearest waste disposal point.			
	Solid Waste				
	Paper / Cardboard	Evidence of burn pits.			
	Can, bottles and plastics	All products are separated by type			
		Cans crushed at location			
	Organic	Organic pits dug to a depth of 500mm above highwater mark			
	Inorganic				
	Building Materials	Trucked off-site to appropriate disposal site			
	Batteries	All used batteries collected for to disposal at appropriate sites			
	Iron / Steel				
	Waste Water				
	Brown Water	Type of treatment system			
	Septic tank				
	Multi-tank (2)				
	Multi-tank (2) w/ herringbone				

Ref	Standard	Indicator	Value	Score	Notes
	soakaway.				
	Multi-tank (3)				
	Multi-tank (3) w/ constructed wetland				
	Water Quality	Chemical upper limits as stated in Tables 2 and 3 of Botswana Bureau of Standards BOS 93:2004			
	Grey Water	Evidence of calculation ensure retention time in septic tanks.			
		Evidence of sufficient capacity of septic tanks			
	Vehicle Wash	Wash bays on impermeable surface			
		Wash bays on impermeable surface with drains to sand filter tank or septic tank			
		Vehicle cleaning products are bio-degradeable			
	Fat / Grease				
		Grease trap constructed as per recommendations in site development plan covering, chamber size, T-pipe size and location, mesh and guaze specifications			
		Evidence grease traps are cleaned weekly with appropriate enzyme product			
		Grease traps are animal proofed			
		Grease traps are flood proof			
	Fuel				
	Transportation	Means available to roll drums off of vehicle and not drop them onto tires in order to avoid damaging fuel drums.			
	Overhead tanks	Refueling area has an			

Ref	Standard		Indicator	Value		Score		Notes	
			impermeable base.						
	Gas lines and storage		Storage area has an impermeable base						
	Fuelwood								
	Boats / Outboard Engines								
	Two stroke engines								
	Cleaning of boats								
	Re-fueling								
	Noise near camps and wildlife								
	Driving Style								
	Recycling								
	Bio-degradeable Products								

TOUR OPERATIONS CRITERIA

Ref	Tour Standards	Indicator	Weighting	Score	Contractual Target	Notes
	Tour Management					
	Tour quality is monitored regularly	Visitor expectation / satisfaction survey				Relates to eco-certification
	Tour road use and driver policy reflecting on / off road use, night driving, water crossing and means of monitoring.	Mapping and logging of tour routes utilized during wet and dry seasons				Relates to eco-certification
	Tour activities do not cause change of the habitats and wildlife activity	Maps of tour routes utilized in relation to habitats reflect tour route rotation				Relates to eco-certification
	Emergency preparedness	Comprehensive first aid kit (shock treatment) on all vehicles				Relates to eco-certification
	Mobile Trips					
		Two or less items of man-made litter encountered per trip in water or water habitat, in areas used by tourists and tour operators for hikes, mokoro rides and overnight camps.				
	Environmental Management					
	Environmental impact of tour has been assessed, and measures have been taken in order to minimize or remove any negative impacts using an environmental management plan.					Relates to eco-certification
	A fire prevention and action plan has been developed and is available for reference for all staff					Relates to eco-certification
	Solid waste disposal plan - No solid waste disposed of burnt in natural areas	Solid waste delivered at end of tour to disposal site.				Relates to eco-certification

5.6 Recommended Content and Structure of Concession Management Plan

5.6.1 The content required in the development of such a plan should be directed at the context of the Lease area or site, and how it should be managed to best achieve the Objectives developed for that area or site. However, all relevant content or material from the overarching WMA Management Plan should be included as a means of providing the Lessee with *adequate, immediately available data or information* to make informed decisions and to carry out management activities as efficiently as possible.

5.6.2 The various categories in the Management Plan will form the basis for a Long-term Action Plan covering the terms of the Lease – indicating in a matrix form: what management activities will be carried out, according to what standards, during which times or periods, and who is accountable to ensure the activity is carried out.

5.6.3 This Plan will also form the basis upon which the Lease will be evaluated within a monitoring and evaluation system such as a Scorecard system.

Content of a Lease Management Plan

1. Brief history of the area
2. Objectives of the Management Plan, including those covering biodiversity and conservation issues, and those covering the specific purpose of the lease i.e. tourism intentions, as well as any related objectives regarding social and economic or rural development issues linked to resident or neighbouring communities;
3. The duration of the Management Plan;
4. Drivers of change that affect the ecosystems and natural resources
5. A description of the physiography and climate of the area (this will usually come from the WMA Management Plan);
6. An outline of existing biodiversity, natural resources and human activities as a baseline of future management processes, including:
   a). A description of key vegetation types of the area or site
   b). A description of the fauna in the area
   c). A description of any unique, endangered, rare or threatened species that may exist in the area;
   d). A description of unique, special or important habitats such as heronries; breeding grounds etc.
   e). Reference to any components of the Sensitivity Analysis of the Area carried out for the WMA Management Plan that relate to the Lease Area or Site;
7. A description of neighbouring communities or communities resident in the area
8. Planned management and protection activities for biodiversity, ecosystems, habitats and natural resources, according to the objectives of the Plan, including:
   a). Principles and approaches to be used in the management and conservation of the ecosystems and natural resources;
   b). The ongoing condition and status of natural resources;
   c). The sustainable use of natural resources;
   d). Protection of any endangered or threatened species, ecosystems or

habitats requiring special management attention or proactive conservation measures to be taken, including research and monitoring priorities.

9. Zonation of the Lease area or site in such a manner as to integrate biodiversity and wildlife management needs with any sustainable use activities relating to the intended activities to be carried out in the Lease area or site, understanding that the primary form of land-use in such areas is that of wildlife use and management. Such zonation will consider the need to maintain natural areas in as natural a state as possible, the need to establish tourism facilities and carry out tourism activities, and in some cases the need to accommodate human settlements, the need to provide access for the traditional harvesting of natural resources for subsistence purposes. Such zonation shall indicate limits of acceptable change; access criteria and initial carrying capacities.

The following types of land use designations may be considered in such zonation:

a). "Natural Areas": Locations within the Lease area or site to be void of any sign of permanent human development, including cattle posts, water installations, housing, etc.; or, where existing developments shall be removed or allowed to fall into disrepair.
b). "Development Areas": Defined areas, sites or nodes where specified types of buildings, structures, and infrastructure is permitted to enable the purpose of the Lease to be carried out and as stipulated in the Lease i.e. tourism lodges and camps, airstrips;
c). "Community Harvesting": Collection of traditional veldt products by citizens of Botswana for subsistence purposes as designated, shall be allowed;
d). "Bulk Infrastructure Development": Easements or servitudes allowing for the construction of linear developments such as transmission lines and telecommunication lines.
e). "Settlement Areas": Specific geographic regions within a Lease area or site dedicated according to these regulations to the maintenance of in situ human populations.
f). "Subsistence Hunting Areas": Regions where only non-commercial, domestic use hunting activities by citizens of Botswana shall be allowed; may designate specific categories of citizens allowed to hunt within such areas.
g). "Traditional Hunting Areas": Hunting allowed only with the use of traditional weapons.
h). "Wildlife Recovery Areas": Areas set aside for the recovery of species in decline. After designating such areas, the Director may suspend all activities or categories of activities, including hunting and infrastructure development, as necessary and without liability, to minimize disturbance to species habitat.
i). "Commercial Hunting Areas": Areas set aside or where commercial hunting is permitted.

10. Description of what management activities will be carried out in the area, per zone, in order to achieve the objectives of the Management Plan. Such description shall indicate accountabilities and resource requirements. Such management activities shall cover amongst others:
a). Managing the condition of the veldt (grazing, browse, etc.) – herbivory - including setting and managing approved fires for management purposes;
b). Managing wildlife populations where permitted and authorized in the

Lease;
c). Managing endangered species and their habitats;
d). Managing alien and invasive species;
e). Strategies for dealing with or responding to wild fires;

11. Management and control of non-tourism physical development, including infrastructure, buildings, facilities and other physical interventions that may change the natural wildlife orientated character of the area.
12. Management and control of tourism related physical development, including infrastructure, buildings, facilities and other physical interventions that may change the natural wildlife orientated character of the area.
13. Management of access, movement and traffic of people and vehicles, including: access routes, roads and airstrips. Where necessary this should address issues of tourism related carrying capacities, entry points and closure of roads.
14. Residence of communities in the WMA, including issues relating to:
    a). Human settlement establishment, management and growth.
    b). Management of domestic animals and livestock.
    c). Access to and provision of water, including the status and numbers of boreholes and other water installation schemes.
    d). Introduction and cultivation of alien and invasive plant or animal species.
15. Monitoring and evaluation of required management activities according to stated standards and through stated procedures, linked to the Lease and to assessment systems such as the use of a 'Scorecard';
16. Management of pollution, litter, sewage and waste disposal
17. Requirements of EIAs where certain types of development may take place
18. Problem Animal Management and Control
19. Research and monitoring
20. Management of relationships with communities in the area or neighbouring it, including mechanisms, methods, approaches of managing access to the lease site by communities; what benefits may be directed to communities and under what conditions; how relationships with resident or neighbouring communities might be managed; how conflicts and disputes may be resolved etc.
21. Action Plan Matrix (See Table 2)

Table 2: Sample Action Plan for Management Plan

Category	Activity	Standard	Time / Period	Accountable Person
Tourism Management	Patrolling of WMA	240 man-hours in the field per month achieved	Every month	Senior Officer M&U
	Controlling Access and Entry	Gate guards manning entrance gates on a daily basis	Monthly	District Wildlife Officer
	Managing visitor traffic flows	Road signs in good condition and visible	6 monthly	District Wildlife Officer
Hunting Management	Patrolling WMA	120 man-hours in the field per month achieved	Hunting season	District Wildlife Officer
	Inspecting permits and camps	20 inspections carried out in a month	Monthly	District Wildlife Officer
	Licensing trophies	No illegal trophies submitted	Monthly	District Wildlife Officer
Fire Management	Cutting firebreaks	130 km of fire-breaks graded	March & April	Head of Research
	Maintaining equipment	All equipment inspected and repaired once a month	Monthly	Head of Research (District)
	Carrying out management burns	1,000 ha of mosaic burns completed in correct month	June	Head of Research (District)
Community Relations	Attending community meetings	5 meetings attended per month	Monthly	Head of CEOD District
	Developing CBNRM activities	6 communities assisted to develop new NR enterprises	Annually	Head of CEOD District

6 GUIDELINES FOR WASTE MANAGEMENT

6.1.1 The guidelines for waste management cover any development in a Wildlife Management Area in Botswana that may produce solid or liquid waste. Due to the large number of tourism developments in the Okavango Delta Ramsar Site (ODRS), they also contain more specific guidelines tourism developments in wetland areas. The waste management guidelines are largely informed by the *Assessment of Liquid Waste Systems and Hazardous Substance in the Okavango Delta* Component of the Okavango Delta Management Plan and the *Biokavango Assessment of Liquid Waste Systems of Tourism Establishments in the Okavango Delta and Transportation, Handling and Storage of Hazardous Substance in the Okavango Delta*.

6.2 Background

6.2.1 Solid and liquid waste generation is generally associated with physical developments. The WMAs with the greatest amount of development are in the ODRS and associated with tourism development. Assessment of the impact of waste generation from tourism development is compounded by the location of human settlements outside of the WMAs near waterways that drain into the areas within the ODRS.

6.2.2 Careful consideration must then be made in distinguishing total waste generation in the ODRS, waste generation due to tourism development and finally waste generation due to tourism development in the WMAs in the ODRS. The data produced on waste generation are not always clear are these distinctions. It is for these reasons, that the guidelines propose improvements in waste information data collection and assessment.

6.2.3 The surface water resources in the Okavango Delta Ramsar Site are generally highly vulnerable. Traveling times in the surface water system are rather short (typical flow velocities on the order of 1-10 km/d), the dilution potential in some of the minor channels of the Delta is rather low due to low discharge and some of the water intake points of the various lodges and tourist resorts are quite close to each other, thus posing problems of cross-contamination. Since the surface water in the floodplains is stagnant and exposed to abundant sunlight, there is a great potential for nutrients to cause toxic algal blooms. Prevention of eutrophication and nutrient discharge into surface waters should therefore be a priority for wastewater management in the region.

6.3 Objective

6.3.1 The objective for waste management is to develop and document a waste management audit of the waste and wastewater management process for any development in Wildlife Management Areas that potentially will produce solid or liquid waste in a WMA.

6.4 Strategy

6.4.1 The central message of Botswana's strategy is that waste management will be taken in a manner, which adequately protects human health and the environment. It adopts a Waste Management Hierarchy as the guiding principle. Among the key

components of the hierarchy are; reduction of waste, reuse of waste recycling of waste and final disposal. The other key principles adopted by the strategy are, the Prevention Principle (emphasis on pollution prevention), the Polluter Pays Principle (costs of environmental damage must be borne by those who caused the damage in the first place) and the Principle of Co-operation (emphasis on stakeholder involvement). These principles are inline with international practice aimed at achieving best practicable environmental options (BPEO). Source: ODRS Waste Management Strategy

6.4.2 The strategy for waste management in WMAs is to ensure the incorporation of either a) waste management plan as part of the concession area management plan for operations within a WMA or b) a waste management strategy for operations that utilize WMA such as mobile safari operators that are not required to prepare a concession management plan, but potentially are responsible for the production of waste during operations in a WMA.

6.4.3 The waste management plan or strategy for WMAs is to:

1. Provide Information on waste generation

   Provide an accurate and up to date source of information on waste streams, effluent quality, storage, collection, treatment and disposal facilities to facilitate effective planning and waste management performance monitoring. This will include:

   - Record and archive of data on waste streams, collection, treatment and disposal;
   - Provide effluent samples for monitoring effluent quality and its impacts on groundwater and surface water quality;
   - The parameters to be analyzed include: BOD, Total Suspended Solids, Total Phosphorus, Ammonia-N

2. Waste Collection

   Provide adequate primary storage. Require developers to be responsible for the cost of waste collection and removal when regular waste collection is not scheduled or possible.

3. Solid Waste Treatment and Disposal

   Reduce the quantity of waste for disposal through reuse and recycling. Separate waste by type to facilitate disposal, recycling and reuse.

4. Liquid Waste Treatment and Disposal

   Improve effluent quality from wastewater systems to minimize their impact on the environment.

   Pilot septic tank and artificial wetland system as a wastewater treatment option for camps/lodges in the Okavango Delta Ramsar Site with a capacity of more than 30 people and monitor effluent quality.

   Improve management of used oil to minimize its impact on the environment.

5. Institutional Requirements

   Operators of developments in WMAs are responsible for ensuring the proper disposal of wastes generated by their activities, and for paying appropriate costs of collecting, transporting, treating and disposing this waste. These generators may establish contracts with the local authority to provide this service or may choose to use other waste collection contractors. To facilitate collection, they must provide primary storage containers in accordance with

collector specification. These generators should also ensure that the quality of effluent they discharge into the environment are of acceptable standard.

6.5 Classification of Sites

6.5.1 Every waste management site is area specific. Assessment and classification of sites has not been completed to allow for site specific designation of requirements, other than a general designation of the ODRS as 'difficult'.

6.5.2 Classification of a waste generation site is a function of the soil texture, flooding, slope, depth to bedrock, permeability and depth of high water table below the bottom of the disposal field as in Table 3.

Table 3: Classification of Site Requirements

Requirements	Normal Site	Difficult Site	Adverse Site
Soil Texture	Coarse to medium sand, fine sand, sand loams, porous silt loams	Silty clay, loam, porous silt loam, silty clay loam	Clays, colloidal clays, expansive clays
Flooding	None	Rare	Common
Slope (%)	0 - 8	8 – 15	>15
Depth to bedrock (m)	>2	1-2	<1
Depth of high-water table below bottom of disposal field (m)	>2	1-2	<1
Permeability (cm/h)	5 – 150	0.5 – 5	<0.5

Source: Qasim (1999) as found in Aqualogic, 2008

6.5.3 Generally speaking the WMAs in the ODRS are in areas that have high water tables and are prone to flooding. The area is designated as a Ramsar Site and is therefore seen as ecologically sensitive. Until site specific classifications are completed, WMAs within the ODRS will be considered as requiring waste management systems for *difficult sites*. It will be on the initiative of the developer to conduct a site assessment to demonstrate otherwise.

6.5.4 Developers in WMAs are required to submit their proposed on-site waste treatment system and waste management strategy are as part of their development plan for approval by the relevant local authority.

6.6 Types of On-site Wastewater Treatment Systems

6.6.1 Most current water treatment systems (septic tank with soak away or mini activated sludge treatment plan) in the WMAs are not suitable for use in difficult site situations such as the WMAs in the ODRS, almost all do not meet current Botswana Standards for effluent quality requirements of BOS 93:2004 for BOD, COD, TSS and Total P. The conventional septic tank effluent quality does not meet BOS 93:2004 requirements for BOD_5 and Ammonia-N, but falls within the standard for TSS.

6.6.2 To address the requirements for WMAs in difficult site locations such as the ODRS, pilot septic tank systems with constructed wetlands have been evaluated with favourable results. Recommendations for using these systems were based on consideration of cost, maintenance and ability to remove BOD, COD, TSS, P, N and heavy metals. The Department of Environmental Affairs and Department of Waste Management and Pollution Control will need to be consulted as to the

current status of the requirements for on-site treatment systems in difficult site locations such as the ODRS but as of this writing, septic tank systems with constructed wetlands are the method preferred for on-site waste water treatment in the Delta.

6.7 On-site Waste Treatment Implementation for Permanent Locations (Lodge Sites)

6.7.1 Implementation guidelines and subsequent inspection by the relevant authorities seeks to address the adequacy of installed capacity, suitability of technology and appropriateness of operation.

6.7.2 Key variables for observation during inspections are evidence of leaks, smell, overflows, blockages, accessibility and record of frequency of septic tank emptying. Distance of guest toilet(s) from water course, whether the toilet is located upstream or downstream, type of black water system, number of toilets available at establishment, connection of sink to septic tank, methods of wastewater treatment and/or disposal of effluent, whether fat traps have been installed

6.7.3 Tour operators are responsible for desludging of their conservatories and septic tanks as and when they are full. They usually use private contractor, to remove and dispose of wastewater from lodges and camps.

Table 4: Guidelines for Septic Design

Design Parameter	Unit	Typical
Liquid Volume		
Minimum	m^3	2.5
1-2 bedrooms	m^3	2.5
3 bedrooms	m^3	4.5
4 bedrooms	m^3	5.7
5 bedrooms	m^3	5.7
Additional bedrooms	m^3	1.0
Number of compartments	No.	2
Volume distribution in compartments	% (total) 1^{st}, 2^{nd}	67 , 33
Length to width	ratio	3:1
Depth	M	1.5
Clear space above liquid	Cm	25
Depth of water surface below inlet	Cm	8
Inspection ports	No.	2
Inlet and outlet devices	No.	1 each

Source: Qasim (1999) – ODMP Liquid Waste Transport Component

6.7.4 Monitoring the impact of wastewater management systems on the environment

should constitute a component of their installation. This means that construction of each system should make it possible to obtain effluent samples for analysis of its quality as well as its impact on the surrounding environment. Water samples should be taken from various locations and depths in the vicinity of the system, particularly in the direction of groundwater flow.

6.8 Implementation for Mobile Locations (Mobile Safaris / Houseboats)

Mobile Safaris

6.8.1 The on-land mobile safari industry is generally self-regulating, with HATAB and BOGA the enforcing authorities of respective regulations. For the self-regulation framework to be effective, the regulations governing HATAB members have to be consistent with those of BOGA members. The Department of Waste Water and Sanitation of the NWDC should bring the two associations together to streamline their regulation and for purposes of standardization.

6.8.2 Long drop holes are the predominant method of black water disposal by on-land mobile safari operators. Both BOGA and HATAB have guidelines that are to be followed by the operators for sanitation at campsites sites. The guidelines have monitoring and punitive measures for non-compliance.

6.8.3 To enhance overall effectiveness, the following best practices should be followed in addition to the guidelines followed by BOGA and HATAB members:

- Operators should ensure that the holes are dug on organic soil
- Locate long drop holes at least 60m from water sources to avoid bacterial contamination
- Avoid concentration of long drop holes around campsites

6.8.4 The long drop hole toilets appear to be doing well under the current conditions of low density tourism. However, regulations need to be strengthened to guard against illegal camping that may result in more intensive use of the long drop hole toilets in non-designated areas.

Houseboats

6.8.5 Houseboats should apply to the Department of Waste Water and Sanitation of the NWDC for permission to erect offshore conservatories. The conservatories should be of such a standard that they do not permit wastewater leakage into the environment. The application should also indicate approximate wastewater generation, conservatory emptying authority and frequency of emptying.

6.8.6 Houseboat have pumped grey water that contains kitchen wastes of oils and fats directly into rivers. This should be discouraged unless they prove that it meets the limits for wastewater quality parameters as set by BOS 93:2004.

6.9 Waste Generation Data Assessment and Analysis

6.9.1 Developers and operators of developments in WMAs are not expected to analyze the key variables of pH, BOD, Ammonia-N, TSS and Total Phosphorus utilized to assess the impact of waste from developments in the WMAs. This is the responsibility of the relevant authorities.

6.9.2 As WMAs are designated for their unique wilderness habitat or potential however, it is important that information is collection on waste generation rates that can be utilized to assess cumulative impacts in the WMA and appropriateness of installed capacity to required capacity of on-site waste treatment systems.

6.9.3 Waste management audit requirements – purpose is to be able to verify per capita waste usage based on source of water, pumping output, duration of pumping, water storage capacity, capacity of establishment (camp/lodge), average occupancy during peak and off-peak season, and number of full time staff resident at the establishment. This information will be used to estimate waste water generation rates which are subsequently related to on-site wastewater treatment designs in terms of adequacy of installed capacity versus expected wastewater generation rate (m^3).

6.9.4 The data will be utilized to assess progress in achieving the Botswana Waste Management Strategy to reduce, reuse, recycle and assess impact of final disposal.

7 GUIDELINES FOR HANDLING TRANSPORTATION AND STORAGE OF FUEL

7.1 Background

7.1.1 The movement of hazardous substances in WMAs is an area of concern due to the need to conserve biodiversity and maintain a wilderness experience in most areas within the gazetted WMAs. Most like solid and liquid waste, hazardous substances that are found in WMAs result from developments usually associated with tourism. Hazardous substances are largely petroleum products. As most tourism development in WMAs are currently concentrated in the ODRS, these guidelines focus on issues related to hazardous substance in wetlands and are informed by the *Assessment of Liquid Waste Systems and Hazardous Substance in the Okavango Delta* Component of the Okavango Delta Management Plan and the *Biokavango Assessment of Liquid Waste Systems of Tourism Establishments in the Okavango Delta and Transportation, Handling and Storage of Hazardous Substance in the Okavango Delta*.

7.1.2 The Okavango Delta is an ecologically sensitive environment whose biodiversity could be compromised by the side effects of improper transportation, handling and storage of hazardous substances. Some of these substances contain high levels of heavy metals and dioxins that could alter the ecosystem. The guidelines for handling, storage and transportation of hazardous substances in the delta largely depend on the existing practices and their potential to compromise the delta environment.

7.1.3 Guidance is influenced to a large extent by the quantity of hazardous substances that are generated by the tourism establishments. These practices were benchmarked during the assessment against relevant government policy and legislation and Best International Management practice.

7.1.4 Usage of hazardous substances in the delta is relatively low, but is based on transport of substances into the delta based on transport by road, air or boat of quantities which can reach a level of ~8,000 litres per trip when transported by road. This will required the establishment of a *hazardous substances spillage contingency plan* based on maximum possible transport capacity for this mode of transport.

7.1.5 As with the management of liquid and solid waste, the goal of these guidelines is to improve hazardous substances information management in order to establish a better knowledge of the level of usage. This will ensure that appropriate management practices are developed and monitored for enterprises established or proposed for establishment in the WMAs.

7.2 Objectives

7.2.1 The objectives of these guidelines are to:

- Facilitate the establishment and monitoring of materials flow of hazardous substances into the WMAs,
- Create inventory of hazardous substances of WMAs,
- Describe transport of hazardous substances into WMAs,
- Identify storage sites of hazardous substances in WMAs before and after use.

7.3 Hazardous Substances Data Requirements

7.3.1 Quantities of hazardous materials are critical in the development of plans using a materials flow approach. This requires temporal information. Table 5 indicates the minimum information required to development a better understanding of the current use and potential impact of hazardous substances in the WMAs. This information should be completed monthly and reported annually as part of the development area (Environmental Health) or concession area (DWNP, Department of Environmental Affairs) inspections.

Table 5: Proposed Hazardous Substance Data Collection form for WMA Developments

Material	Means of Transport	Route Traveled	How Stored (Drums, tanks, containers)	How Stored After Use (Containers)
Diesel	Road			
	Air			
	Boat			
Petrol	Road			
	Air			
	Boat			
Oil	Road			
	Air			
	Boat			
Paraffin				
Paint				
Wood preservatives				
Used oil	Road			
	Air			
	Boat			

Source: Adapted from *Assessment of Liquid Waste Systems and Hazardous Substances in the Okavango Delta*

Management of Hazardous Substances

7.3.2 Management of hazardous substances in on-site in a WMA requires an operator having contingencies for spent oil, means to collect or trap oil during vehicle maintenance using spillage traps or concrete slabs, and recommendations for disposal and handling used oil filters.

7.3.3 The following are best practices for operators and relevant authorities for transport, handling and storage of hazardous substances that can be adapted and applied to their use in WMAs.

Transportation

- All transport of hazardous substances in the WMAs should only be conducted by transporters who licensed to handle hazardous substances;
- Access routes to the WMA for hazardous materials must be clearly specified in the WMA and Concession Management Plan including provisions for water crossings;
- Drums and truck-box fuel tans are acceptable methods of transporting oil and fuel;
- All vehicles carrying fuel should have at least one 20 B:C rate portable fire extinguisher;

- Drums and fuel tanks should be filled to a recommended level of 90%
- The load should be secured in a manner which ensures that:
  - It does not escape from the vehicle
  - It does not shift or sway in a manner that may affect the operation of the vehicle

Storage

- Fuel storage tanks, whether above ground or underground should be located down slope from water sources;
- Locate above ground tanks over an impermeable liner made of concrete or other synthetic materials;
- All underground tanks should be coated with fiberglass to prevent corrosion or use fiberglass tanks instead;
- Aboveground tanks should be made of high quality steel;
- Fuel tanks should have spill and overfill protection
  - Spill protection typically consists of a catch basin for collecting spills when the tank is filled:
  - Overfill protection has a warning, such as a buzzer or an automatic shutoff, to prevent an overflow when the tank is filled.
- Store hazardous substances such as paints and wood preservatives in the original container;
- Store similar products together to reduce any danger from reactions incase of leakage or spill;
- Store substances in a well ventilated area;

Handling and disposal

- All containers storing hazardous substances should be in good condition and clearly labeled
- Containers and tanks should be closed and sealed except where a hazardous substance is being added or removed from the container
- Storage tanks at marine fuel dispensing stations must be located 4.5m horizontally from the normal annual high-water mark;
- Solid piping must be used between storage tanks located on shore;
- Use a funnel when transferring substances between containers;
- Provide a stable platform for fueling;
- Follow the directions for storage on the label;
- Used oil should not be mixed with other hazardous substances;
- Never burn, dump or buy hazardous waste;
- Do not flush wastes down sink or toilet;
- Do not pour hazardous waste into ditches, storm drains or gutters;
- Completely drain all oil filters to ensure that they do not contain hazardous substances

Hazardous Substance Spill Contingency Plan

7.3.4 Transportation of fuel, particularly in difficult roads such as the ones in the Okavango delta, has the potential to result in leakages and spills. Apart from transportation, vehicle service areas and/or leaking storage facilities have the potential to contaminate the surrounding environment. In order to minimize

potential environmental harm, it is important that spills are contained and areas affected be treated. This is often achieved by using absorbent materials that absorb through capillary action. Among the technology that is used for such purposes and is already used by some establishments is Peat Sorb.

7.3.5 Peat Sorb is a natural and renewable resource which can be used to contain anticipated spills, treat both fresh and old spills in water and hard surfaces. It is environmentally friendly and biodegradable. It is marketed commercially both in Botswana and South Africa (www.pulaholdings.co.bw and www.enviroserv.co.za). It is recommended that establishments with contaminated sites should use Peat Sorb to treat the sites, while transporters of fuel should carry fuel spill kits all the time they are transporting hazardous substances to enable them to contain fuel and oil spills immediately they occur.

Risk assessment for fuel storage facilities

7.3.6 Fuel (diesel and petrol) is the most common hazardous substance transported and stored in the Okavango Delta. In order to avert some of the risks that its storage poses, it is recommended that a minimum risk assessment should be undertaken by the operators. The objective of risk assessment is to help the operators understand the level of risk they are taking in managing their fuel facilities, for purposes of taking appropriate risk control measures. Table 6 provides a simple risk-ranking framework adapted from Ministry of Water, Land and Air Protection, British Columbia (2002). A risk-rank value (3 for high, 2 for medium and 1 for low) is assigned for each of the risk identification categories indicated in the left column of Table 6. After assigning the risk ranking values, the values are added to arrive at the total risk-ranking value for the fuel storage facility.

Table 6: Risk-ranking framework for hazardous substances

Risk identification category	Risk Rank High	Risk Rank Medium	Risk Rank Low	Assigned Risk Rank Value
Numerical Value	3	2	1	
Environmental				
Distance to the nearest water course	< 50m	50 – 100m	>100m	
Characteristic of the soil at the fuel facility	Porous or unknown	Semi-porous	Non-porous (Clay or bedrock)	
Slope of terrain surrounding the fuel facility	> 6%	2 – 6%	< 2%	
Operational				
Site designation or description	High traffic road	Low traffic road	No through traffic	
Duration of facility operations	> 6 days	2 – 6 days	< 2 days	
Volume of fuel stored at the facility	>4,500L	500-4,500L	<500L	
Number of times the fuel facility is used per day	>12 times/day	6-12 times/day	< 6 times/day	
Amount of traffic around the fuel	> 15 people on site	5-15 people	<5 people	

Risk identification category	Risk Rank High	Risk Rank Medium	Risk Rank Low	Assigned Risk Rank Value
facility				
Prevention / Preparedness				
Distance to additional spill caches	> 60 minutes	15 – 60 minutes	< 15 minutes	
Additional spill control	Tank with no secondary containment	Tank with secondary containment	Tank with secondary containment & additional spill control	
Last spill training session for those handling fuel	Operator not trained in > 2 years	Operator not trained in 1 – 2 years	Operator not trained in the last year.	
Total Risk-Rank Value (Total of the assigned Risk Value				

Source: *Assessment of Liquid Waste Systems and Hazardous Substances in the Okavango Delta – Using Ministry of Water, Land and Air Protection, British Columbia (2002)*

7.3.7 In order to establish the necessity for risk control measures, the Total Risk Value from Table 6 is used to establish appropriate levels of effort to mitigate the risk at the fuel handling facility by using the recommended risk control measure in Table 7.

Table 7: Recommendations on Risk Control Measures

Numerical Value	Risk Ranking	Recommendations on Risk Control Measures
< 12	Low risk	No control measures necessary
12 – 23	Medium risk	Additional control measures should be considered to reduce risk
> 23	High risk	• Additional controls are necessary to reduce risk • Consider moving the fuel facility

Source: *Assessment of Liquid Waste Systems and Hazardous Substances in the Okavango Delta – Using Ministry of Water, Land and Air Protection, British Columbia (2002)*