



Kisumu Impala Sanctuary

Management Plan, 2010-2015



A lake shore walk with the Impala

KENYA
WILDLIFE
SERVICE



A lakeshore walk with the Impala

Kisumu Impala Sanctuary

Management Plan, 2010-2015

*Planning carried out
By*

Kisumu Impala Managers and
KWS Biodiversity Planning and Environmental
Compliance Department

In accordance with the

KWS Planning Standard Operating Procedures

Acknowledgements

This General Management Plan was developed by a Planning Team comprising Park Wardens, KWS Area and Headquarters Scientists, and a resource person from the tourism industry, Mr. Daniel Njaga.

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Approval Page

The management of the Kenya Wildlife Service has approved the implementation of this management plan for Kisumu Impala Sanctuary

A handwritten signature in black ink, appearing to read 'Julius Kipng'etich', with a large, sweeping flourish extending to the left.

Mr. Julius Kipng'etich
Director

Executive Summary

This 5-year (2010-2015) management plan for the Kisumu Impala Sanctuary has been developed in accordance with the standard operating procedure for developing management plans for protected areas. The plan is one of four management planning initiatives piloting the revised standard operating procedure, the other being, Hell's Gate, Ndere and Ruma National Parks. In line with this SOP, this plan aims to balance conservation and development in the target protected areas.

Plan structure

The plan is divided into five major sections i.e. plan foundations, zonation scheme, management programmes and plan monitoring. The **Plan Foundations** section describes the geographic extent of the planning area, its purpose, its exceptional resource values and major management issues of concern. The **Zonation Scheme** section divides the area into management zones to ensure that the Sanctuary's management objectives are achieved.

The main bulk of the plan is divided into four management programmes: **Ecological Management Programme; Tourism Development and Management Programme; Community Partnership and Education Programme; and Protected Area Operations and security Management Programme**. Each programme includes a programme purpose statement, guiding principles underpinning the programme and management objectives and actions that, if implemented will help achieve the programme purpose.

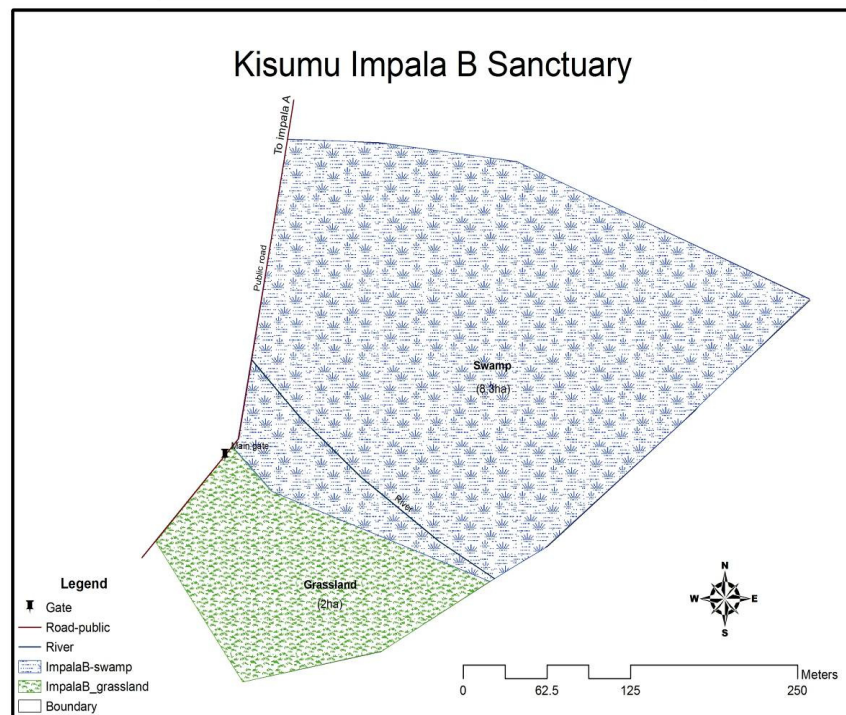
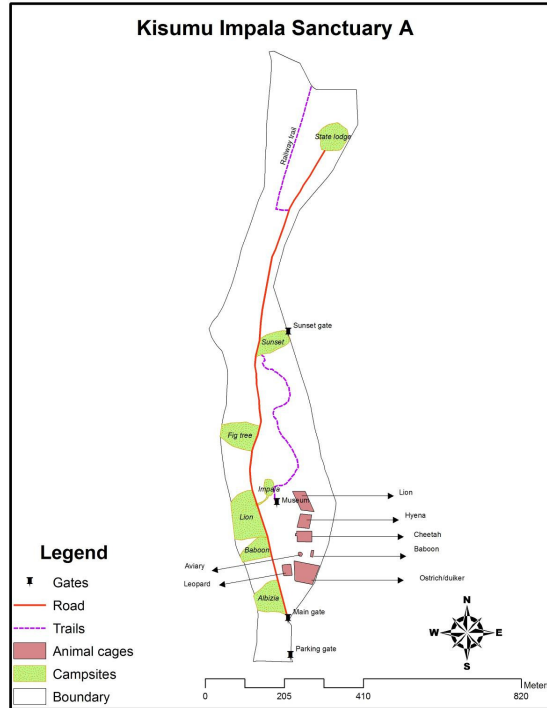
Finally, the **Plan Monitoring** section provides a framework to guidance assessment of the potential impacts, both positive and negative, resulting from the implementation of each of the four management programmes.

Area description

The Kisumu Impala Sanctuary was created to provide a home for threatened Impalas in the Kisumu City and its environments and a safe grazing area for the hippos from the lake. It was gazetted in October 1992. A holding facility for captive animals in Western Conservation Area was then developed within the sanctuary to enhance tourism inter alia. The sanctuary covers approximately 40 Ha which are split into two separate parts; Impala A and Impala B (see figure 1 and 2). Impala B is a 10.3 Ha piece of land disconnected from the main Impala Sanctuary by privately owned parcels of land. *Yacht club, Hare Krishna* and *Hippo point* are situated in between. Impala B constitutes two main habitat types; grassland covering 2 Ha and swamp which cover 8.3 Ha.

No tourist products have been developed in Impala B, though plans are underway to construct conference facilities. The Sitatunga occurs naturally in Impala B.

The Key Components of Kisumu Impala Sanctuary



Purpose Statement

The Purpose Statement summarises the Sanctuary's significance, clarifies the reasons for the Sanctuary's establishment, and provides the overall goal that managers should aim to achieve. The Purpose Statement is divided into a primary Purpose followed by a series of supplementary purposes that expand on and complement the primary purpose.

The Sanctuary's Purpose is:

To offer refuge for displaced wildlife and conserve representative habitats and wildlife species to enhance conservation education in the region

Supplementary purposes are:

- ▶ ***To enable collaboration between stakeholders in the conservation and sustainable use of natural resources;***
- ▶ ***To promote scientific research and education in order to guide sustainable management of natural resources; and***
- ▶ ***To promote tourism.***

Exceptional Resource Values

The development of the above Purpose Statement was based on the Planning team's identification of the Sanctuary's Exceptional Resource Values (ERVs). These ERVs are discussed in the following section.

Exceptional Resource Values

<i>Category</i>	<i>Exceptional Resource Value</i>
Biodiversity	▶ Impala
	▶ Lake shore vegetation community
	▶ Dunga Swamp
	▶ Sitatunga
Scenic	▶ Lake Victoria
	▶ Sanctuary landscape
Social	▶ Orphanage
	▶ Water sports
	▶ Social functions
Cultural	▶ 'Lunatic Express' terminus
	▶ Religious shrine
	▶ Medicinal plants

Issues of concern and management approach

The small size, the increasing tourism activities, and management of captive animals are the key issues that need to be addressed to ensure the Sanctuary is achieving its management objectives. These issues are discussed further in the following paragraphs.

Small size: The Sanctuary's small size, only 40 Ha, limits the number and diversity of wildlife species that can be supported at the Sanctuary without compromising the Sanctuary's ecological integrity. Hence, the Sanctuary is best developed as a conservation education and recreation facility whose primary purpose should be to create conservation awareness in the Western region of the country.

Tourism development: Tourist facilities, such as a tented camp and restaurant, are proposed to be constructed in the Sanctuary. Such facilities and any other tourism development should not be delinked from the conservation education goal of the Sanctuary. Hence, the tourism facilities that will be established should demonstrate best environmental practices in their design and operation. These facilities should support the conservation education programme by acting as models for teaching environmental best practices.

Animal husbandry for captive animals: Confinement of animals in small spaces for exhibition stresses the animals and makes them vulnerable to diseases. A captive animal does not have the freedom to forage, hunt, feed, exercise or interact with other species, or individuals of the same species, and therefore extra management effort is required to ensure these needs are provided for to minimize stress.

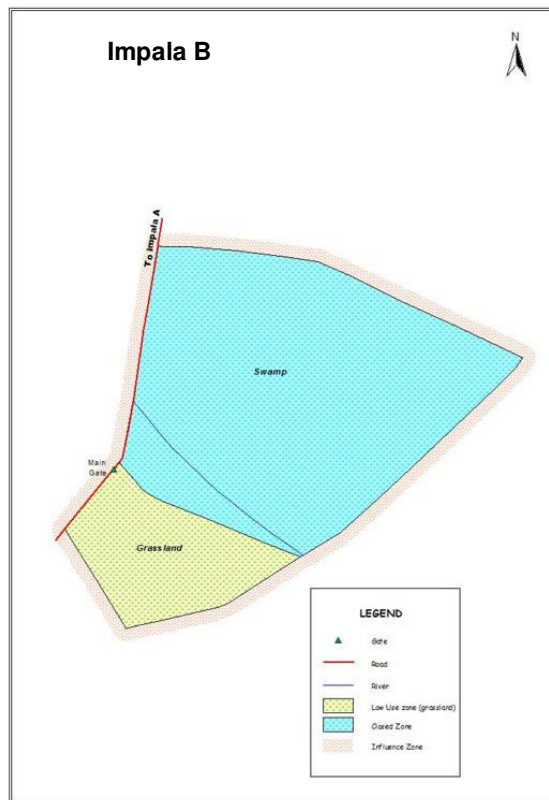
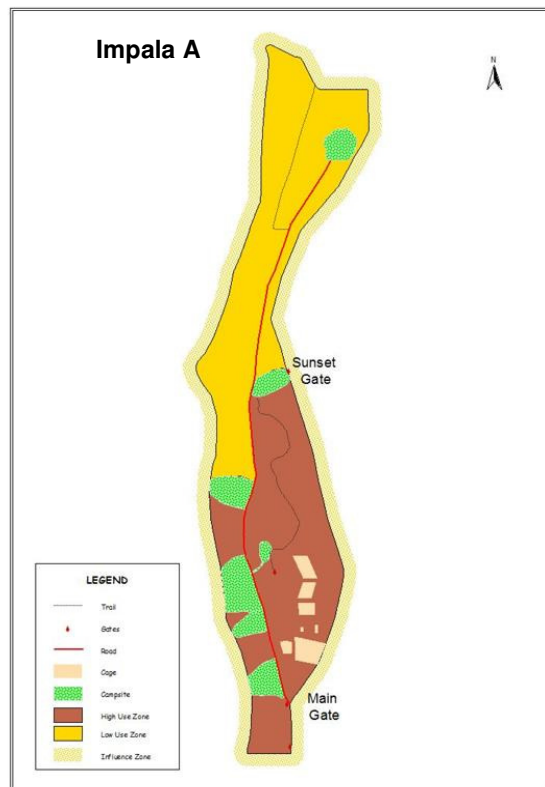
In spite of the negative impacts of confining animals for exhibition, live exhibits are needed to educate the public on the natural history of some of the biodiversity resources that we have in the country. Captive animals will, however, require intensive care to ensure that they are well fed, each animal lives in a suitable environment, and they have opportunity to express most normal behaviors and the ability to escape from stressful situations¹. This calls for commitment of funding resources to ensure that food and veterinary care for captive animals is always available.

Zonation Scheme

The purpose of zoning the Kisumu Impala Sanctuary is to ensure that incompatible land uses are separated; the sanctuary is supporting various forms of visitor enjoyment based on the natural resources available at the Sanctuary; and critical habitats are protected and conserved. The sanctuary has therefore been divided into four zones i.e. High Use Zone; Low Use Zone; Closed Zone; and influence Zone (see map below).

¹ These are referred to as 'The five freedoms' and they are as follows: 1. Freedom from hunger and thirst; 2. Freedom from thermal and physical discomfort; 3. Freedom from pain, injury and disease; 4. Freedom to express most normal patterns of behaviour; 5. Freedom from fear and distress (International Tourism Services Ltd. 2008. Animal Attractions Handbook. www.its4travel.com)

Kisumu Impala Zoning



Ecological Management Programme

The purpose of the Ecological Management Programme is *to ensure sustainable conservation of the natural habitats and the biodiversity there in through monitoring of ecological processes; and maintenance of healthy animals in the orphanage through constant care and surveillance*. In implementing the Ecological Management Programme the Sanctuary's management will strive to ensure that: animal husbandry is improved; wildlife diversity is enhanced; ecological processes are understood; and ecological health and stability is improved.

The key management actions that will be implemented include: controlling invasive species and pollution to provide a healthy ecosystem; feeding and providing health care to captive animals; carrying out routine health surveillance of animals in the sanctuary; and translocation of animals to the sanctuary to increase species and genetic diversity. In addition, the sanctuary management will carry out an elaborate biodiversity inventory for all taxa and establish an ecological monitoring program to document changes in the environment.

Tourism Development and Management Programme

The purpose of the Tourism Development and Management Programme is *to develop conservation education and recreational urban tourism experience based on the unique urban setting of the Sanctuary including an indigenous forest and aquatic scenery*. In implementing the Tourism Development and Management Programme, Management will strive to ensure that: marketing and education materials are developed; tourism infrastructure is developed and upgraded to enhance visitor experience; and education and recreation value of the sanctuary is well marketed.

The key management actions that have been designed to realise the programme purpose and objectives include setting up a tourist accommodation facility (24- bed tented camp) inside the sanctuary; upgrading the existing campsite through provision of essential utilities; establishing two additional campsites to increase capacity of the sanctuary to accommodate visitors; and improving picnic sites and nature trails. To enhance visitor satisfaction and cater for other essential services, a gift shop and a canteen will be constructed and a money transfer shop opened.

Community Partnership and Education Programme

The purpose of the Community Partnership and Education Programme is *to ensure that Sanctuary-adjacent communities support and appreciate the sanctuary and are benefiting from Corporate Social Responsibility projects; while conservation education is sustained through visitation and outreach programs*. In implementing the Community Partnership and Education Programme, Management will strive to ensure that: human-wildlife conflicts are minimised; communities and other stakeholders support and appreciate the sanctuary; and schools and learning institutions are benefiting from the sanctuary through conservation education.

The key management actions that will be implemented through this programme include: sensitizing the local community on conflict avoidance techniques; intensifying problem animal control activities; establishing an education centre at Impala B and equipping it with relevant

educational materials like books and other publications; videos and a variety of art. The management will also recruit sanctuary guides to enhance visitor experience and satisfaction through guiding, education and interpretation. For success of school outreach programs a mobile unit will be constituted with all facilities like videos and generator to facilitate wildlife education and lessen dependence on Wildlife Clubs of Kenya (WCK) facilities. Radio programs specifically targeting the youth will be produced in conjunction with WCK.

Protected Area Operations and Security Programme

The purpose of the Protected Area Operations and Security Programme is *to ensure that operational systems are effectively and efficiently supporting the implementation of management programmes and the area is safe for wildlife and visitors*. In implementing the Protected Area Operations and Security Programme, Sanctuary Management will strive to ensure that: operational effectiveness is improved; collaboration with key stakeholders is strengthened; staff welfare and motivation is enhanced; and effective and efficient management infrastructure is provided.

The key management actions that have been designed to achieve the sanctuary's purpose include: deploying staff in line with the determined optimum staffing levels; staff training in modern management skills; constructing staff residential and non residential buildings to ensure staff have a conducive working environment; providing staff with essential working tools such as vehicles, computers and telecommunication equipment to enhance performance; liaising with other stakeholders in the management of the Sanctuary and its adjacent areas; and supporting registration of the newly started CBO, *"Friends of Impala Sanctuary"*.

Plan Monitoring

The plan monitoring sections provides guidance for the assessment of the potential impacts (both positive and negative) resulting from the implementation of management actions set out in this plan.

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Acronyms

CAP	Conservation Action Planning
CBO	Community Based Organisation
CSR	Corporate Social Responsibility
CWO	Community Wildlife Officer
CWS	Community Wildlife Service
IBA	Important Bird Area
IUCN	International Union for the Conservation of Nature
KWS	Kenya Wildlife Service
NEMA	National Environment Management Authority
NSIS	National Security Intelligence Service
PAC	Problem Animal Control
PAPF	Protected Area Planning Framework
SOP	Standard Operating Procedure
SRS	Senior Research Scientist
SW	Senior Warden
TNC	The Nature Conservancy
WCK	Wildlife Clubs of Kenya
WRMA	Water Resources Management Authority

Plan Foundations

The Plan

This 5-year (2010-2015) management plan for the Kisumu Impala Sanctuary has been developed in accordance with the standard operating procedure for developing management plans for protected areas. The plan is one of four management planning initiatives piloting the revised standard operating procedure, the other being, Hell's Gate, Ndere and Ruma National Parks. In line with this SOP, this plan aims to balance conservation and development in the target protected areas.

Plan structure

In order to fulfil the Plan's functions, the plan structure has been developed to be as simple as possible, and as such, easily understood by Kisumu Impala Sanctuary management. The following points summarise the plan's main sections:

- ▶ **Plan Foundations.** This chapter describes the plan's structure and provides an introduction to the Sanctuary, its exceptional resource values and major management issues of concern. It gives the Sanctuary's Purpose Statement, which explains why the Sanctuary was established as a protected area, and the functions that the Sanctuary is meant to fulfil.
- ▶ **Zonation Scheme.** This section sets out areas of the different zones that have been developed to ensure that the Sanctuary's management objectives are achieved.
- ▶ **Four management programmes.** The main bulk of the plan is divided into four management programmes:
 - **Ecological Management Programme**
 - **Tourism Development and Management Programme**
 - **Community Partnership and Education Programme**
 - **Protected Area Operations and security Management Programme**

Each programme includes a programme purpose statement, guiding principles underpinning the programme and management objectives and actions that, if implemented will help achieve the programme purpose.

- ▶ The **plan monitoring** framework provides guidance to enable the assessment of the potential impacts, positive, and where appropriate negative, resulting from the implementation of each of the four management programmes.

Area description

The Kisumu Impala Sanctuary was created to provide a home for threatened Impalas in the Kisumu City and its environments and a safe grazing area for the hippos from the lake. It was gazetted in October 1992. A holding facility for captive animals in Western Conservation Area was then developed within the sanctuary to enhance tourism inter alia. The sanctuary consists of two separate parts; Impala A and Impala B (see figure 1 and 2). Impala B is a

10.3ha piece of land disconnected from the main Impala Sanctuary by privately owned parcels of land. Yacht club, Hare Krishna and Hippo point are situated in between. Impala B constitutes two main habitat types; grassland covering 2ha and swamp which cover 8.3ha.

No tourist products have been developed in Impala B, though plans are underway to construct conference facilities. The Sitatunga occurs naturally in Impala B.

Figure 1: Kisumu Impala Sanctuary Regional Setting

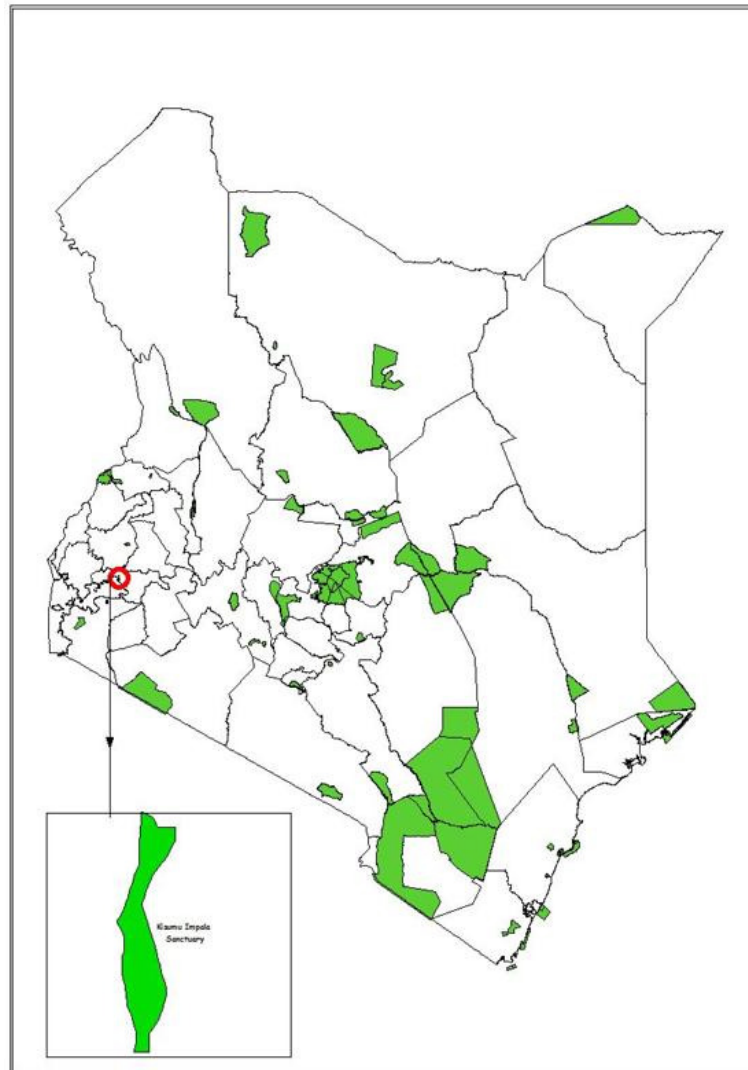
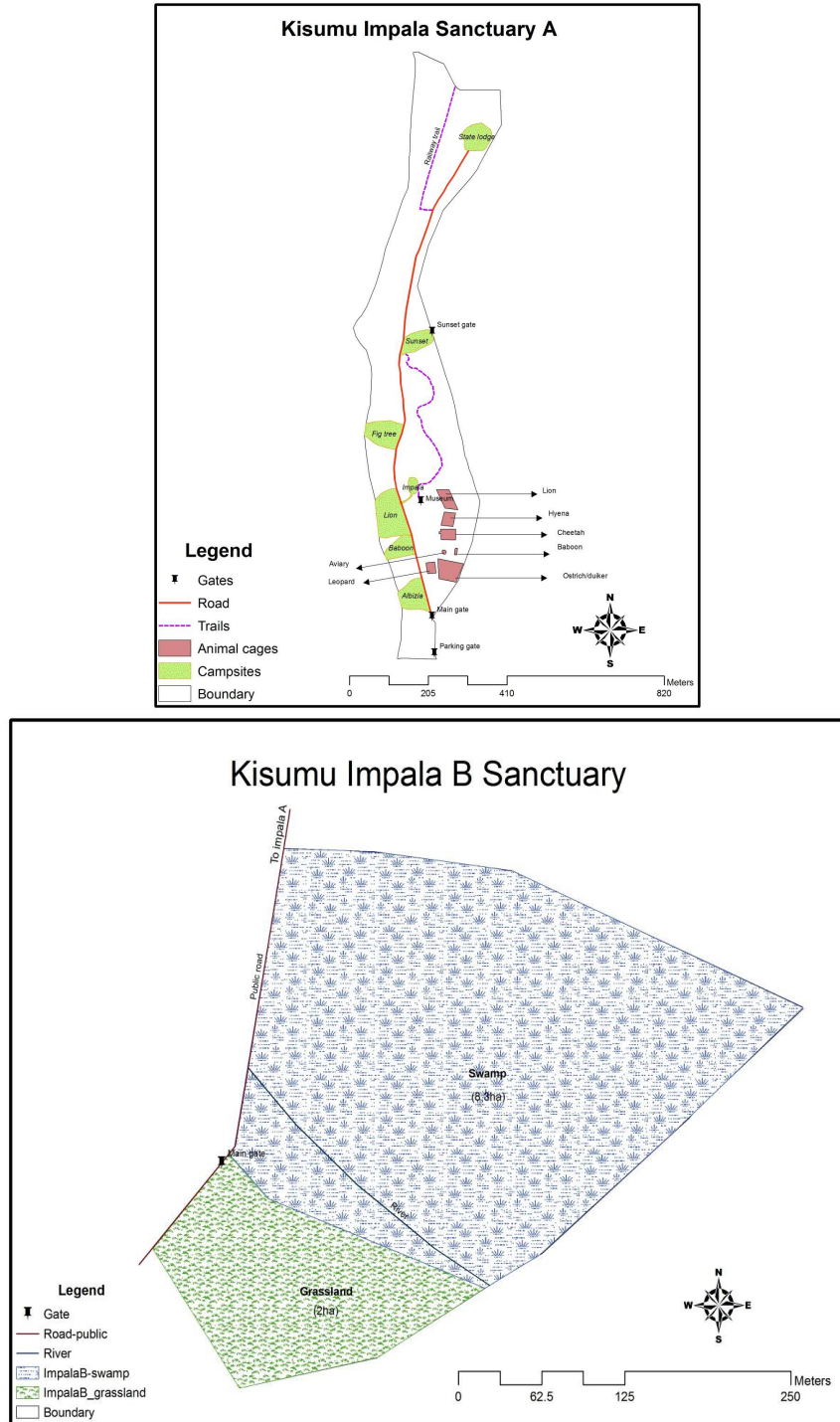


Figure 2: The Key Components of Kisumu Impala Sanctuary



Purpose Statement

The Purpose Statement summarises the Sanctuary's significance, clarifies the reasons for the Sanctuary's establishment, and provides the overall goal that managers should aim to achieve. The Purpose Statement is divided into a primary Purpose followed by a series of supplementary purposes that expand on and complement the primary purpose.

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- ▶ ***To promote tourism.***

The development of the above Purpose Statement was based on the Planning team's identification of the Sanctuary's Exceptional Resource Values (ERVs). These ERVs (see table 1) are discussed in the following section.

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<i>Category</i>	<i>Exceptional Resource Value</i>
Biodiversity	▶ Impala
	▶ Lake shore vegetation community
	▶ Dunga Swamp
	▶ Sitatunga
Scenic	▶ Lake Victoria
	▶ Sanctuary landscape
Social	▶ Orphanage
	▶ Water sports
	▶ Social functions
Cultural	▶ 'Lunatic Express' terminus
	▶ Religious shrine
	▶ Medicinal plants

Biodiversity values

Impala

The sanctuary was primarily established as a refuge for impalas that previously used to roam in the town and its immediate environs. This explains the origin of the name “impala” which continues to serve as the Sanctuary’s flagship. Indeed both the sanctuary and the Kisumu City Council adorn Impala antelope as their logos.



Plate 1: Impalas at the Sanctuary

Sitatunga

The Sitatunga is a rare antelope found in few wetland habitats in Kenya especially Western Kenya region. It is listed by IUCN as threatened and its population in Kenya is affected by poaching and reclamation of wetlands for agriculture. The sanctuary is one of the few protected areas offering refuge for Sitatunga.

Lake Shore Vegetation Community

The vegetation community constitutes of an indigenous forest which is the only such forest in Nyanza Province.

Dunga Swamp

Dunga Swamp is pristine wetland in the middle of densely populated area and close to a large urban centre. It hosts diverse aquatic life including high populations of water birds and is listed by Nature Kenya as an Important Bird Area (IBA). It is an important habitat for *Papyrus gonohek*, which is endemic to Lake Victoria region.

Scenic values

Lake Victoria

Lake Victoria is the largest fresh water lake in Africa and second in the world. It offers breathtaking scenery on account of the large water mass bordering the sanctuary.

Sanctuary Landscape

The visual integration of lowland area, the escarpment and a plateau with a Lake in the background offers beautiful scenery which, by itself, is a big attraction to visitors.

Social values

Orphanage

The orphanage is an important source of conservation and wildlife education to schools, learning institutions and the larger public. It is also an important source of revenue for the government and especially Kenya Wildlife Service.

Water sports

The sanctuary serves as an important recreation centre for the public who use it for water sports like canoeing and boating in a manner not common in protected areas.

Social functions

Kisumu Impala Sanctuary is one of the few protected areas in Kenya where members of the public can hold social functions without any threat of wildlife attacks.

Cultural values

Lunatic Express terminus

The first railway line from Mombasa to Kampala, famously known as “lunatic express” has the original terminus inside the Sanctuary. This is of great historical value and is an attraction to visitors in the sanctuary.



Plate 2: Railway line in the Sanctuary

Religious shrine

The Impala Picnic Site inside the Sanctuary is used as a religious shrine by different members of the community and especially the Legio Maria Church.

Medicinal plants

There is a variety of indigenous trees inside the Sanctuary known for their medicinal value and therefore serving as a potential reservoir for research and cultural medicine.

Issues of concern and management approach

The small size, the increasing tourism activities, and management of captive animals are the key issues that need to be addressed to ensure the Sanctuary is achieving its management objectives. These issues are discussed further in the following paragraphs.

Small size: The Sanctuary's small size, only 40 Ha, limits the number and diversity of wildlife species that can be supported at the Sanctuary without compromising the Sanctuary's ecological integrity. Hence, the Sanctuary is best developed as a conservation education and recreation facility whose primary purpose should be to create conservation awareness in the Western region of the country.

Tourism development: Tourist facilities, such as a tented camp and restaurant, are proposed to be constructed in the Sanctuary. Such facilities and any other tourism development should not be delinked from the conservation education goal of the Sanctuary. Hence, the tourism facilities that will be established should demonstrate best environmental practices in their design and operation. These facilities should support the conservation education programme by acting as models for teaching environmental best practices.

Animal husbandry for captive animals: Confinement of animals in small spaces for exhibition stresses the animals and makes them vulnerable to diseases. A captive animal does not have the freedom to forage, hunt, feed, exercise or interact with other species, or individuals of the same species, and therefore extra management effort is required to ensure these needs are provided for to minimize stress.

In spite of the negative impacts of confining animals for exhibition, live exhibits are needed to educate the public on the natural history of some of the biodiversity resources that we have in the country. Captive animals will, however, require intensive care to ensure that they are well fed, each animal lives in a suitable environment, and they have opportunity to express most normal behaviors and the ability to escape from stressful situations². This calls for commitment of funding resources to ensure that food and veterinary care for captive animals is always available.

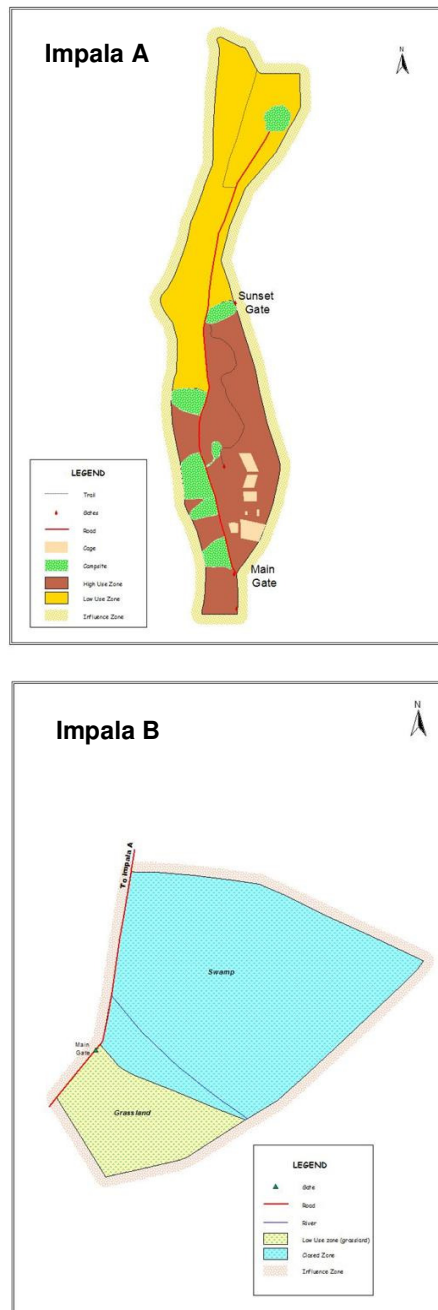
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Zonation Scheme

Zoning Overview

The purpose of zoning the Kisumu Impala Sanctuary is to ensure that incompatible land uses are separated; the sanctuary is supporting various forms of visitor enjoyment based on the natural resources available at the Sanctuary; and critical habitats are protected and conserved. The sanctuary has therefore been divided into four zones i.e. High Use Zone; Low Use Zone; Closed Zone; and influence Zone (see figure 3). These zones are described in the following sections.

Figure 3: Kisumu Impala Zoning



High Use Zone

The high use zone covers the area that is intensely used by visitors. This is where the live animal exhibits, picnic sites and sanctuary administration facilities are located. The zone extends up to the proposed ecolodge's three-acre exclusive zone in Impala A. This will continue to be heavily used by visitors and adequate visitor facilities will be developed to facilitate high visitor densities. In this regard, a floating restaurant will be constructed in this zone at a site that will be subjected to a comprehensive environmental impact assessment to mitigate potential negative environmental impacts.

Low Use Zone

The low use zone covers nearly half of Impala A and most of Impala B where there is natural vegetation and a forest habitat. The zone is open to visitors but the density of visitors is restricted indirectly through minimal infrastructures like nature trails and campsites. In return the visitors to low use zone shall enjoy more exclusivity and the zone is proposed for private oriented activities like sundowners, filming and photography.

One eco-lodge is permitted here as is a special campsite. Activities prescribed for this zone include nature walks, sport fishing, bird watching among others. The nature trail or the eco-lodge shall be restricted to the lodge vicinity and not join the main nature trail for the larger public.

Closed Zone

This is the zone occupied by the swamp in Impala B. The zone is identified as a fragile habitat that supports critical ecological processes like breeding and shelter of many aquatic biota and there is need to restrict any developments and human activity. In this regard, no visitation is allowed here except for research activities or other special reasons that the management may find to be of conservation or management interest.

Influence Zone

This zone comprises a 200 metre strip of urban land that borders the Sanctuary and a similar extent in the lake. It is critical to influence waste management in this zone to mitigate negative environmental impacts that can have adverse effects on the Sanctuaries aesthetics and biodiversity. This zone will be a focus for waste management awareness activities. Further, the section of the zone that is in the lake will be open to various forms of tourist activities, but fishing for commercial reasons will not be permitted.

A summary of permitted visitor activities and visitor facilities are given in table 2 and table 3 respectively.

Table 2: Permitted visitor accommodation facilities

High Use Zone	Low Use Zone	Closed zone	Influence zone
Restaurant	Ecolodge	No visitor facilities are allowed	Since this is a residential and commercial zone, there are no restrictions on development of visitor facilities
Banda	Special Campsite		
Public campsite			
Special Campsite			
Children's corner			

Table 3: Tourism zonal activity prescriptions

High Use Zone	Low Use Zone	Closed Zone	Influence Zone
Wildlife viewing	Picnicking	Research activities	-No restrictions on visitor activities -Commercial fishing not permitted
Picnicking	Bird watching		
Bird watching	Sun downers		
Filming & photography	Filming & photography		
Canoeing	Nature walks		
	Sport fishing		

Ecological Management Programme

Programme Purpose and Guiding Principles

The purpose of the Ecological Management Programme is to ensure:

Sustainable conservation of the natural habitats and the biodiversity there in through monitoring of ecological processes; and maintenance of healthy animals in the orphanage through constant care and surveillance

In implementing the Ecological management Programme the Sanctuary's management will strive to ensure that:

1. *Animal husbandry is improved;*
2. *Wildlife diversity is enhanced;*
3. *Ecological processes are understood; and*
4. *Ecological health and stability is improved.*

Targeting ecological management action

The KWS planning standard, the Protected Areas Planning framework (PAPF) prescribes the use of the **Nature Conservancy's (TNC) Conservation Action Planning (CAP)** process as a foundation for designing the Protected Area (PA) plan's Ecological Management Programme. This is because with limited human and financial resources a manager cannot monitor every parameter in a protected area.

The CAP identifies and develops an accurate definition and understanding of the most important ecological features and their management needs, and the major threats to these features. This program therefore adopts the CAP methodology, in line with the PAPF.

The methodology has three stages: the selection of **conservation targets**; the identification and ranking of **threats** to the conservation targets; and the development of **management objectives and actions** to address these threats to enhance the conservation of the protected area. These key stages are elaborated in the following sections.

Conservation targets

The first stage consists of two key steps. First, identification of the area's conservation targets, which is biodiversity, whose continued conservation reflects conservation success. Biodiversity in an area is represented by species, communities or ecological systems that are usually measured as an index of ecosystem functioning. A small suite of about 8 conserva-

tion targets at different levels of biodiversity hierarchy are sufficient indicators of ecosystem health, functioning and stability.

In the second step, Key Ecological Attributes (KEAs) for each conservation target are identified. These represent such parameters as biological composition, structure, interactions and processes, environmental regimes, and landscape configuration etc that, if missing or altered, would lead to the loss of that target over time. In the case of Kisumu Impala Sanctuary, the conservation targets and the rationale behind their selection are set out in Table 4.

Threats to conservation targets

Once conservation targets are identified, threats to conservation are also identified and ranked on the basis of how much they stand to affect conservation targets. Threats are activities or processes that have caused, are causing or may cause destruction, degradation and/or impairment of biodiversity and natural processes. Identification of threats helps to identify the various factors that immediately affect conservation targets and then rank them so that conservation actions and resources are concentrated where they are most needed. Table 5 shows the priority threats impacting or likely to impact on conservation targets and their KEAs.

Table 4: Conservation targets

	Conservation target	Rationale for selection	Important subsidiary targets	Key ecological attributes
Species	Impala	The initial purpose for establishing the Sanctuary was to protect Impalas that were living here	▶ Zebras	▶ Population size
				▶ Population structure
				▶ Genetic composition
				▶ Habitat size
Habitats	Sitatunga	IUCN SSC Antelope Specialist Group (2008) listed the species as threatened. It is found in Impala B and Dunga Swamp	▶ Swamp inhabiting species including reptiles and amphibians	▶ Population size
				▶ Population structure
				▶ Habitat size
Habitats	Riparian vegetation	<ul style="list-style-type: none"> ▶ Sheltered lakeshores are breeding grounds for fish. ▶ The lakeshore hosts a lot of reptiles and water fowls ▶ Its integrity is threatened by sewerage and effluent pollutants 	<ul style="list-style-type: none"> ▶ Fish species e.g. Tilapia ▶ Water fowls 	▶ Habitat size
				▶ Species composition
				▶ Water quality
Systems	Grassland	▶ fragile habitats taking cognisance of the crucial ecological function they play; low resilience and strong human interests and pressures directed to them	<ul style="list-style-type: none"> ▶ Zebras ▶ Impalas 	▶ Habitat size
				▶ Floristic structure composition
Systems	Swamp	<ul style="list-style-type: none"> ▶ These are important habitats for Sitatunga and Hippos. ▶ The <i>Papyrus gonohek</i>, which is endemic to the Lake Victoria region is found in the Kisumu swamps 	<ul style="list-style-type: none"> ▶ Hippos ▶ Sitatunga ▶ Water fowls 	▶ Habitat size
				▶ Floristic structure and composition
				▶ Species richness
Systems	Lake Victoria	<ul style="list-style-type: none"> ▶ This is the largest lake in Africa and the source of the longest river in Africa, the Nile. ▶ It is threatened by the water hyacinth ▶ The lake support diverse aquatic species some of which support livelihoods of a large population in the lake region 	<ul style="list-style-type: none"> ▶ Fish species ▶ Amphibians ▶ Water fowls 	▶ Water quality and quantity
				▶ Lake size
				▶ Species composition

ECOLOGICAL MANAGEMENT PROGRAMME

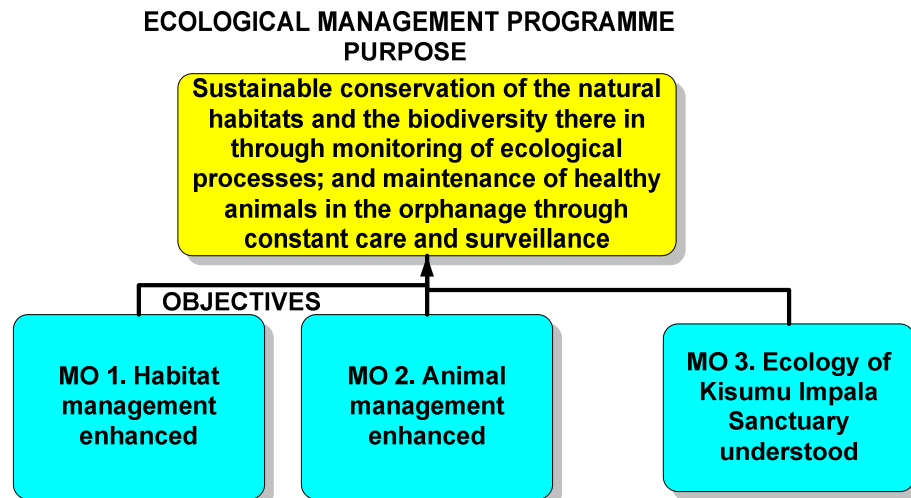
Table 5: Threats to Conservation Targets

TARGETS	Impala	Sitatunga	Riparian vegetation	Grassland	Swamp	Lake Victoria
THREATS						
Poaching	Low	Low				
Inbreeding	High	Low				
Diseases and pests	High	High				
Alien and invasive species	Low	High	High	High	High	High
Over-grazing	High	Low	Low	High	Low	
Human encroachment	Low	Very High	High	Low	Very High	
Poor fishing practices			Medium			Low
Pollution	Low	Low	High		High	Medium
Swamp drainage		Very High	High		Very High	Low
Siltation of swamps		Medium	High		Very High	Low

Management Objectives

Figure 4 below shows the overall objectives tree for the Ecological Management Programme.

Figure 4: Ecological Management Programme objectives tree



Objective 1: Habitat management enhanced

The goal of habitat management at Kisumu Impala Sanctuary is to provide a healthy ecosystem where different habitats are in equilibrium and are free of pollution, degradation or invasive species. The shoreline habitat should sustain breeding and shelter of aquatic species and should therefore be free of pollution or invasion by the water hyacinth. The grassland habitat should support all the grazers without overgrazing and with minimal spread of invasive species of shrubs.

The sanctuary is faced with a problem of invasive plant species such as the *Lantana camara*, water hyacinth and hippo grass. These species suppress growth of indigenous vegetation and hence distorting the ecological stability of the sanctuary. The aquatic invasive destroy the breeding grounds of the fish apart from hindering other activities such as boating and fishing. The lake also faces pollution of water mainly from the City Council sewerage system which discharges raw sewerage with high content of organic wastes. This has also encouraged the growth of the aquatic invasive species. There is also pollution from the rivers upstream whose waters are contaminated with agricultural chemicals. Pollution destabilizes the ecosystem through negative effects on local biodiversity and ecological processes.

To enhance habitat management, Kisumu Impala Sanctuary management will mitigate these negative effects through regular animal translocations and formulation of an invasive species strategy. To minimize degradation of Dunga Swamp, which is adjacent to the Sanctuary, the management will step up community awareness program to halt further encroachment while

collaborating with other stakeholders like the Kisumu City Council, and the local CBOs to step up conservation work in the Dunga Swamp area.

A summary of management actions to achieve this objective is given in box 1.

Box 1. Summary of Management Actions

1. Formulate invasive species removal strategy
2. Liaise with Kisumu City Council, NEMA, Lake Basin Authority in controlling invasives
3. Create an awareness programme to stem degradation
4. Lobby for acquisition of more land adjoining the park
5. Carry out education and awareness to minimize encroachment

Objective 2: Animal management enhanced

As regards animal management, the future desired state at Kisumu Impala is to have a diversified and healthy individual animals and populations devoid of diseases and stress.

The sanctuary, being in the city, is surrounded by human activities on one side and water on the other implying it has no room for animal dispersal. Island Biogeographical effect can lead to extinction of some species in the sanctuary such as the zebra and impala if active management is not carried out; there is the potential threat of weak genes spreading in the local population of animals due to inbreeding which may undermine the health of the animals. This poses ecological challenges to management of the sanctuary due to inbreeding and potential habitat degradation.

The sanctuary has diverse caged animals that are on exhibit. These species include lions, cheetah, hyena, jackals, buffalos, parrots, baboons, blue monkey, bushbucks and duikers (see table 6 and 7). The caged animals require intimate care and attention in provision of food and veterinary care and surveillance.

To enhance animal management at the sanctuary, feeding of animals will continue and KWS veterinary scientists will continue to conduct routine health surveillance of animals in the sanctuary. In addition, additional animals will be translocated to the sanctuary to increase species and genetic diversity.

Table 6: Caged Animals at Kisumu Impala Sanctuary

Species	Cage size (acres)	Current no.	Maximum. no. required
Lion	0.42	1	4
Leopard	0.17	1	2
Hyena	0.27	1	5
Baboon	0.03	4	7
Cheetah	0.27	2	5
Aviary (Parrots, guinea fowls, Quelea)	0.05	28	200 (depending on body size)
Buffalo	0.72	2	2
Ostrich		1	2
Duiker		13	15
Blue monkey		1	3
Silver back jackal		2	2

Table 7: Free range animals at Kisumu Impala Sanctuary

Impala	33	Natives and others introduced from L. Nakuru in 2007
Burchell's zebra	5	Introduced from Aberdare Area in January 2010
Vervet monkeys	11	Natives
Sitatunga	≥4	In Impala B
Hippopotamus	-	

A summary of management actions to achieve this objective is given in box 2.

Box 2. Summary of Management Actions

1. Carry out regular translocations to avoid inbreeding
2. Feed and provide veterinary care to confined animals
3. Translocate additional animals species to the sanctuary to increase species diversity

Objective 3: Ecology of Kisumu Impala Sanctuary understood

The objective of ecological monitoring program for Kisumu Impala Sanctuary is to ensure that ecological processes and trends for the main species of plants and animals are well understood and documented. It's also necessary to know the species composition and distribution of different taxa and to have a data base to support a continuous monitoring program to guide management.

So far there has been no thorough inventory of biodiversity in the sanctuary since its inception. This implies that all species of plants and animals of different taxa are not known and changes in the habitats cannot be understood. This affects effective management of the sanctuary. Also no studies have been conducted on impala social behavior which would shed light on impact of ecological isolation.

In view of the above, the sanctuary management will carry out an elaborate biodiversity inventory for all taxa and establish an ecological monitoring program to document changes in vegetation cover, animal behavior and numbers and changes in weather patterns and water quality and quantity. A weather station will be set up at the sanctuary and equipped with basic facilities to monitor rainfall, temperature and other vital climate parameters. To monitor water quality and quantity, gauges will be installed at the lake bed in collaboration with the water Resources management Authority (WRMA) while water samples will be collected and analyzed quarterly. For vegetation monitoring, sampling transects will be set up to monitor species diversity and biomass changes while regular censuses will be conducted monthly to monitor animal populations.

Also a study will be carried out to compare social structure and dynamics of impala population in the sanctuary with other populations that do not face similar isolation.

A summary of management actions to achieve this objective is given in box 3.

Box 3. Summary of Management Actions

1. Carry out ecological monitoring (Monitoring vegetation and invasive species)
2. Carry out biodiversity inventories for all taxa
3. Carry out impala behaviour studies;
4. Carry out water quality and quantity monitoring in the lake;
5. Set up a weather station in the sanctuary

Tourism Development and Management Programme

Programme Purpose and Guiding Principles

The purpose of the Tourism Development and Management Programme is:

To develop conservation education and recreational urban tourism experience based on the unique urban setting of the Sanctuary including an indigenous forest and aquatic scenery.

Kisumu Impala Sanctuary is the leading tourism revenue earner in the Western Conservation Area (WCA). Wildlife based, wilderness (camping and picnicking) and aquatic ecotourism are major activities facilitated by the KWS. Available visitor statistics indicate that Kenya Citizens make majority numbers and that visitations across all categories have been increasing all along from 2007 to date (See table 8). This implies that demand for the destination is not yet fulfilled. Just like the larger Western Tourism Circuit, hospitality facilities namely accommodation and transport have been identified as inadequate. To this effect potential ecotourism sites in Kisumu Impala and Ndere Island have already been identified for necessary improvement such as construction of operational tented camps; furnish camp sites and picnic sites with ablutions, shades and others.

Table 8: Visitor and revenue statistics for Kisumu Impala Sanctuary (2005-2009)

Year	Visitors	Revenue(Ksh)
2005	93,817	1,719,846
2006	84,285	3,779,716.00
2007	71,822	5,152,440.00
2008	76,572	5,226,155.00
2009	115,072	8,025,565.00

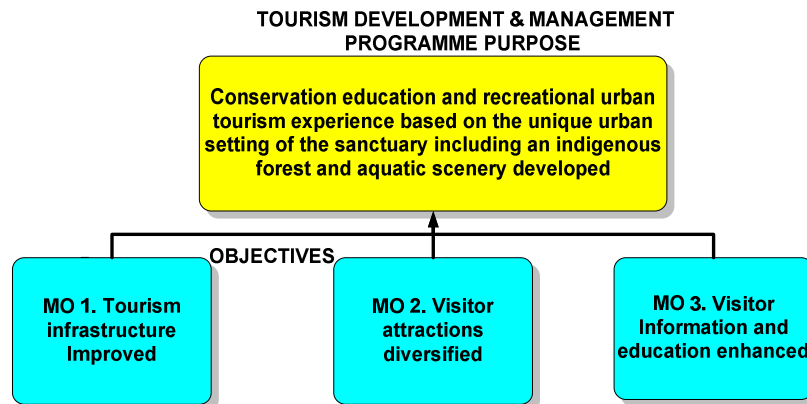
In implementing the Tourism Development and Management Programme, Management will strive to ensure that:

- a) Marketing and education materials are developed;**
- b) Tourism infrastructure is developed and upgraded to enhance visitor experience; and**
- c) Education and recreation value of the sanctuary is well marketed.**

Management Objectives

Figure 5 below shows the overall objectives tree for the Tourism Development and Management Programme.

Figure 5: Tourism Development and Management Programme objectives tree



Objective 1: Tourism infrastructure Improved

The desired state of Kisumu Impala as a tourist destination is a reputable sanctuary that spearheads conservation and education while giving optimum touristic value to local and international visitors. The objective of infrastructure development in Kisumu Impala sanctuary is therefore to ensure there are basic infrastructures to sustain tourism activities without compromising ecological stability. It should also be able to offer accommodation to an acceptable number of visitors while the surplus is taken care of by other facilities in Kisumu City. Also the infrastructures in the sanctuary should be able to cater for a wide range of customer needs and optimum comfort.

There is general lack of adequate tourism facilities in the Western Kenya region which constraints on visitation as people have no places to stay overnight. And with the ongoing expansion of Kisumu Airport to international standards, more visitors are expected to visit Kisumu and environs and the existing facilities at the sanctuary need to be expanded and upgraded (see table 9 and figure 6). The management will cash in on this potential market by setting up a tourist facility and has already commissioned an investor for a 24- bed tented camp inside the sanctuary.

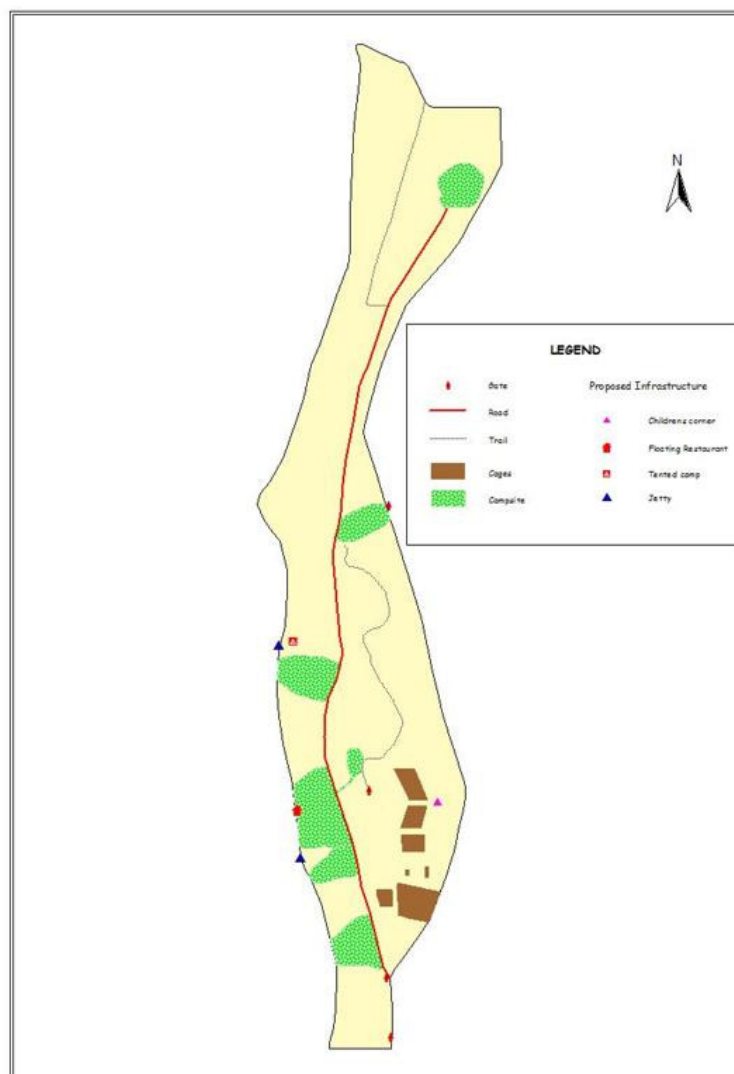
In addition the existing campsite will be upgraded through provision of essential utilities. Two more campsites will be established to increase capacity of the sanctuary to accommodate visitors. The picnic sites will be improved by providing more and comfortable seats and the existing nature trail will be upgraded and more trail circuits opened within the sanctuary.

To enhance visitor satisfaction and cater for other essential services, a gift shop and a canteen will be constructed and a money transfer shop opened.

Table 9: Tourism facilities at Impala Sanctuary

Facility	Number	Comments
Animal cages	11	Leopard; (Buffaloes, Bush Duikers, Bush Buck, Ostrich); Cheetahs; Lions; aviary; (Guinea fowls, <i>Quelea quelea</i>); Silver back jackal, Spotted hyena, olive baboons; Blue monkey. (these cages were renovated or constructed in December 2009)
Camp sites	1	State lodge camp site. It has an ablution block and cooking shelter
Picnic sites	6	Albizia, Baboon, Simba, Impala, Fig Tree (site for the proposed tented camp), and Sunset. These have modern ablution blocks
Animal museum	1	Currently not Manned
Landing jetty	1	At Hippo picnic site
Nature trails	3	5km long. Include Impala trail, Sunset trail, and rail trail
Trunk road	1	2km road from main gate to state lodge campsite. Connects nature trails to main gate and cages
View point	1	Constructed October 2009

Figure 6: Existing and proposed Infrastructure



A summary of management actions to achieve this objective is given in box 4.

Box 4. Summary of Management Actions

1. Construct a tented camp
2. Upgrade existing campsite
3. Create two more campsites
4. Improve the picnic sites and nature trails
5. Construct a gift shop and M-pesa shop
6. Put up a canteen inside and outside the sanctuary

Objective 2: Visitor attractions diversified

The objective of visitor attractions diversification is to ensure Kisumu Impala sanctuary is a popular destination of choice for local and international visitors offering a wide variety of attractions for education, recreation and entertainment without compromising its conservation attributes.

In order to maximize on visitor satisfaction there is need to diversify tourism attractions within the sanctuary beyond the current ones (see table 18). In this regard, a Snake Park will be established within the sanctuary in conjunction with the National Museums of Kenya while other animal species will be introduced. The proposed species for introduction include the giraffes, ostriches and warthogs. Monitoring activities will continue to inform introduction of other species in future.

Tourist activities in the sanctuary will also be diversified by introducing water sports in Lake Victoria, especially between Impala Sanctuary and Ndere Island, 25km away. The management will also encourage growth of filming and photography through promotion and advertisements locally and internationally. The management will also continue to advertise the sanctuary as a popular site for social functions like weddings, group dinners, prayers etc.

A summary of management actions to achieve this objective is given in box 5.

Box 5. Summary of Management Actions

1. Establish a snake park inside the sanctuary
2. Introduce water sports
3. Encourage growth of filming and photographic activities

Objective 3: Visitor Information and education enhanced

The objective of visitor information and education program at Kisumu Impala Sanctuary is to ensure the sanctuary is well known nationally and internationally for its conservation and touristic values and information about it is easily available to visitors and potential visitors.

Currently, marketing of the sanctuary as a tourist destination is constrained by lack of adequate information to potential visitors locally and internationally. Also the visitors who come to the sanctuary have no means of disseminating the information about the sanctuary as there are no published materials like maps, posters and brochures which would serve as

effective means of indirect marketing. The management has already started filling this gap and some materials are already in production stage. These will be distributed free of charge or at nominal fees at the sanctuary and other strategic consumer outlets like supermarkets, bookshops and entry points to other national parks.

To maximise awareness of the sanctuary in the locality, billboards will be erected at strategic points on the major highways like Webuye junction on Eldoret- Kampala road, Kericho Kisumu highway etc. Also the management will continue disseminating information about the sanctuary through local radios which have wide reach within the other East African countries of Uganda and Tanzania. The management will sponsor advertising supplements in the major daily newspapers on quarterly basis. And to ensure that the Sanctuary and adjacent areas appeal to a wide range of visitors, the visitor information packages will highlight other tourist attractions in Kisumu and adjacent districts (see table 10).

Table 10: Natural and cultural attractions within the ecosystems

Name of attraction	Location in Province
Kisumu museum	Kisumu
Tom Mboya-Rusinga museum Island	Rusinga Island
Kango Ka Jaramogi Museum	Bondo
Kit Mikayi Shrine,	Bondo
Got Ramogi shrine	Bondo
Bala hot springs	Rachuonyo
Remba Islands bird sanctuary	Suba
Yala swamp	Bondo
Dunga wetlands	Kisumu
Lake Simbi Bird Sanctuary	Rachuonyo
Oyugis Bird Sanctuary	Rachuonyo
Kolwa Bird Sanctuary	Kisumu

A summary of management actions to achieve this objective is given in box 6.

Box 6. Summary of Management Actions

1. Publish maps, posters, guide books and brochures on the sanctuary resources and attractions
2. Erect more advertising bill boards on the highways
3. Maintain education programs in local FM radios
4. Publish publicity supplements in the newspapers every year

Community Partnership and Education Programme

Programme purpose and guiding principles

The purpose of the Community Partnership and Education Programme is to ensure that:

Adjacent communities support and appreciate the sanctuary and are benefiting from Corporate Social Responsibility(CSR) projects; while conservation education is sustained through visitation and outreach programs

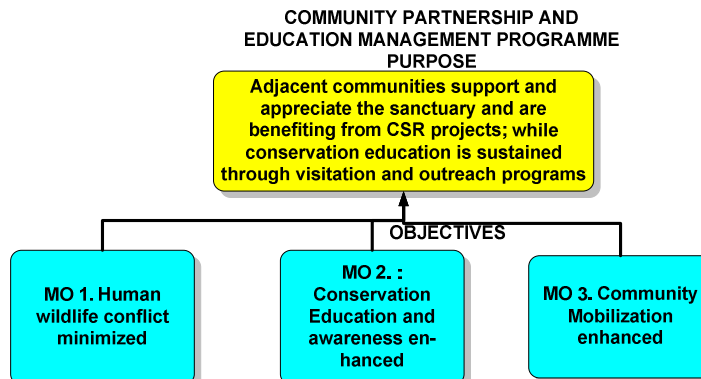
In implementing the Community Partnership and Education Programme, Management will strive to ensure that:

- a) Human-Wildlife conflicts are minimised;*
- b) Communities and other stakeholders support and appreciate the sanctuary; and*
- c) Schools and learning institutions are benefiting from the sanctuary through conservation education.*

Management Objectives

Figure 4 below shows the overall objectives tree for the Community Partnership and Education Management Programme.

Figure 7: Community Partnership and Education Management Programme objectives tree



Objective 1: Human wildlife conflict minimized

The desired state for Kisumu Impala is where the local people peacefully coexist with wildlife and specifically the hippos at the swamp.

The continued encroachment of the Dunga Swamp by agriculture has seen rising cases of crop raids by hippos and occasional attacks on the people which strains the relationship with sanctuary management.

The management will sensitize the local community not to cultivate up to the lake shore and leave a buffer zone for grazing by the hippos. Further, problem animal control activities will be intensified where incidences of conflict arise.

A summary of management actions to achieve this objective is given in box 7.

Box 7. Summary of Management Actions

1. Conduct frequent public barazas and radio programs
2. Intensify Problem Animal Control (PAC) to reduce human-wildlife conflict
3. Conduct seminars and workshops for local leaders and CBOs

Objective 2: Conservation Education and awareness enhanced

The aim of the conservation education program is to have the sanctuary serve as the hub of conservation and wildlife education for Nyanza, Western and North and South Rift regions. Schools and other learning institutions in these areas should be able to visit Kisumu Impala and learn all aspects of wildlife and conservation without going to the Nairobi animal orphanage.

An education centre will be constructed at Impala B and equipped with all relevant educational materials like books and other publications; videos and a variety of art. The management will also recruit more sanctuary guides to enhance visitor experience and satisfaction through guiding, education and interpretation. For success of school outreach programs a mobile unit will be constituted with all facilities like videos and generator to facilitate wildlife education and lessen dependence on Wildlife Clubs of Kenya (WCK) facilities. Radio programs specifically targeting the youth will be produced in conjunction with WCK.

A summary of management actions to achieve this objective is given in box 8.

Box 8. Summary of Management Actions

1. Conduct education and outreach programs to learning institutions
2. Constitute a mobile education unit
3. Recruit more guides
4. Liaise with WCK to produce conservation programs for the youth

Objective 3: Community Mobilization enhanced

The future desired state at the sanctuary is where there is harmonious coexistence between the sanctuary and the neighbouring community. For this to happen, the community should be aware and appreciate the sanctuary's conservation, education and economic mandate and support the management in its objectives.

At the moment there is general lack of goodwill from the community due to insufficient education and awareness and also due to land pressure which makes them view the sanctuary as a potential settlement and cultivation area. This is further hampered by lack of an education unit at the sanctuary to carry out community education activities.

The management has started and will increase Corporate Social Responsibility(CSR) activities in the area to bond the community with the sanctuary and promote their appreciation and goodwill. Education and awareness will be stepped up through public barazas, education and outreach programs in schools and other learning institutions.

Community mobilization programs will be conducted through workshops and seminars to halt further encroachment in Dunga Swamp. Community Based Organizations and individuals operating boat trips, domestic and commercial fishing businesses will also be trained in entrepreneurial and organizational skills to enable them to participate in conservation of the Parks and Lake Victoria positively. The management will also liaise closely with provincial administration and National Environment Management Authority and other stakeholders to ensure that critical habitats are conserved. In regard to this, management will negotiate for the inclusion of the parcel of land to the immediate north of the Sanctuary, owned by the Kenya Railways, to the sanctuary.

A summary of management actions to achieve this objective is given in box 9.

Box 9. Summary of Management Actions

1. Conduct frequent public barazas and radio programs
2. Conduct education and outreach programs to learning institutions
3. Educate the local community on importance of the sanctuary
4. Establish community projects to enhance good will
5. Liaise with other government agencies to conserve critical habitats

Protected Area Operations and Security Programme

Programme purpose and guiding principles

The purpose of the Protected Area Operations and Security Programme is to ensure that:

Operational systems are effectively and efficiently supporting the implementation of management programmes and the area is safe for wildlife and visitors

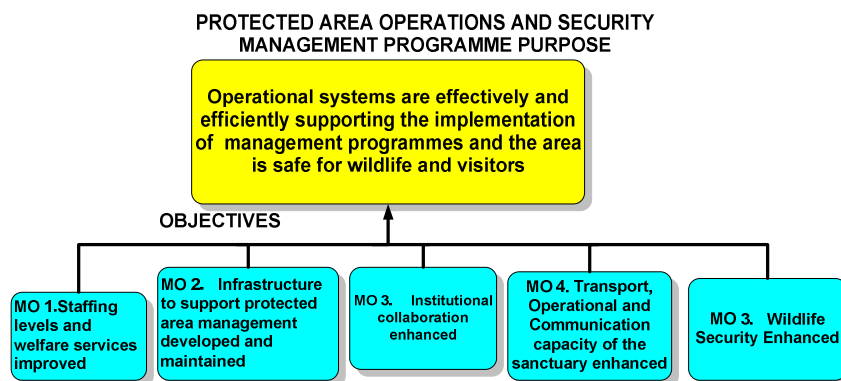
In implementing the Protected Area Operations and Security Programme, Management will strive to ensure that:

- a) *Operational effectiveness is improved;*
- b) *Collaboration with key stakeholders is strengthened;*
- c) *Staff welfare and motivation is enhanced; and*
- d) *Effective and efficient management infrastructure is provided.*

Management Objectives

Figure 8 below shows the overall objectives tree for the Protected Area Operations and Security Management Programme.

Figure 8: Protected Area Operations and Security Management Programme objectives tree



Objective 1: Staffing levels and welfare services improved

The goal of human resources at Kisumu Impala is to have a desired workforce that is well trained and motivated. The sanctuary suffers from inadequate staff while welfare services for existing staff are still unsatisfactory (see table 11).

The management will liaise with KWS Headquarters to have more rangers recruited and deployed especially for problem animal control. Existing staff will be trained in relevant and modern skills of management and refresher courses introduced for all staff.

To boost staff welfare, the management will purchase recreation equipment like balls, nets, dart boards and sports kits. For optimum occupational safety, first aid kits are being installed and staff will be trained on their use in conjunction with St. Johns Ambulance and The Red Cross.

Table 11: Optimum staffing levels

Impala Sanctuary	Current	Optimum	Variance	Comments
Warden II	0	1	-1	In-charge
Asst. Warden I	1	1	0	Currently in-charge and education warden
Sergeant	1	1	0	In-charge discipline and camp
Corporal	0	2	-2	Organize and coordinate visitor and Wildlife security, revenue escort
Ranger	2	10	-8	2 on sentry at main gate, sunset, campsite, Impala B Undertake security, escort duties
Customer Care Supervisor	1	1	0	Supervises Customer care staff
Customer Care Assistant	2			To handle visitors at Impala A & B
Tour Guide	0	1	-1	Currently filled by temporary staff
Coxswain	0	1	-1	to assist coxswain
Office attendant	0	1	-1	Currently casuals engaged
Animal Keeper	1	1	0	
Cage Attendants	2	4	-2	Cleaning of cages and feeding animals at Impala sanctuary. Deficit currently filled by 2 temporary staff
Assistant Research Scientist	0	1	-1	To undertake research activities in Impala, Ndere and other areas e.g. Lake Kanyaboli and Yala Swamp
Driver	0	1	-1	Administration and outreach programmes

A summary of management actions to achieve this objective is given in box 10.

Box 10. Summary of Management Actions

1. Liase with KWS HQS to deploy more rangers for PAC
2. Train staff in relevant skills (refresher courses for all staff)
3. Introduce entertainment facilities and provide recreation equipment like balls, nets, dart boards etc
4. Provide first aid kits and train staff on their use

Objective 2: Infrastructure to support protected area management developed and maintained

The objective of infrastructure development program at Kisumu Impala is to ensure the sanctuary has enough infrastructures to support its operations. The sanctuary should have ample staff houses and offices, while visitors should have enough utility facilities for recreation, meetings and accommodation.

In the past, Kisumu station had a wooden office from which the Senior Warden operated before it broke down. The current offices in the station are meant for the Telecommunications section. These accommodate the Senior Warden, registry, radio room, store, and Telecommunication Section (Superintendent and deputy, telecommunications workshop). There is need for construction of a storey office and junior staff houses at Kisumu station to house staff. Outposts at Bondo, Siaya and Nyakach will be strengthened to support Kisumu Station in Community Wildlife Service and Anti-poaching programmes.

Currently visitors lack accommodation facilities and venues for business and social meetings (See tables 12 and 13). The management will construct more houses and more office space. To enhance visitor experience, a walking board will be constructed near sunset gate and a jetty constructed at the lakeshore to facilitate boating. An auditorium will be constructed at the impala A main gate where visitors can relax as they sample education materials or watch education videos. The children corner under construction will be completed and an education centre constructed at Impala B to strengthen capacity of the sanctuary to host business and social meetings.

Impala is mainly accessible through three gates namely; Sunset, Impala Main and Service gate. Visitors touring the park can pay entry fee at the first two gates. The service gate is open to vehicles entering the sanctuary mostly for camping, weddings, photo sessions, video shooting and others. These gates will be maintained.

Signages are crucial for visitor guidance and interpretation. At Impala Sanctuary there is modern state-of-the-art signage that was redone in December 2009 during branding. Highway signages have also been strategically erected along the major roads leading to Kisumu. These signages will be maintained during the plan period.

Table 12: Existing and proposed staff accommodation

Description	Current	Optimum	Variance	Comments
Senior staff houses with servant quarter	3	5	-2	Renovated in 2009 December
Middle level staff houses	5	8	-3	“ “
Junior staff houses (uniformed)	8	20	-12	Renovated in 2009 December
Junior staff houses (non-uniformed)	0	6	-6	

Table 13: Gates, Fences, offices, residential houses for Impala Sanctuary

Description	Current	Optimum	Variance	Comments
Warden's office	1	1	0	Comprises armoury

Description	Current	Optimum	Variance	Comments
Customer Care supervisor office	1	1	0	In same block with Warden's office
Service gate	1	1	0	Sunset gate
Gate/ Ticketing office	1	1	0	Include main gate
Naturalists office	1	1	0	Assistant research scientist's office
Animal keeper's office	0	1	-1	Current office is a uniport
Mini Laboratory/store	0	1	-1	Currently, tools and materials are kept in the animal keeper's residential store
Animal keeper's house	0	1	-1	Current house is temporary

A summary of management actions to achieve this objective is given in box 11.

Box 11. Summary of Management Actions

1. Construct more staff houses
2. Construct more office space
3. Construct a walking board near sunset gate
4. Construct a jetty at the lakeshore
5. Construct a restaurant at the lakeshore
6. Construct an auditorium at the impala A main gate
7. Complete the children's corner
8. Construct an education centre/conference centre at impala B

Objective 3: Institutional collaboration enhanced

The objective of institutional collaboration program at Kisumu Impala is to strengthen working relationship with other institutions to ensure effective conservation of the environment and minimal pollution of the sanctuary from solid and liquid wastes.

The sanctuary currently faces challenges relating to pollution in the lake due to poor sewerage disposal from Kisumu City while garbage disposal in the city is also a problem which causes pollution to the sanctuary. The management will liaise closely with Kisumu City Council on sewerage and garbage disposal and also with other relevant government departments to ensure enforcement of environmental laws. The management will also support registration of the newly started "Friends of Impala Sanctuary" as a corporate entity to support sanctuary operations

A summary of management actions to achieve this objective is given in box 12.

Box 12. Summary of Management Actions

1. Liaise closely with Kisumu City Council on sewerage and garbage disposal
2. Liaise with NEMA, Ministry of Water and Irrigation, KEMFRI and others to ensure enforcement of environmental laws
3. Support registration of "Friends of Impala Sanctuary"

Objective 4: Transport, Operational and Communication capacity of the sanctuary enhanced

The desired future state of Kisumu Impala Sanctuary with respect to transport and communications is where there are adequate motor vehicles and modern telecommunication and related equipment. Administrative offices require modern computers fitted with modern programs for data storage and communication.

Currently the sanctuary has a severe shortfall of vehicles and other equipment while others are too old and in-serviceable. The management will liaise with KWS HQs to acquire more vehicles and telecommunication equipment and computers and their accessories. Other modern machinery to be acquired include lawn mowers and power saws

A summary of management actions to achieve this objective is given in box 13.

Box 13. Summary of Management Actions

1. Liaise with KWS HQs to acquire more vehicles and telecommunication equipment
2. Modern equipment like computer hardware and software, and GPSs
3. Acquire efficient machinery eg lawn mowers, power saws

Objective 5: Wildlife Security Enhanced

The objective of park operations and security program at Kisumu Impala Sanctuary is to ensure security and safety of wildlife and visitors in the whole sanctuary and its environment.

Currently there are incidences of poaching especially at Dunga Swamp and also illegal fishing. Occasionally, criminals in the city use the sanctuary as hideout. The management will carry out frequent patrols and intensify intelligence operation in liaison with Kenya Police and National Security Intelligence Service. The management will also recruit informers from the community in the spirit of community policing.

A summary of management actions to achieve this objective is given in box 14.

Box 14. Summary of Management Actions

1. Carry out frequent patrols
2. Intensify intelligence operations
3. Liaise with relevant government organs like Kenya Police and NSIS to curb wildlife crime

Plan Monitoring

KISUMU IMPALA SANCTUARY MANAGEMENT PLAN (2010-2015)

The plan monitoring framework given in the following tables (table 14, 15, 16, and 17) is designed to provide guidance for the assessment of the potential impacts (both positive and negative) resulting from the implementation of management actions set out in this plan.

Table 14: Ecological Management Programme Monitoring Plan

Objective	Potential Impacts (<i>Positive</i> and <i>Negative</i>)	Verifiable Indicator	Sources and means of verification
Objective 1: Habitat management enhanced	Maintenance of critical habitats such as swamps	-Size of swamps -Biodiversity in the swamps	Satellite imageries and biodiversity status reports
Objective 2: Animal management enhanced	Increased species and genetic diversity	Number of species re-introduced and established	-Species specific studies -Genetic survey reports
Objective 3: Ecology of Kisumu Impala Sanctuary understood	Natural resources information available for management decision making	Number of information based management decisions	-Monthly reports -Annual Park reports

Table 15: Tourism Development and Management Programme Monitoring Plan

Objective	Potential Impacts (<i>Positive</i> and <i>Negative</i>)	Verifiable Indicator	Sources and means of verification
Objective 1: Tourism infrastructure Improved	<p>Increase in visitor satisfaction</p> <p>Habitat loss and degradation through vegetation clearing during construction of facilities</p>	<p>-Visitor satisfaction index</p> <p>Land developed and not available to wildlife</p>	<p>-Reports on status of visitor infrastructures</p> <p>-Customer satisfaction surveys</p> <p>Land cover mapping</p>
Objective 2: Visitor attractions diversified	Increased visitor satisfaction	Number of repeat visitors	Visitor satisfaction surveys
Objective 3: Visitor information and education enhanced	Increased visitor satisfaction	Visitor satisfaction index	Customer satisfaction surveys

Table 16: Community Partnership and Education Management Programme Monitoring Plan

Objective	Potential Impacts (<i>Positive</i> and <i>Negative</i>)	Verifiable Indicator	Sources and means of verification
Objectives 1: Human-wildlife conflict minimized	Increased support for conservation	Number of wildlife cases reported	Human wildlife conflict database and reports

PLAN MONITORING

Objective	Potential Impacts (<i>Positive</i> and <i>Negative</i>)	Verifiable Indicator	Sources and means of verification
Objective 2: Conservation Education and awareness enhanced	Increased support for wildlife conservation	Number of community based conservation projects	-Collaborative initiatives -Community wildlife service reports
Objective 3: Community Mobilization enhanced	Increased support for wildlife conservation	Number of collaborative initiatives undertaken	-Collaborative initiatives -Education and awareness reports

Table 17: Protected Area Operations and Security Programme Monitoring Plan

Objective	Potential Impacts (<i>Positive</i> and <i>Negative</i>)	Verifiable Indicator	Sources and means of verification
Objective 1: Staffing levels and welfare services improved	Increased staff output given available resources	Staff motivation levels	Staff appraisal reports
	Increased human capacity	Number of staff trained	Training reports
Objective 2: Infrastructure to support protected area management developed and maintained	Increased visitor satisfaction	Visitor satisfaction index	Visitor satisfaction surveys
	Environmental degradation during construction phase	Size of converted habitat	Land cover mapping report
Objective 3: Institutional collaboration enhanced	Increased stakeholder collaborations	Number of collaborative initiatives undertaken	-Collaborative initiatives -Project reports
Objective 4: Transport, Operational and Communication capacity of the sanctuary enhanced	Reduced cycle time through effective and efficient management	Time taken to serve customers	-Visitor satisfaction surveys -Human-wildlife conflict reports
Objective 5: Wildlife Security Enhanced	Enhanced wildlife security	Number of wildlife crimes reported	-Wildlife crime database -Wildlife crime reports

Plan Annexes

Annex 1: Three Year Action Plan (2010 – 2013)

The following pages set out the first 3-Year Action Plans for each Management Programme. The action plan details the actions, responsibilities, timeframe and milestones for each management objective.

Management Action and Activities	Persons Responsible	Timeframe												Milestones
		FY 2010-11				FY 2011-12				FY 2012-13				
		1	2	3	4	1	2	3	4	1	2	3	4	
Ecological management programme														
Objective 1: Habitat management enhanced														Invasive species removal strategy developed by June 2011
1.1 Formulate invasive species removal strategy	SRS				X									
1.2 Liaise with Kisumu City Council, NEMA, Lake Basin Authority in mitigating impacts of invasive species	SRS	X	X	X	X	X	X	X	X	X	X	X	X	
1.3 Create an awareness programme to stem degradation	SW									X	X			
1.4 Lobby for acquisition of more land adjoining the park	SW	X	X	X	X	X	X	X	X	X	X	X	X	
1.5 Carry out education and awareness to minimize encroachment	SW	X	X	X	X	X	X	X	X	X	X	X	X	
Objective 2: Animal management enhanced														Additional animals translocated to the sanctuary by December 2011
2.1 Carry out regular translocations to avoid inbreeding	SRS	X	X	X	X	X	X	X	X	X	X	X	X	
2.2 Feed and provide veterinary care	SW&SRS	X	X	X	X	X	X	X	X	X	X	X	X	
2.3 Translocate additional animal species to the sanctuary.	SRS	X	X	X	X	X	X	X	X	X	X	X	X	
Objective 3: Ecology of Kisumu Impala Sanctuary understood														Comprehensive biodiversity inventories completed by June 2011
3.1 Carry out ecological monitoring (Monitoring vegetation and invasive species; water quality).	RS	X	X	X	X	X	X	X	X	X	X	X	X	
3.2 Carry out biodiversity inventories for all taxa.	RS	X	X	X	X	X	X	X	X	X	X	X	X	
3.3 Carry out impala behaviour studies	RS							X	X	X			X	
3.4 Carry out water quality and quantity monitoring in the lake	RS	X	X	X	X	X	X	X	X	X	X	X	X	
3.5 Set up a weather station in the sanctuary.	RS		X	X										
Tourism Development and Management Programme														
Objective 1: Tourism infrastructure Improved														Tented Camp developed and operational by
1.1 Construct a tented camp	SW	X	X	X	X									
1.2 Upgrade existing campsite	SW			X										

KISUMU IMPALA SANCTUARY MANAGEMENT PLAN (2010-2015)

Management Action and Activities	Persons Responsible	Timeframe												Milestones	
		FY 2010-11				FY 2011-12				FY 2012-13					
		1	2	3	4	1	2	3	4	1	2	3	4		
1.3 Create two more campsites	SW				X	X								December 2012	
1.4 Improve the picnic sites and nature trails	SW			X	X										
1.5 Construct a gift shop and M-Pesa shop	SW							X	X						
1.6 Put up a canteen inside and outside the sanctuary	SW					X	X								
Objective 2: Visitor attractions diversified															Snake park established by December 2011
2.1 Establish a snake park inside the sanctuary	SW&SRS				X	X	X								
2.2 Introduce more animal species	SW&SRS						X	X							
2.3 Introduce water sports	SW											X	X		
2.4 Promote of filming and photographic activities	SW	X	X	X	X	X	X	X	X	X	X	X	X		
Objective 3: Visitor Information and education enhanced															At least two education programmes aired by FM stations every quarter
3.1 Publish maps, posters and guide books and brochures on the sanctuary resources and attractions	SW						X	X							
3.2 Erect more advertising bill boards on the highways	SW							X	X	X	X	X	X		
3.3 Maintain education programs in local FM radios	SW	X	X	X	X	X	X	X	X	X	X	X	X		
3.4 Publish publicity supplements in the newspapers every year	SW	X	X	X	X	X	X	X	X	X	X	X	X		
Community Partnership and Education Programme															
Objectives 1: Human wildlife conflict minimized															At least 2 semi-nars/workshop s organised every year
1.1 Intensify PAC to reduce human wildlife conflict	CWO	X	X	X	X	X	X	X	X	X	X	X	X		
1.2 Conduct seminars and workshops for local leaders and CBOs	CWO	X	X	X	X	X	X	X	X	X	X	X	X		
Objective 2: Conservation Education and awareness enhanced															Mobile education outreach unit in place by December 2011
2.1 Conduct education and outreach programs to learning institutions	CWO	X	X	X	X	X	X	X	X	X	X	X	X		
2.2 Constitute mobile education unit	CWO						X	X							
2.3 Recruit more guides	CWO								X	X					
2.4 Liaise with WCK to produce conservation programs for the youth	CWO	X	X	X	X	X	X	X	X	X	X	X	X		
Objective 3: Community Mobilization enhanced															At least 2 Barazas held each quarter
3.1 Conduct frequent public barazas and radio programs	CWO	X	X	X	X	X	X	X	X	X	X	X	X		
3.2 Conduct education and outreach programs to learning institutions	CWO	X	X	X	X	X	X	X	X	X	X	X	X		
3.3 Educate the local community on importance of the Sanctuary	CWO	X	X	X	X	X	X	X	X	X	X	X	X		
3.4 Establish community projects to enhance good will	CWO	X	X	X	X	X	X	X	X	X	X	X	X		

Management Action and Activities	Persons Responsible	Timeframe												Milestones
		FY 2010-11				FY 2011-12				FY 2012-13				
		1	2	3	4	1	2	3	4	1	2	3	4	
Protected Area Operations and Security Programme														
Objective 1: Staffing levels and welfare services improved.														At least 80% of staff trained in computers by December 2011
1.1 Liaise with KWS HQS to deploy more rangers for PAC	HRO	X	X	X	X	X	X	X	X	X	X	X	X	
1.2 Train staff in relevant skills (refresher courses for all staff)	SW&HRO	X	X	X	X	X	X	X	X	X	X	X	X	
1.3 Introduce entertainment facilities and provide recreation equipment like balls, nets, dart boards etc.	SW	X	X	X	X	X	X	X	X	X	X	X	X	
1.4 Provide first aid kits (and train staff on their use)	SW	X	X	X	X	X	X	X	X	X	X	X	X	
Objective 2: Infrastructure to support protected area management developed and maintained														
2.1 Construct more staff houses	SW											X	X	Education Center constructed by June 2013
2.2 Construct more office space	SW											X	X	
2.3 Construct a walking board near sunset gate	SW												X	
2.4 Construct a jetty at the lakeshore	SW									X	X	X	X	
2.5 Construct a restaurant at the lakeshore	SW											X	X	
2.6 Construct an auditorium at the impala A main gate	SW												X	
2.7 Complete the children's corner	SW	X	X	X	X									
2.7Construct an education centre/conference centre at impala B	SW									X	X	X	X	
Objective 3 Institutional collaboration enhanced														
3.1 Liaise closely with Kisumu City Council on sewerage and garbage disposal	SW	X	X	X	X	X	X	X	X	X	X	X	X	Friends of Impala Sanctuary registered by June 2011
3.2 Liaise with NEMA, Ministry of Water and Irrigation, KEMFRI and others to ensure enforcement of environmental laws	SW	X	X	X	X	X	X	X	X	X	X	X	X	
3.3 Support registration of "Friends of Impala Sanctuary	SW				X									
Objective 4 Transport, Operational and Communication capacity of the sanctuary enhanced														
4.1 Liaise with KWS HQS to acquire more vehicles and telecommunication equipment	SW	X	X	X	X	X	X	X	X	X	X	X	X	The Sanctuary has adequate computers by December 2011
4.2 Purchase modern equipment like computer hardware and software; GPSs, night vision goggles,	SW	X	X	X	X	X	X	X	X	X	X	X	X	
4.3 Acquire efficient machinery e.g. lawn mowers, power saws	SW	X	X	X	X	X	X	X	X	X	X	X	X	

Abbreviations:

1. SW-Senior Warden; SRS-Research Scientist; CWO-Community Wildlife Officer; HRO-Human Resource Officer