Kiunga-Boni-Dodori Conservation Area Management Plan (KBDCA), 2013-2023

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Planning carried out by

KBDCA Managers
KBDCA Stakeholders and
KWS Planning & Environmental Compliance Department

In accordance with the

KWS PROTECTED AREAS PLANNING FRAMEWORK

Acknowledgement

This Management Plan has been developed through a participatory planning process involving a cross section of KBDCA stakeholders, under the coordination of a Core Planning Team comprising KBDCA Protected Area managers, KWS Headquarters planners, and WWF officers at Lamu.

Approval Page

The management of the Kenya Wildlife Service has approved the implementation of this management plan for Kiunga-Boni-Dodori Conservation Area (KBDCA).

On behalf of the
KENYA WILDLIFE SERVICE

William K. Kiprono
Director

Date: 26.6.2013

Abbreviations

ASK	Agricultural Society of Kenya
BMU	Beach Management Unit
BNR	Boni National Reserve
CBO	Community Based Organisation
CCC	Community Consultative Committee
CCF	Community Consultative Forum
CFA	Community Forest Association
CITES	Convention on International Trade in Endangered Species
CMS	Convention on Migratory Species
DNR	Dodori National Reserve
EIA	Environmental Impact Assessments
EMCA	Environmental Management and Coordination Act
FiD	Fisheries Department
GIS	Geographical Information Systems
HF	High Frequency
HQ	Head Quarters
HWC	Human-Wildlife Conflict
IBA	Important Bird Area
IUCN	International Union for Conservation of Nature
KBDCA	Kiunga Boni Dodori Conservation Area
KBR	Kiunga Biosphere Reserve
KCCWG	Kenya Climate Change Working Group
KCDP	Kenya Coastal Development Project
KEA	Key Ecological Attribute
KFS	Kenya Forest Service
KIBODO	Kiunga Boni Dodori Trust
KMFRI	Kenya Marine Fisheries Research Institute
KMNR	Kiunga Marine National Reserve
KTB	Kenya Tourism Board
KWS	Kenya Wildlife Service
LAPSSET	Lamu Port South Sudan Ethiopia Transport Corridor
MCTA	Mombasa and Coastal Tourism Association
MIST	Management Information System
MOU	Memorandum of Understanding
NEMA	National Environment Management Authority
NGO	Non-Governmental Organization
NLC	National Land Commission
PA	Protected Area
PAC	Problem Animal Control
PAPF	Protected Areas Planning Framework
SECURE Project	Securing Rights to Land and Natural Resources for Biodiversity and Livelihood in Kiunga-Boni-Dodori Reserves and Surrounding Areas in North Coastal Kenya
TV	Television
UNESCO	United Nations Educational, Scientific and Cultural Organisation
USAID	United States Agency for International Development
VSAT	Very Small Aperture Terminal
WNBR	World Network of Biosphere Reserves
WPD	Wildlife Protection Department
WRMA	Water Resources Management Authority
WRUA	Water Resource Users Association
WWF	World Wide Fund for Nature
ZSL	Zoological Society of London

Executive Summary

This management plan has been developed in accordance with the KWS Protected Area Planning Framework (PAPF), which is the management planning standard for Kenya's wildlife protected areas. The PAPF aims to ensure that Protected Area (PA) management plans are developed according to a common process, and that the final plans produced have a similar structure. To ensure the management plans produced are both realistic and appropriate, and to build wider stakeholder understanding and support for implementation, the PAPF planning process incorporates a high level of stakeholder participation. The structure of the management plan itself has also been designed to maximise ease of implementation by PA managers, which is achieved through application of the "*Logical Framework Approach*" in the plan's management programmes, and the development of "*3-year Activity Plans*" that provide the link between the 10-year vision and components of the plan to the annual work planning carried out by the Protected Area (PA) managers responsible for plan implementation.

At the heart of the plan are the **zonation scheme** and the plan's four **management programmes**. These programmes are:

▶ *Ecological Management Programme*
▶ *Tourism Development and Management Programme*
▶ *Community Partnership and Conservation Education Management Programme*
▶ *Protected Area Operations and Security management Programme*

KBDCA Purpose

The purpose of the KBDCA as defined by the area's stakeholders is:

> *To conserve and protect marine and coastal forest species, especially the threatened sea turtles, dugong, Coastal topi, wild dogs and elephants along with their associated habitats for the benefit of present and future generations.*

The development of the above Purpose Statement was based on the stakeholder identification of the KBDCA's "Exceptional Resource Values" (ERVs), which were divided into four categories: biodiversity, scenic, social and cultural.

KBDCA Zonation Scheme

The KBDCA zonation scheme provides a dual framework aimed at supporting both the decentralised management of the protected area and the regulation and promotion of various resource uses across the area. To achieve this, the KBDCA has been divided into five natural resource use zones and three management sectors:

Management Sectors

The decentralisation of the KBDCA's management into three management sectors is in accordance with the wider KWS Sectoral Management Strategy for Conservation Areas, and aims to increase management presence and infrastructure development across the entire KBDCA. The Senior Warden (based at Mkokoni) will remain the overall officer in charge of

the KBDCA, while the sectors will be managed by wardens based at sector headquarters (Mkokoni, Mangai and Sangailu).

Resource Use Zones

Five natural resource use zones have been developed to enable management of different types and levels of use across the KBDCA. These zones are: High Use Zone, Low Use Zone; Wilderness zone, Restricted Use Zone, and Influence Zone.

▸ The **High Use Zone (HUZ)** is established in areas capable of accommodating a broad range of opportunities for recreation and related facilities for visitor enjoyment, in ways that respect the natural landscape. HUZ services large volumes of tourists in a naturally scenic though substantially human altered environment. Tourism in the HUZ is closely linked to motorized, high volume transportation on sea routes in the KMNR and viewing circuits in the DNR and BNR. This zone will contain the highest concentration of tourism accommodation in the KBDCA. However, in order to maintain low-impact tourism in the area, new developments are restricted to eco-lodges, permanent tented camps, KWS Bandas and camp sites.

▸ The **Low Use Zone** (LUZ) is characterized by the provision of recreation experiences for low numbers of visitors in a quality natural environment. This zone is associated with motorized access and accommodation, but on a smaller scale and to a lesser intensity than in the HUZ. For example, LUZ's accommodation consist of small lodges with limited facilities. The rustic basics of comfort are provided but emphasis of the experience is still on the natural environment rather than the facilities themselves. Access in the LUZ is by air or viewing roads in BNR and DNR, and water in KMNR. However, the density of vehicles will be lower than in the HUZ. This zone is represented in all three KBDCA protected areas. It comprises the wooded glades and some forested areas of BNR and DNR and the waters of the Indian Ocean north of Kiwayu in KMNR. The dispersal of tourism use into this zone will be encouraged by allowing a variety of low impact tourist activities.

▸ The **Wilderness Zone** covers large areas in DNR and BNR that are representative of the ecosystems of the two terrestrial protected areas. The zone provides a high quality wilderness experience in a pristine environment. This zone will be least developed and least accessible area of the KBDCA. There will be limited road network which will primarily be for administration of the KBDCA and security patrols. It is not anticipated that tourism use pressure will increase to levels of concern in this zone within the 10-year time horizon of this management plan.

▸ The **Restricted Use Zone** is designed to protect and conserve biologically significant habitats. This is a 'no-take' area where extraction of natural resources is not allowed and activities that may harm plants or animals are prohibited. In the KBDCA, such areas include the fish breeding areas, the turtle nesting areas (Mkokoni, Kiwayu Safari Village, Kongowale, Ashuwei, and Mvundeni), the dugong foraging areas (Dodori creek) and bird breeding, feeding and nesting sites (Kitanga Kikuu, Kiunga Mwini, Chole, Mwongo Sharif, and Mtumwe). Intertidal zone of about 600 meters width from the high tide mark defines this zone in KMNR. Mangrove forests within KMNR and DNR are also included in this zone.

▸ The **Influence Zone** comprises a 5Km-wide strip of land or water bordering the protected areas. This zone supports multiple uses of resources for community livelihood. The community in this area have the highest interaction with the protected area; hence they

experience the highest human-wildlife conflicts. The main human activities in this zone include agriculture, fishing and honey harvesting.

To improve PA-community interactions as well as improve community livelihoods, this zone will be the focus for activities outlined in the Community Partnership and Conservation Education Management Programme.

Ecological Management Programme

The Ecological Management Programme aims to ensure that "*The ecological components and processes of the KBDCA are understood, restored and conserved, and threats to the area's key ecological features are reduced*". In order to achieve this aim, three objectives have been designed. These objectives focus on managing and maintaining critical habitats and important dispersal areas in the KBDCA; conserving species of conservation concern; and strengthening research to understand KBDCA's ecological components and dynamics. In addition, the programme includes an ecological monitoring plan framework, which has been designed to provide a mechanism for monitoring the overall ecological health of the KBDCA and for assessing the impact of ecological management actions.

Tourism Development and Management Programme

The Tourism Development and Management Programme aims to ensure "*development* of *sustainable tourism that offers a distinctive and memorable visitor experience based on the area's mix of special natural, cultural and historical values*". To achieve this aim four management objectives focusing on developing tourism accommodation facilities; diversifying tourist activities to enhance visitor experience and satisfaction; enhancing promotion and marketing of the KBDCA; and improving tourism management have been designed.

Community Partnership and Education Programme

The Community Partnership and Conservation Education Management Programme aims to ensure that "*the support and participation of KBDCA adjacent communities in conservation and sustainable use of natural resources is enhanced*". This aim will be achieved through implementation of management actions relating to improving PA-community communication and collaboration mechanisms; strengthening the conservation education and awareness programme; promoting conservation-compatible community land uses and practises; reducing human-wildlife conflicts; improving opportunities for communities to benefit from the KBDCA; and promoting sustainable utilization of marine resources.

Protected Area Operations and Security Management Programme

The aim of this programme is to ensure that "t*he KBDCA operational systems and structures are effectively and efficiently supporting the delivery of the management programmes outlined in this management plan*". The management objectives that have been designed to realize this aim focus on establishing effective management systems and collaboration mechanisms; improving performance and motivation of KBDCA staff; improving infrastructure, transport and communications to support PA management and tourism development; and enhancing security for wildlife, visitors, and KWS assets.

Plan Monitoring

The plan monitoring section provides a framework for monitoring the potential impacts, both positive and negative, that are anticipated from the implementation of each of the four management programmes' objectives. The framework also includes easily measurable indicators for monitoring positive and negative impacts, and potential sources of this information.

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Plan Foundations

The Plan

This management plan for the Kiunga-Boni-Dodori Conservation Area (KBDCA) has been developed in accordance with the KWS Protected Area Planning Framework (PAPF), which is the management planning standard for Kenya's wildlife protected areas. The PAPF aims to ensure that Protected Area (PA) management plans are developed according to a common process, and that the final plans produced have a similar structure. To ensure the management plans produced are both realistic and appropriate, and to build wider stakeholder understanding and support for implementation, the PAPF planning process incorporates a high level of stakeholder participation. The structure of the management plan itself has also been designed to maximise ease of implementation by PA managers, which is achieved through application of the "*Logical Framework Approach*" in the plan's management programmes, and the development of "*3-year Activity Plans*" that provide the link between the 10-year vision and components of the plan to the annual work planning carried out by the PA managers responsible for plan implementation.

The following sections on the plan functions, plan structure and stakeholder participation in the plan's development provide an overview of the practical application of the PAPF.

Plan functions

A PAPF-based plan is primarily designed to be a practical management tool to support PA managers in carrying out their duties. PAPF plans achieve this aim by providing strategic guidance on the goals towards which management is working, and a series of prescriptions and management actions that need to be implemented in order to achieve these aims. In line with this, the following points set out the key functions of the KBDCA Management Plan.

The KBDCA Management Plan (2013-2023) is designed to:

- ▶ **Vision:** Set out a common understanding between stakeholders on the purpose of the KBDCA and its most important values, towards which all management action in the conservation area will be focused;

- ▶ **What:** Establish clear management objectives that are agreed by the KBDCA's stakeholders and managers and that, if achieved, will ensure that KBDCA purpose will be fulfilled and exceptional values conserved;

- ▶ **How:** Provide clear and unambiguous guidance and a rationale for the specific management actions that PA Managers will need to implement over the 10-year timeframe of the plan to achieve the management objectives;

- ▶ **Where:** Define a mechanism for zoning to enable different types and intensities of use in different parts of the KBDCA, thereby facilitating reconciliation of the KBDCA's sometimes competing conservation and development objectives;

- ▶ **When:** Provide a detailed activity plan for the first three years of implementing the management plan, thereby establishing a crucial link between the plan's long-term management objectives and the annual operational planning and budgeting routinely carried out by PA Managers;

▸ **Who**: Provide a practical framework enabling the collaboration of PA managers and other institutions and stakeholders to implement the plan; and

▸ **Rules**: Set out clear and unambiguous prescriptions and regulations on what can and cannot occur in different parts of the KBDCA in order to achieve the area's management objectives and fulfil the conservation area purpose.

The Plan is NOT designed to:

▸ Provide a comprehensive reference source for the KBDCA, with detailed background information on the area's biodiversity, ecology, geology, soils, etc;

▸ Set out a detailed inventory of issues or problems impacting the KBDCA, that are not directly addressed through the plan's management objectives and actions; and

▸ Provide detailed descriptions of the PAs management, administration, and national policies, unless they are relevant to the plan's management objectives and actions.

Plan structure

In order to fulfil the Plan's functions, and in accordance with the PAPF, the KBDCA plan structure has been developed to be as simple as possible, and as such, easily understood by stakeholders and implemented by KBDCA management. Table 1 provides an outline of the plan structure.

Table 1: Plan Structure

Chapter	Function and contents
Plan Foundation	▸ Provides an introduction to the KBDCA and its management ▸ Introduces the plan, and describes the plan's structure and the framework used in the process leading to the plan's development ▸ Sets out the KBDCA Vision and Purpose Statements, and Exceptional Resource Values (ERVs)
Zonation Scheme	▸ This is meant to enable different types and intensities of use in different parts of the KBDCA, and to help reconcile the sometimes competing and conflicting conservation and resource use needs ▸ Sets out areas of the KBDCA where different types of visitor use and tourism developments are permitted ▸ Provides specific prescriptions on resource utilization by the communities ▸ Ensures that the management extends its mandate by increasing management presence and infrastructure development across the entire ecosystem.
Management Programmes	This section forms the bulk of the management plan and provides a framework to guide management activities in achieving a future desired state for specific aspects of the KBDCA management. As a result, four programmes have been proposed. These are: ▸ Ecological Management Programme; ▸ Tourism Development and Management Programme; ▸ Community Partnership and Conservation Education Programme; and ▸ PA Operations and Security Management Programme Each management programme was developed in line with the Logical Framework Approach and has a programme purpose statement and guiding principles that define the desired future state for the KBDCA. In addition, each programme contains management objectives that set out

Chapter	Function and contents
	the specific goals that KBDCA management aims to achieve and a set of specific management actions that management will implement to achieve these goals.
Plan Monitoring	▶ Provides a framework for the assessment of positive and potentially negative impacts of plan implementation ▶ Includes easily quantifiable indicators for assessing impacts, and potential sources of the information required
3-Year Activity Plans	▶ These provide the link between the 10-year management actions and the annual work planning and budgeting of KBDCA management. ▶ Break down the programme's management actions into a series of tangible and explicit activities ▶ Allocate responsibility for implementation, set out the timeframe for activity implementation, and "milestones" for monitoring plan delivery.

Participation in planning

The development of the KBDCA management plan involved a high degree of stakeholder participation. This is geared towards ensuring that the eventual plan is both practical and appropriate, and is built on stakeholder understanding and support for the plan's implementation. Four principal mechanisms were used to ensure that stakeholders could meaningfully contribute to the plan's development: the Core Planning Team, Stakeholder Workshops, specialist Working Groups and village level consultative meetings.

The KBDCA

Area description

The KBDCA management plan primarily focuses on Kiunga Marine, Boni and Dodori National Reserves and the immediate adjacent community land. These protected areas and the community land comprising the planning area are located in Lamu (KMNR and DNR) and Garissa (BNR) Counties (Figure 1). The KBDCA geographic components are described in the following sections:

Figure 1: KBDCA Components
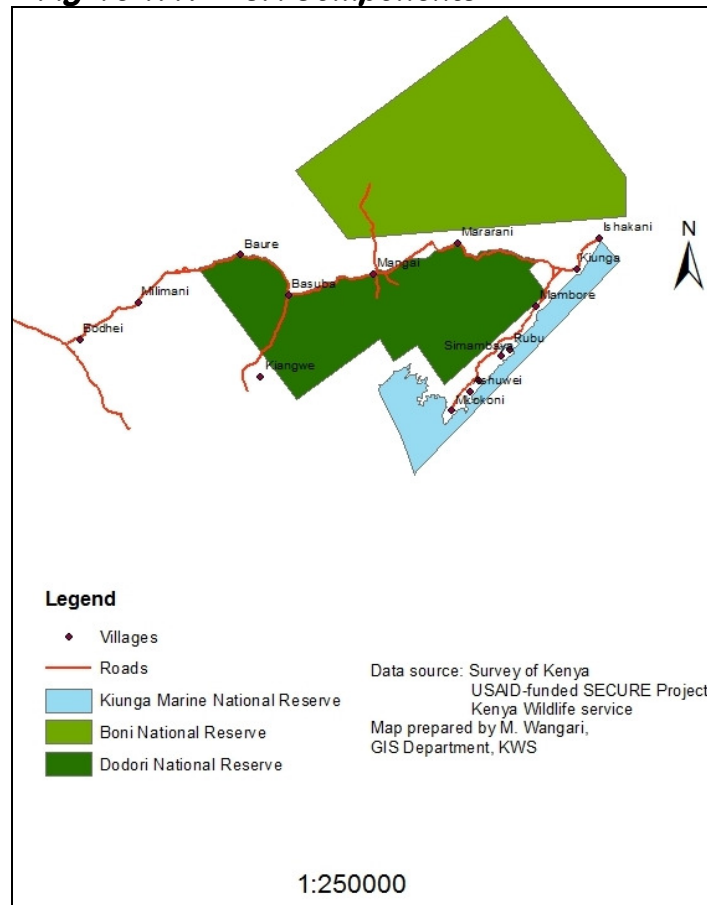
Kiunga Marine National Reserve

Kiunga was designated as a Marine National Reserve on June 11, 1979, and is legally registered on the boundary plan 216/39. The reserve covers 25,000 Ha south of the Kenya/Somalia border, in Lamu County, extending from the village of Ishakani in the north to the Boteler Ledge fringing coral reef in the south. The terrestrial boundaries are defined by a line 30 meters above the high water mark, unless the land is occupied whereupon the high water mark is the boundary. Approximately 51 islands occur within the reserve's boundaries.

Boni National Reserve

The Boni National Reserve was gazetted in 1976 primarily as a dry season refuge for elephants and other wild animals. It covers 133,900 Ha of indigenous coastal forest including significant concentrations of economically valuable hardwoods and numerous significant species, many of which are classified as vulnerable or endangered. It is located wholly within Ijara District, with its north-eastern boundary adjoining the Laga Badana National Park in Somalia.

Dodori National Reserve

Dodori was designated a national reserve in 1976. It covers 87,739 ha, bordered to the north by the east-west road between Kiunga and Bodhei and by linear boundaries marked by oil

drums extending as far south as Dodori Creek. Dodori is named after the river that passes through it and enters the ocean near Mkokoni. It was established to protect among others the major breeding grounds of the coastal topi *(Damaliscus lunatu*s). It comprises of mangrove swamp, lowland dry forest, marshy glades and ground water forest, and is bisected by the Dodori River. The Dodori creeks and inlets serve as ideal breeding grounds for marine animals such as dugong and the green turtle.

Vision Statement for KBDCA

This vision statement describes a desired future of what KBDCA should be like in 10 years. It is an inspirational view of a future for the conservation area that helps to focus and guide the planning, management and operation while fostering closer cooperation and integration between people who care for and use the conservation area.

In Ten Years...

All the major threat's to KBDCA's ecological integrity, such as poaching of threatened species and illegal extraction of natural resources from the protected areas will have been eliminated and populations of threatened species will be increasing;

- ▸ KBDCA will be a showcase model of community participation in conservation where local communities conserve and utilise natural resources in a sustainable manner;
- ▸ KBDCA's diverse ecological systems and their functioning will be better understood through research and monitoring programmes;
- ▸ The KBDCA will be a tourist destination of choice both nationally and internationally offering high quality, low impact tourism capitalising on the areas wilderness characteristics and other unique values;
- ▸ The KBDCA tourism infrastructure and services will have been developed to a high quality guaranteeing visitors an enjoyable experience in the area;
- ▸ KBDCA will be renowned by ecotourists, naturalists and adventure tourists as a premier destination for wilderness experiences based on the coastal forest resource; and
- ▸ Traditional knowledge, scientific research and wildlife tracking by para-ecologists will provide a greater understanding of the wildlife populations in the KBDCA.

KBDCA Purpose Statement

The purpose statement summarises the importance of the KBDCA, clarifies the main reasons for its existence and provides the overall goals that managers are striving to achieve. Hence the overall purpose of the KBDCA as defined by stakeholders is:

To conserve and protect marine and coastal forest species, especially the threatened sea turtles, dugong, coastal Topi, wild dogs and elephants along with their associated habitats for the benefit of present and future generations

Supplementary purposes of the KBDCA are:

- ▸ ***To promote tourism development that capitalises on the KBDCAs exceptional values as well as its location in the Lamu metropolis;***

▶ *To provide optimal benefits to local communities, other KBDCA stakeholders and the nation, in harmony with the KBDCA's unique wilderness characteristics;*

▶ *To enable collaboration between stakeholders in the conservation and sustainable use of KBDCA natural resources;*

▶ *To preserve all sites of aesthetic, historical and cultural significance in the KBDCA; and*

▶ *To promote scientific research and education in order to guide sustainable management of natural resources in and around the KBDCA.*

The development of the above Purpose Statement was based on the stakeholder identification of the KBDCA's "Exceptional Resource Values" (ERVs).

KBDCA Exceptional Resource Values

The KBDCA Exceptional Resource Values (ERVs) describe the area's key natural resources and other features that provide outstanding benefits to local, national and international stakeholders. They are particularly important for maintaining the area's unique qualities and ecology. The ERVs build an understanding of the features that are especially important for maintaining the unique character of the area and are in need of the most preservation. The ERVs are set out according to four categories i.e. Biodiversity, Scenic, Social and Cultural (see Table 2).

Table 2: KBDCA's Exceptional Resource Values

Category	Exceptional Resource Value
Biodiversity	▶ Threatened and rare coastal forest species (Ader's duiker, Elephant shrew, coastal Topi, Hirola, wild dogs)
	▶ Threatened marine species (Dugong, Sea turtles)
	▶ Mangroves
	▶ Sea grass
	▶ Connectivity between the protected marine and terrestrial protected areas
	▶ Important Bird Area (IBA) status
	▶ Coral reefs
Scenic	▶ Kibokoni Lake
	▶ Sandy Beaches
	▶ Uninhabited and unexploited islands
	▶ Forest landscape
	▶ The sea
Social	▶ Hardhi Lake
	▶ Mangai River
	▶ Fisheries
	▶ Crustaceans

Category	Exceptional Resource Value
	▶ Wild food plants
	▶ Water catchment
	▶ Potential to combine marine and terrestrial tourism
	▶ Ornamental fish
	▶ UNESCO Biosphere Reserve Status
Cultural	▶ Ethnic and cultural diversity (Boni, Somali, and Bajuni cultures)
	▶ Shrines
	▶ Historical sites

Major Issues of Concern

The major management issues of concern addressed in this are set out in the following sections:

1. Insecurity

The KBDCA is not safe for visitors as recent insecurity incidents attest. With poor security, tourism cannot grow nor can other social programmes be implemented successfully. The proposed expansion of tourism investment and use, particularly in Dodori and Boni National Reserves will be contingent on the security situation in the area, and must occur concomitantly with enhanced security operations. Security should therefore be prioritized to realize socio-economic advancement in the KBDCA.

2. Poaching

Poaching has decimated many wildlife species in the KBDCA. The most affected has been the elephant whose numbers have been reduced significantly such that they are rarely seen in the area and are even not regarded as key problem animals by the local communities. Enhancement of security operations is critical to control poaching in the area.

3. Lack of management presence in most parts of the KBDCA

KMNR is the only PA among the three KBDCA PAs that has a management structure. The other two have no management system making them vulnerable to uncontrolled resource use and illegal activities such as poaching.

4. Multiple land uses in the National Reserves

Land uses in the national reserves include fish harvesting and gathering wild fruits and honey. These activities require clear unambiguous controlled management to prevent over exploitation.

5. Land tenure conflicts, particularly in the KMNR islands

Thirty four (34) land titles and allotment letters have been issued for land on Kiwayu Island in the Kiunga Marine National Reserve. There has been misinterpretation of the gazette notice that established KMNR with land speculators saying that the islands are not included in the reserve as the gazette notice mentions waters of the Indian Ocean. However, the boundary clearly encompasses all the 51 islands and if there was intention to exclude the islands, then the boundary would have gone round each island in the KMNR. Hence these illegal titles should be revoked.

6. Poor infrastructure

Access roads to the KBDCA are in poor condition and they get worse particularly during the wet season. The terrestrial protected areas have no road network. This constrains PA management and is a disincentive for tourism investors. For tourism to grow and security to improve, a good road network to facilitate viewing and security patrols is needed.

7. Poor community participation in natural resource management

The local community at the KBDCA complains that they were not adequately consulted during the establishment of the National Reserves. Further, they claim that the national reserve status does not benefit them. Therefore, there is need to initiate a community conservation programme to involve the communities in the conservation of the KBDCA. Establishment of community conservancies and other tourism related ventures would be a good starting point.

8. Livestock incursion in DNR and BNR

Livestock incursion in the DNR and BNR is particularly high during droughts. Livestock is brought from the adjacent pastoralist Counties of Garissa, Wajir and Mandera. Livestock compete with wildlife for water and forage and displace some of the wildlife from the national reserves making them to invade adjacent farmlands in search of water and forage. Providing artificial water pans both inside and outside the PAs would mitigate this problem. Also, improving management of grazing pastures in pastoralist areas would also assist.

9. Lack of clear demarcation of the National Reserve Boundaries

Lack of clear boundary markers (e.g. cut lines or rock cairns, buoys for KMNRs marine part) along the PA boundaries is leading to increased encroachment by resource users. To control encroachment on the protected areas, PA boundaries should be surveyed and marked.

KBDCA Zonation Scheme

Introduction

The KBDCA Zoning scheme seeks to achieve two purposes which will significantly change how the area is conserved and managed. First, the area is divided into distinct management zones in accordance with the KWS sector management strategy, which aims to decentralise management in large conservation areas. Second, and most important, the area is divided into zones that meet the primary goal of the KBDCA (i.e. biodiversity conservation) and zones that spatially control allowed activities with defined activities permitted or prohibited from specified geographic areas. This second zoning system facilitates multiple uses to be carried out in the conservation area by separating potentially conflicting activities and providing for different intensities or levels of use to be practiced in separate areas. Broad zones are provided within the KBDCA as opposed to small isolated zones to facilitate understanding of the extent of zones and thereby ensure ease in implementation of the zoning scheme.

In developing the KBDCA zoning scheme, multiple use of natural resources is the key guiding principle that informed the zoning process. This provides for conservation and protection of the conservation values while also providing for the ecologically sustainable use of the area. Hence, while zoning the KBDCA, the following factors were considered; the physical and biological characteristics of the area including breeding and foraging areas for species of conservation concern and fish; community resource use patterns; tourism use areas; conflicts between different users e.g. fishing and tourism; and conflict between users and the environment.

The following section provides further details on the location and management structure for each of the three **management sectors**. Following on from this, details of the **resource use zones** are set out, including: an overview of the rationale behind their development and details of the activity prescriptions for each zone where applicable.

Management Sectors

The decentralisation of the KBDCA's management into three management sectors is in accordance with the wider KWS Sectoral Management Strategy for Conservation Areas, and aims to increase management presence and infrastructure development across the entire KBDCA. The Senior Warden (based at Mkokoni) will be the overall officer in charge of the KBDCA, while the sectors will be managed by PA Wardens based at sector headquarters (Mangai, Mkokoni, and Sangailu). Table 3 gives the KBDCA sectors and their administration centres while figure 2 shows the sectors.

Table 3: KBDCA Management Sectors and Administration Centres

Management sector	Headquarters	Proposed Warden rank	Ranger Outposts
▶ **KBDCA**	Mkokoni	Senior Warden	__
▶ **Kiunga MNR**	Mkokoni	WII	Kiwayu (new for revenue collection); Mwongo Sharif (WWF currently based here)
▶ **Dodori NR**	Mangai	WII	Kiangwe (HWC hotspot)
▶ **Boni NR**	Sangailu	WII	To be identified

Figure 2: KBDCA Management Sectors

Legend

- ◆ Villages
- — Roads
- Kiunga Marine National Reserve
- Boni National Reserve
- Dodori National Reserve
- Influence zones

Data source: Survey of Kenya
USAID-funded SECURE Project
Kenya Wildlife service
Map prepared by M. Wangari,
GIS Department, KWS

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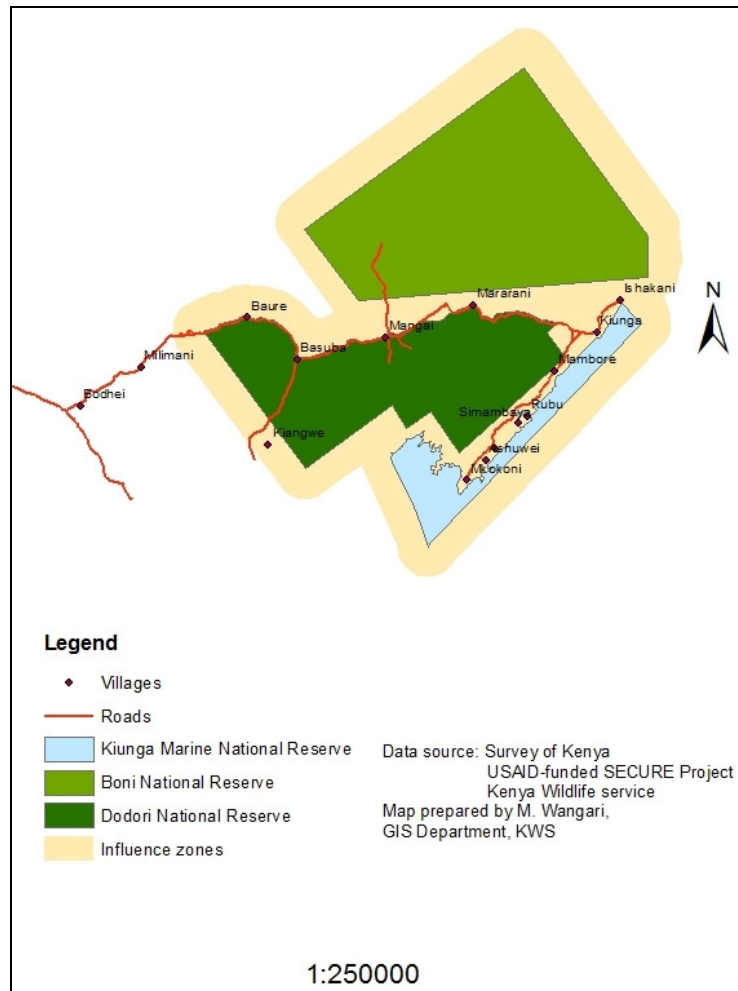
KBDCA Resource Use Zones

Five types of zones are used in this scheme to offer various levels of protection and use. These are:

- ▶ High Use Zone
- ▶ Low Use Zone
- ▶ Wilderness zone
- ▶ Restricted Use zone
- ▶ Influence zone

These five resource use zones have been developed to enable the degree and type of use to be managed spatially across the KBDCA, and to support the management objectives of KBDCA. This plan aims to increase and expand tourism investment and visitor use across the entire KBDCA, whilst ensuring the preservation of a high quality, relatively low density, wilderness-type visitor experience. As such, strict limits have been placed on the type and maximum bed capacity that can be developed in the HUZ, LUZ and WZ in order to preserve the quality of visitor experience.

Table 4 gives the percentage area covered by each Resource Use Zone in the KBDCA protected areas while figure 3 shows the use zones.

Table 4: The percentage area covered by each use zone in the KBDCA protected areas

National Reserve	Use Zone	Percentage
Boni National Reserve	Low Use	16%
	Wilderness	84%
Dodori National Reserve	High Use	20%
	Low Use	37%
	Wilderness	34%
	Restricted use	9%
Kiunga Marine National Reserve	High Use	45%
	Low Use	40%
	Restricted use	15%

Figure 3: KBDCA Resource Use Zones
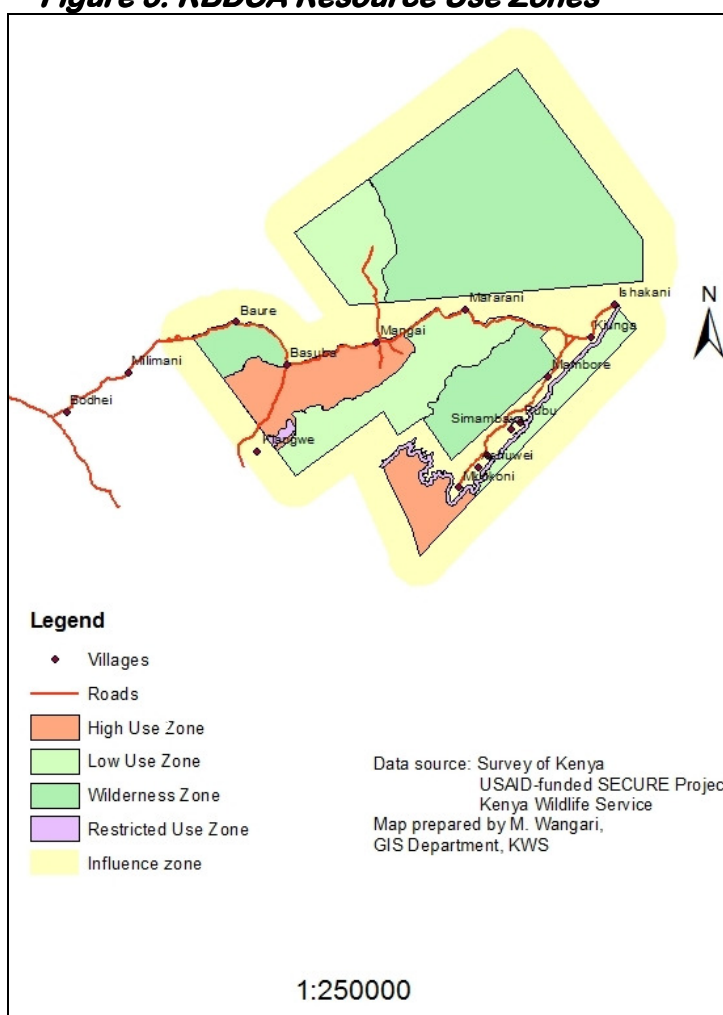
The five resource use zones, the activities allowed, and visitor accommodation facilities permitted are described in more detail in the following sections.

High Use Zone

This zone is established in areas capable of accommodating a broad range of opportunities for recreation and related facilities for visitor enjoyment, in ways that respect the natural landscape and the PA environment. HUZ services large volumes of tourists in a naturally scenic though substantially human altered environment. Tourism in the HUZ will be closely linked to motorized, high volume transportation on sea routes in the KMNR and viewing circuits in the DNR and BNR. Tourism in this zone involves the use and development of substantial infrastructure for visitor accommodation and transport. Adventure tourist activities associated with the HUZ include day trip boating and canoeing in KMNR; and walking safaris in the DNR and BNR. Tourist activities are expected to appeal to those tourists seeking a short duration outdoor oriented activity.

In the KBDCA this zone comprises areas that are currently used by visitors or have potential, because of tourist attractions found there, to be popular with visitors. Visitor facilities are currently located in this zone. In KMNR the HUZ is located around Kiwayu Island and Mkok-oni Village. Tourist facilities in this zone include Kiwayu Safari Village, Champali, and Munira camps. Kiwayu Island has been targeted by the Lamu Port South Sudan Ethiopia transport corridor (LAPSSET) project for development of a satellite resort site, with the main resort city being located at Mokowe. The targeted visitors will be those on circuit tours where the visitor experiences diverse activities in a short time. Hence, diverse tourist activities will be on offer in this area. In DNR and BNR this zone contains the highest concentration of large mammals in the KBDCA, which, combined with areas of open glades, presents the best opportunities for game viewing in the conservation area. However, in order to help ensure a quality experience, there is need to control Tsetse flies which are currently a nuisance to visitors. Figure 4 shows the location of the HUZ while specific activities allowed in this zone are set out in Table 5.

Figure 4: High Use Zone
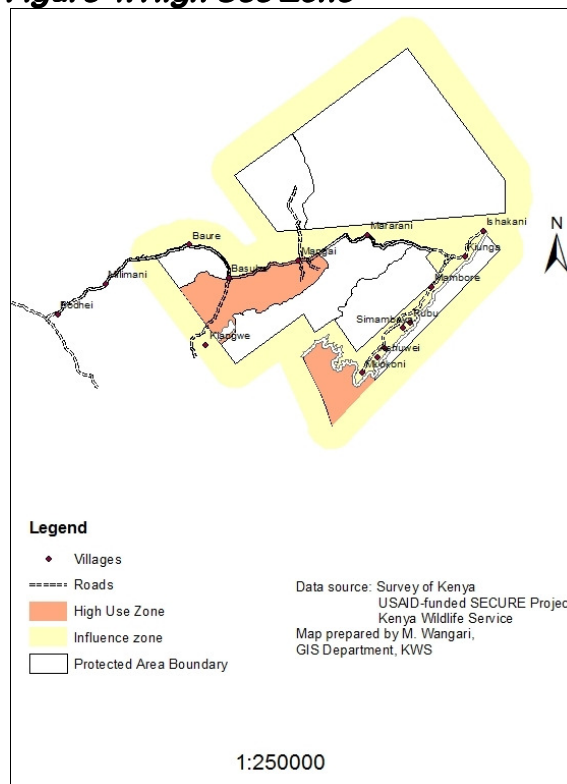
Table 5: High Use Zone: Visitor activity prescriptions

▶ **Game drives.** Along designated viewing circuits

▶ **Night game drives**. Along specified routes agreed between the operator and KBDCA management. Red/pink filters must be placed over spotlights. Visitors must return to their accommodation by 20.30. Subject to security considerations

▶ **Short walks**. Along specified routes agreed between operator and KBDCA management. No overnighting, except walks between existing permanent facilities (lodges or permanent tented camps).

▶ **Canopy walk. At** Kibokoni Lodge site

▶ **Catch and release fishing**. Along designated lengths of Mangai/Dodori River and Mkokoni-Kiwayu area. All fish caught to be released at same location.

▶ **Boat rides**. In the KMNR

▶ **Canoeing**. In the KMNR

▶ **Cultural tours-** organised by tour guides from the local community

Visitor accommodation prescriptions

This zone will contain the highest concentration of tourism accommodation in the KBDCA. However, in order to maintain low-impact tourism in the area, tourist accommodation facilities are restricted to eco-lodges or permanent tented camps, KWS self help Bandas, public campsites and special campsites (see Table 6 below).

Table 6: High Use Zone: Permitted tourism facility types and maximum size

Facility type	Maximum size
▶ Eco-lodges	60 beds
▶ Permanent tented camps	60 beds
▶ Special campsites	10 beds
▶ KWS self-help bandas	20
▶ Public campsites	-

Low Use Zone

The Low Use Zone (LUZ) is characterized by the provision of recreation experiences for low numbers of visitors in a quality natural environment. This zone is associated with motorized access and accommodation, but on a smaller scale and to a lesser intensity than in the HUZ. For example, LUZ's accommodation consist of small lodges with limited facilities. The rustic basics of comfort are provided but emphasis of the experience is still on the natural environment rather than the facilities themselves. Access in the LUZ is by air or viewing roads in BNR and DNR, and water in KMNR. However, the density of vehicles will be lower than in the HUZ.

This zone is represented in all three KBDCA protected areas. It comprises the wooded glades and some forested areas of BNR and DNR and the waters of the Indian Ocean north of Kiwayu in KMNR. The dispersal of tourism use into this zone will be encouraged by allow-

ing a variety of low impact tourist activities. Figure 5 shows the LUZ while specific activities allowed in this zone are set out in Table 7.

Figure 5: Low Use Zone
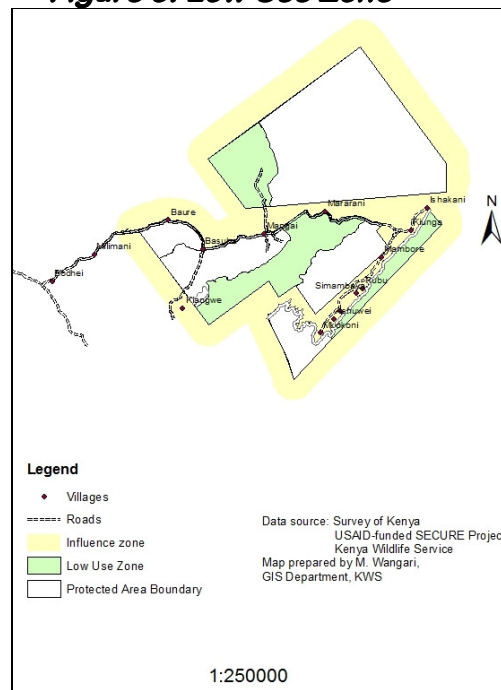
Table 7: Low Use Zone: Visitor activity prescriptions

- ▶ **Game drives.** In BNR and DNR
- ▶ **Walking safaris**. Along specified routes between permanent and/or temporary camps agreed between operator and KBDCA management.
- ▶ **Short walks**. Along specified routes agreed between operator and KBDCA management. No overnighting, except walks between existing permanent facilities (permanent tented camps or starbed camps).
- ▶ **Boating** in KMNR
- ▶ **Canoeing** in KMNR
- ▶ **Snorkelling** in KMNR
- ▶ **Coral reef exploration** in KMNR
- ▶ **Fish viewing using glass bottom boats** in KMNR

Visitor accommodation prescriptions

As shown in Table 8, the maximum size of tourism accommodation facilities permitted in the Low Use Zone is 30 beds lower than that established for the High Use Zone. This is designed to help spread visitors and use more widely across the zone, thereby providing a distinctive lower density tourism product than that on offer in the HUZ, and to protect the ecologically sensitive areas of the pristine forest.

Table 8: Low Use Zone: Permitted tourism facility types and maximum size

Facility type	Maximum size
▶ Eco-lodges	30 beds
▶ Permanent tented camps	30 beds
▶ Special campsites	10 beds
▶ Starbed camps	10 beds

Wilderness Zone

Wilderness is becoming rare in the country as some protected areas become over developed or experience high visitation. The wilderness character of the KDCA is a resource value that should be maintained to give the area an edge over the other well known tourist destinations in the country. The wilderness experience is particularly a preference for affluent visitors and it promises to play an increasingly important part in the future of KBDCA's tourism industry.

The Wilderness Zone covers large areas in DNR and BNR that are representative of the ecosystems of the two terrestrial protected areas. The zone provides a high quality wilderness experience in a pristine environment. This zone will be least developed and least accessible area of the KBDCA, and opportunities for traditional game viewing are extremely limited. There will be limited road network which will primarily be for administration of the KBDCA and security patrols. It is not anticipated that tourism use pressure will increase to levels of concern in this zone within the 10-year time horizon of this management plan. Figure 6 shows the location of the wilderness zone while tables 9 and 10 give the visitor activity prescriptions and accommodation prescriptions respectively.

Figure 6: Wilderness Zone
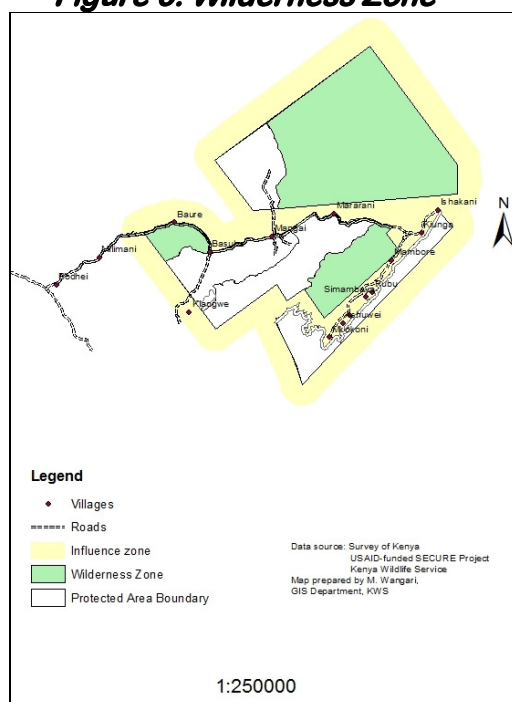
Table 9: Wilderness Zone: Visitor activity prescriptions

▶ **Short walks**. In open access areas, along specified routes agreed between operator and KBDCA management. No overnighting, except walks between existing permanent facilities (permanent tented camps or starbed camps).
▶ **Catch and release fishing**. Along designated lengths of river or lakes agreed between operator and KBDCA management. All fish caught to be released at same location.
▶ **Walking safaris**. Along specified routes between permanent and/or temporary camps agreed between operator and KBDCA management.
▶ **Photographic safaris**
▶ Motorized use is not permitted, but strictly controlled air access to remote areas will be permitted.

Table 10: Wilderness Zone: Visitor accommodation prescriptions

▶ Public campsites
▶ Special campsites
▶ Starbed

Restricted Use Zone

This zone is designed to protect and conserve biologically significant habitats. It is a 'no-take' area where extraction of natural resources is not allowed and activities that may harm plants or animals are prohibited (Table 11). In the KBDCA such areas include the fish breeding areas, the turtle nesting areas (Mkokoni, Kiwayu Safari Village, Kongowale, Ashuwei, and Mvundeni), the dugong foraging areas (Dodori creek) and bird breeding, feeding and nesting sites (Kitanga Kikuu, Kiunga Mwini, Chole, Mwongo Sharif, and Mtumwe). Intertidal zone of about 600 meters width from the high tide mark defines this zone in KMNR (Figure 7). Mangrove forests within KMNR and DNR are also included in this zone.

Figure 7: Restricted Use Zone
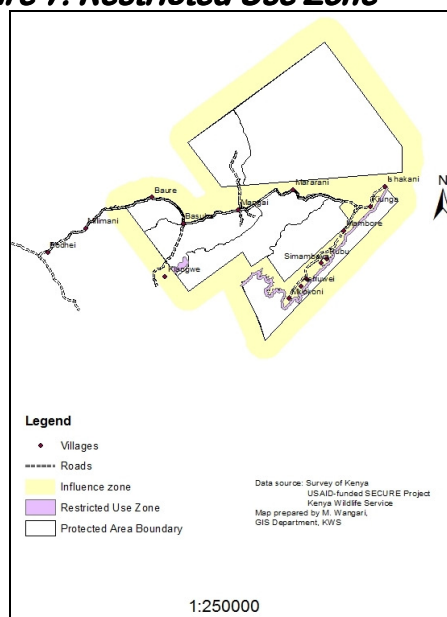
Table 11: Zone prescriptions

> ▶ Research and monitoring
> ▶ Non-consumptive uses only (i.e. low impact tourism activities related to research and moni-
> toring e.g. viewing nesting turtles and bird watching)
> ▶ No motorized access is permitted in this zone (transport will be by canoes or walking)

Influence zone

The influence zone comprises a 5 Kilometre-wide strip of land or water bordering the pro-
tected areas. This zone supports multiple uses of resources for community livelihood. The
community in this area have the highest interaction with the protected area; hence they
experience the highest human-wildlife conflicts. The main human activities in this zone in-
clude agriculture, fishing and honey harvesting. To improve PA-community interactions as
well as improve community livelihoods, this zone will be the focus for activities outlined in the
Community Partnership and Conservation Education Management Programme. Figure 8
shows the extent of the influence zone.

Figure 8: Influence Zone
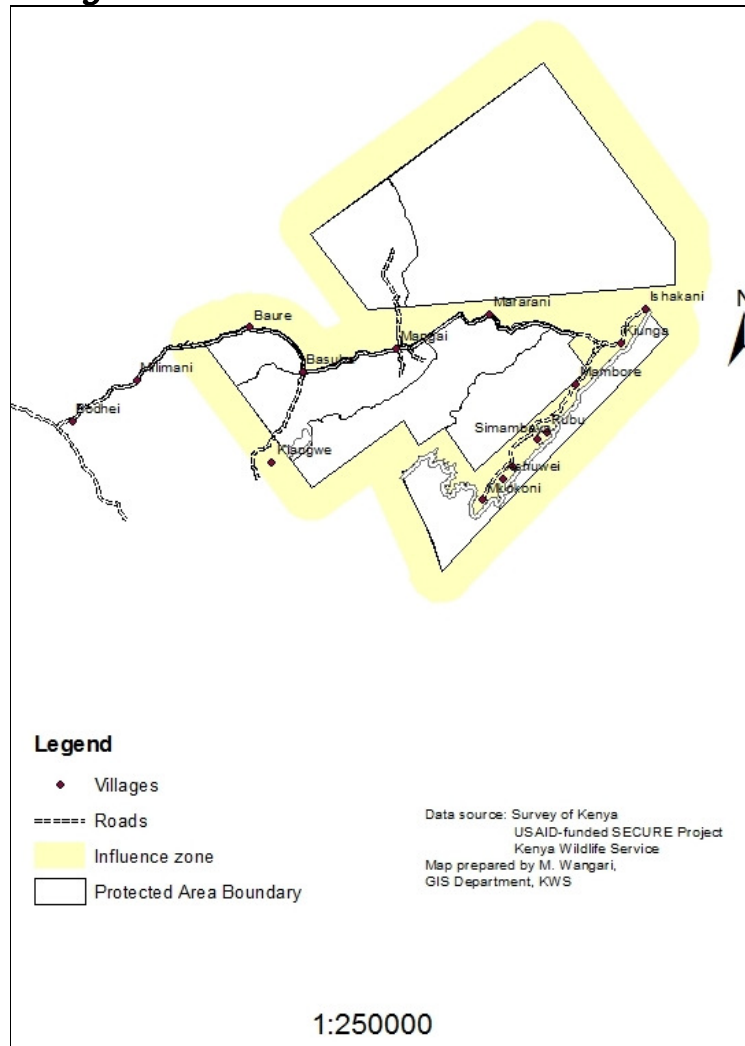
Ecological Management Programme

Programme Purpose and Strategy

The purpose of the Ecological Management Programme is to ensure that:

> The ecological components and processes of the KBDCA are understood, restored and conserved, and threats to the area's key ecological features are reduced

Over the past thirty years, the ecology of the KBDCA has altered considerably, with wildlife numbers being reduced mainly due to intense poaching pressure. Although poaching has now been greatly reduced and wildlife numbers are recovering (however, many populations remain vulnerable), other threats to the ecology of the KBDCA (such as illegal grazing, and expanding agriculture) are escalating, mainly as a result of increasing human population which is mainly dependent on agriculture. The KBDCA Ecological Management Programme aims to address the threats that are impacting on the most important ecological features and values of the KBDCA ecosystem and provide a guiding framework for the long-term ecological monitoring of the area.

Guiding Principles

The following sections set out the principles designed to guide KBDCA managers and stakeholders in the implementation of the Ecological Management Programme and the achievement of the Programme Purpose.

Enhancing wildlife species diversity

The KBDCA supports several terrestrial and marine species of conservation concern. Marine species of conservation concern include the Hawksbill (*Eretmochelys imbricata*) and the Leatherback (*Dermochelys coriacea*) which are both classified by IUCN Red List as Critically Endangered; and the Green (*Chelonia mydas*), Olive Ridley (*Lepidochelys olivacea*), and Loggerhead (*Caretta caretta*) that are listed as Endangered. In addition, the Dugong (*Dugong dugon*), a marine mammal occurs in the KBDCA marine component and it is classified by IUCN as being vulnerable, which indicates that they face a high-risk of extinction in the wild in the medium-term future. In addition, the Convention on Migratory Species (CMS) lists the dugong in its Appendix II, meaning that the conservation of the species would benefit from international cooperative activities organized across the Dugong's migratory range. To enhance wildlife species conservation, and particularly that of threatened species, management will focus on protecting these species to ensure that viable populations of these species are maintained in the KBDCA. This will involve implementing management actions that involve local communities in species monitoring and threat abatement species programmes.

Protecting and conserving critical habitats

Critical habitats in the KBDCA include mangrove forest, sea grass beds, coral reefs, coastal forests and grassland glades. Mangroves serve as a habitat for diverse terrestrial and aquatic flora and fauna, which play an important role in coastal socio-economics. Similarly, sea grass beds provide a habitat for many species of fish and marine invertebrates (echino-

derms, molluscs and crustaceans), many of which are of commercial importance. Sea grass beds are also the feeding grounds for endangered species such as the green turtle (*Chelonia mydas*), the hawksbill turtle (*Eretmochelys imbricata*) and the Dugong (*Dugong dugon*). On the other hand, coral reefs are valuable as tourist attractions and they are also important for fisheries. The coastal forests and associated glades support a wide variety of terrestrial animals some of which are threatened (e.g. elephants). Under this management programme, these habitats will be conserved through mitigating threats that could alter their integrity. Additionally, biodiversity assessments and monitoring will be carried out in these habitats to understand their composition and functioning.

Maintaining habitat connectivity with surrounding areas

Ecological connectivity of natural habitats in the landscape and seascape is critical for maintaining the structure and function of ecosystems. This connectivity enhances species survival by providing areas for animal migration and dispersal, foraging grounds and ensures resilient ecosystems with viable flora and fauna populations. Several species in the KBDCA such as, elephants and wild dogs depend not only on habitats within the area, but also on surrounding connected habitats. The ability of such species to disperse from the conservation area to surrounding habitats is important in completing their life cycles and biological processes. As such, ecological connectivity in the KBDCA will be provided through a set of dispersal corridors linking the protected terrestrial reserves (BNR and DNR) to ensure that all KBDCA components are geographically and ecologically linked. These corridors will be protected and maintained to offer adequate cover to support animal movement and thereby counter the effects of habitat fragmentation and isolation on wildlife.

Protecting and conserving wetland ecosystems

Rivers play a fundamental role in creating ecological connectivity in the KBDCA and the greater Lamu landscape and seascape. At the KBDCA, the Mangai/Dodori River is the only perennial source of fresh water in the Dodori Corridor and has played a crucial, life-sustaining role, particularly during droughts. The neighbouring villages of Basuba and Mararani obtain water from the Mangai/Dodori River. During dry spells, the River supplies water to places as far away as Kiunga, Milimani, and Baragoni, where it is transported in trucks. Under this management programme, management will endeavour to maintain natural hydrological cycles of river systems and associated fresh water wetlands (e.g. swamps) to ensure ecological integrity of the riparian system, where appropriate, in collaboration with other key stakeholders.

Monitoring ecological trends and threats to ecological integrity

Given the high and increasing human pressures the KBDCA is facing, the monitoring of trends in the status of the most important features of the KBDCA's ecology, and the major threats impacting, or with the potential to seriously impact, on these features is a high priority during the lifespan of this management plan. In addition, ecological monitoring will be designed and implemented in such a way as to provide a firm foundation for adaptive management and for measuring management effectiveness.

Targeting ecological management action

The PAPF prescribes the use of a simplified form of **The Nature Conservancy's (TNC) Conservation Action Planning (CAP)** process as a foundation for designing the PA plan's Ecological Management Programme. The rationale underlying this is that, with limited human and financial resources available to PA managers, it is impractical to attempt to manage and monitor every single aspect of the complex ecology of a protected area. The CAP methodology provides a mechanism for targeting ecological management, by identifying and developing an accurate definition and understanding of the PA's most important ecological features and their management needs, and the major threats to these features.

The PAPF identifies three main stages in applying the CAP methodology: 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 as well as to enhance the conservation targets. These key stages and their application in the KBDCA planning process are elaborated in the following sections.

Conservation targets

The first step of the CAP process is the definition of a small number (usually about eight) of **conservation targets** which represent and encapsulate the unique biodiversity contained within the conservation area. A comprehensive ecological definition and understanding of each of these targets is then achieved through the further identification of the "**key ecological attributes**" (KEAs), which are the ecological parameters upon which long-term survival of each conservation target depends. The nine KBDCA conservation targets, the rationale behind their selection, important subsidiary targets (i.e. other ecosystem components that share KEAs and threats with the conservation target concerned), and each of the KEAs for each target are set out in Table 12.

Threats to conservation targets

The comprehensive definition of conservation targets and their KEAs enables the identification of the "**threats**" to these targets and attributes, and the subsequent prioritisation of these threats according to their significance. A threat is defined as any factor, resulting either directly or indirectly from human activities, which has the potential to destroy, degrade or impair a conservation target during the 10-year lifespan of the PA plan. Table 13 shows the priority threats impacting or likely to impact on the KBDCA conservation targets and their KEAs.

Ecological management objectives and actions

The identification and ranking of the threats to the KBDCAs conservation targets and their KEAs provides the basis for the development of the Ecological Management Programme's management objectives and actions. Objectives have been developed to address the clusters of threats shown in Table 13. Three objectives have been developed addressing threats to the KBDCA's most important habitats (covering conservation targets: coral reefs, sea grass, mangroves, wetlands, and coastal forests; addressing threats to the KBDCA's species of conservation concern covering conservation targets:(sea turtles, dugongs, and elephants; and addressing research and monitoring needed to understand threats facing the targets. The three objectives developed for the KBDCA Ecological Management Programme are:

MO 1. Key habitats and important dispersal areas are managed and maintained
MO 2. KBDCA's species of conservation concern conserved
MO 3. KBDCA's ecological components and dynamics understood

These management objectives and their subsidiary management actions are described in detail in the sections below. Under each management objective there is a brief description of the relevant management issues and opportunities, which provides the specific context and justification for the management actions.

Table 12: Conservation targets

	Conserva-tion target	Rationale for selection	Important subsidiary targets	Key ecological attributes
Ecosystems	**Coral Reef**	• Breeding, feeding, sheltering grounds for fish • Shoreline protection • Tourism/recreation • Diverse ecosystem • Research potential	• Corals • Fish species • Octopus, lobsters • Sea turtles	• Water quality • Diversity and abundance of coral community (coral, fish, sea urchins • Coral community size and structure • Coral recruitment • Fish populations (Abundance and diversity)
	Mangrove forest	• Carbon sequestration • Shoreline protection • Important habitat for marine and terrestrial species • Source of livelihood • Nursery for marine species • Nutrient cycling • Filtering for pollutants	• Fish • Crustaceans • Molluscs • creeks (Wange, Dodori creeks) • migratory birds • Dugongs	• Water quality and sediment • Biomass) • Species composition and structure • Mangrove productivity
	Coastal forest	• Habitat for variety of fauna and flora • Carbon sequestration • Source of livelihood • Soil erosion control • Water catchment • Flood control	• Ader's duiker • Elephant shrew • Sunis, • Cycads • Elephant • Baobab • Birds	• Species composition and structure • Forest productivity • Abundance and occurrence of keystone species such as Ader's duikers, elephant shrews

	Conservation target	Rationale for selection	Important subsidiary targets	Key ecological attributes
Habitats	**Inland fresh water wet-lands**	• Source of fresh water for the ecosystem (Animals, • Source of livelihood (fisheries, agriculture, domestic use) • Nutrient recycling • Important habitat for wildlife especially migratory birds, hippos • IBA • Climate regulation	• Hippos • Migratory birds • Microphytes and Macrophytes • Fish	• Water quality and quantity • Percentage cover of macrophytes • Fish abundance • Abundance and diversity of Macro invertebrates • Ecosystem flows
	Forest grass-lands	• Important habitat for grazers and associated predators • Carbon sequestration • Water catchment	• Hirola • Coastal topi • Wild dogs • Lions	• Abundance and distribution of grazers and predators • Grass coverage and composition • Biomass • Connectivity between the hinterland and the coastline
Species	**Elephant**	• Keystone species for KBDCA • Endangered species • Threatened by poaching	• Ader's duiker • Elephant shrew • Boni elephant shrew • Coastal topi • Wild dogs	• Forest cover and structure • Grassland cover • Population size and structure • Surface water availability
	Sea turtles	• Endangered • Fishing pressure and entanglement in fishing nets • Flagship species • Loss of nesting grounds	• Sea grass • Corals • Dugong • Mangroves	• Species diversity • Number and distribution of nesting sites • Hatching success • Population size and structure • Extent and distribution of sea grass beds
	Marine mammals	• Important remnant habitat for dugongs • Indicator species for a healthy ecosystem • Understudied • Ecotourism potential	• Sea grass • Fish stock	• Population size and distribution • Population size and structure
	Migratory birds	• Important nesting and breeding sites • Important stop over for migratory birds • Undisturbed habitats	• Mangroves • Intertidal areas • Sand dunes • Islands • Coastal forest • Fresh water bodies • Grasslands	• Species diversity • Availability of food • population size

Table 13: Threats to Conservation Targets Matrix

TARGETS / THREATS	Mangrove	Coral reef	Coastal forest	Inland fresh water wetlands	Forest grass-lands	Elephants	Sea turtles	Marine mammals	Migratory birds
Proposed Lamu Port development/dredging	High	Very high					Low	Medium	Low
Illegal logging	High	Low	Very high	Medium		Medium			Very high
Sedimentation/Siltation	High	High		High			Medium	Medium	
Climate change	Low	Low	Low	Low	Low		Low	Low	Low
Tourism development pressure		Low					Low		Low
Maritime and industrial pollution	Low	Low					Low	Low	Low
Fishing		High		High			Medium	Medium	
Oil and gas exploration	Low	Low	Low	Low	Low	Low	Low	Low	Low
Conflicting sector policies	High		High		High	High	High	High	High
Un-prescribed fires			High		Medium				
Lack of land use planning			High	High	Medium	Medium			
Uncontrolled harvesting of natural resources(forest and marine products)	Medium	Medium	Very high				Medium	Medium	Medium
Invasive species		Low	Low		Very high				
Over abstraction of fresh water resources				Very high					
Catchment degradation				High					
Beach development/erosion							Very high		
Blockage of migratory routes						Very high	Medium	Low	
Ship traffic								Medium	
Livestock incursion				Low	Low	Low			

TARGETS THREATS	Mangrove	Coral reef	Coastal forest	Inland fresh water wetlands	Forest grass-lands	Elephants	Sea turtles	Marine mammals	Migratory birds
Prolonged drought				Very high		Medium			
Poaching						Very High			
Human-wildlife conflict						Low			

Management Objectives and Actions

Objective 1: KBDCA's key habitats (marine and terrestrial) and important dispersal areas are conserved

The desired future state that this objective aims to achieve is one where the management of key habitats within the KBDCA is improved to protect and maintain the mosaic of habitats that support diverse wildlife species, which in turn support community livelihoods. The KBDCA marine and terrestrial ecosystems are home to a host of a wide variety of species ranging from tiny planktons that comprise the base of the marine food web (i.e., phytoplankton and zooplankton) to large mammals like the elephants and buffaloes in the terrestrial PAs, and medium sized marine species like the threatened sea turtles and the Dugongs. Birds are also plentiful and due to their high congregation, the area has been recognised as an Important Bird Area (IBA) by Bird Life international.

The livelihood of the KBDCA's local community is dependent on goods and services provided by the diverse habitats in the conservation area. Marine fish are critical to food security, which forms the main economic activity for the KBDCA residents living along the Indian Ocean shoreline and adjacent islands. Similarly, the local community along the "Dodori corridor" is dependent on forest resources for food and income from non-wood forest products like honey.

However, KBDCA's habitats (coral reefs, sea grass beds, mangrove and coastal forests, and wetlands) face many threats including coral bleaching and destructive fishing practices in KMNR, and illegal logging and livestock incursion in BNR and DNR. This objective has therefore been designed to address these and other threats to ensure that ecological integrity of these habitats is maintained. The management actions that will be implemented to realize this objective are elaborated in the following sections.

Action 1.1: Monitor coral reef resilience

The coral reefs of KBDCA are found within the Kiunga Marine National Reserve (KMNR). They are comprised of mainly patch reefs, with fringing reef in the northern part. These reefs are home to over 50 genera (4 of which are globally-rare), 150 identified coral species, as well as over three hundred species of fish[1]. The coral biodiversity hotspots are Simbabaya ledge (Chongo cha Kui), a deep reef, and shallow reefs subject to high currents, such as Kui and Mlango Bomani.

Coral reefs within and adjacent to the reserve are integral to the lifestyle of village communities along the shoreline, with fishing being an important source of income and also daily sustenance. The coral reef environments are particularly important to the lobster, hand line and seine net fishers. Coral reef resources within KMNR are critical to the survival of the human and marine animal populations, but are currently threatened. Many species are probably being over-exploited and careless collection methods have led to serious habitat damage.

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[1] http://www.reefresilience.org/Toolkit_Coral/C8_Kenya.html

Key threats to the coral reef include destructive fishing practices and overfishing both of which can cause damage to coral reefs by changing the community structure from one dominated by coral and herbivorous fishes to one dominated by sea urchins. Within the KMNR, use by the tourism sector may pose a danger to coral reefs through breakage of coral by novice snorkelers.

Since 2008, coral reef resilience has been monitored by KWS and its partners based on a resilience monitoring methodology developed by the IUCN Climate Change and Coral Reefs Working Group[2]. Indicators monitored include coral size class, herbivorous fish populations, coral condition and other wider resilience indicators such as oceanographic, anthropogenic and ecological factors[3]. In order to provide scientific information to guide management interventions and also critical information on the status of key ecological processes that are essential for maintaining coral reef resilience, KWS research scientists will work closely with WWF and other researchers in mapping the coral reef ecosystems of the KMNR and compile and analyse all coral reef monitoring data to establish the trends and status of the coral reef ecosystem. This information will be shared with KMNR managers to inform management decisions regarding coral conservation.

Action 1.2: Initiate coral transplantation to mitigate impacts of coral damage at Lamu port development area

The Government of Kenya through the Ministry of Transport is building a port at Manda Bay in Lamu. One of the expected impacts of this project is coral damage as a result of dredging. Hence, to ensure that samples of coral biodiversity at the dredging site is not lost, KBDCA management will work closely with the Kenya Ports authority in transplanting corals from port construction area to Kiunga Marine National Reserve (KMNR). However, before transplantation, an ecological assessment will be carried out in the KMNR to identify suitable sites for transplantation of the Manda bay corals. Thereafter, adequate transplants of coral species that will survive at the relocation site will be acquired from the areas that will be affected by the port development.

Action 1.3: Mitigate threats to sea-grass beds

The major threat to sea-grass beds comes from excessive sedimentation of shallow coastal waters resulting from the erosion of coastal agricultural lands. Increased turbidity of ocean waters reduces light penetration and sea-grasses cannot flourish under such conditions. Outbreak of sea urchin (*Tripneustis gratilla)* is another threat that negatively impacts on sea-grass beds. Further, artisanal fishing and commercial trawling activities often concentrate on sea-grass beds. However, although sea-grass beds of KMNR have not been negatively impacted by the above threats over the past, it is expected that the proposed Lamu port development and increasing cultivation along Mangai River, which drains near the southern boundary of the KMNR could result in impacts that would threaten the integrity of the sea grass habitat. As such, KBDCA Management will endeavour to promote good land management practices in the Dodori corridor to avert erosion impacts on sea grass beds as well as coral reefs. Fishing, including trawling, will be regulated especially in the marine reserve.

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[2] Obura, D.O. and Grimsdith, G. (2009). *Resilience Assessment of coral reefs– Assessment protocol for coral reefs, focusing on coral bleaching and thermal stress.* IUCN working group on Climate Change and Coral Reefs. IUCN, Gland, Switzerland. 70 pages.
[3] http://www.reefresilience.org/Toolkit_Coral/C8_Kenya.html

Action 1.4: Conduct research on the ecology of sea grass beds

Information on the KMNR sea grass beds is scanty since research on this critical habitat has not been conducted widely. As a result, the status and trends of sea grass distribution in the area will be assessed and monitoring of marine water and sediment quality carried out to ensure sea grass habitat is protected.

Action 1.5: Collaborate with KFS and the local community to establish a co-management mechanism for the mangroves

The coast north of Lamu is estimated to harbour approximately 60% of Kenyan mangroves with a large proportion of these northern stands occurring in KMNR. The KBDCA mangroves are generally in excellent to pristine condition. These mangroves are also allegedly the most productive mangrove forests in Kenya, and in view of their high potential productivity and regeneration, they have high prospects for sustainable exploitation. In addition, these mangroves support a high diversity of fauna (crustaceans, molluscs, migratory birds, fish, reptiles etc) and associated flora. They also provide a wide array of goods and services to KBDCA communities and protect shorelines from erosion. On the other hand, the mangroves are also important areas for migrating bird species due to the availability of feeding and roosting sites. However, the KBDCA mangroves face human-related threats such as illegal logging, particularly in areas outside the protected areas. Mangroves are used by the community for construction of houses by those villages that are located in close proximity to the mangroves such as Kiangwe, Mwathi, Kiduruni, Vumbe, Chandani, and Kijembe. Contrary to normal practices, the mangroves are mainly exploited by people from outside the KBDCA for commercial interests contrary to the institutionalized and regulatory procedures of harvesting mangroves. Consequently, according to the residents, the mangroves along the Dodori Creek are depleting rapidly, despite restrictions by KWS.

Therefore, to ensure that mangroves are sustainably conserved, KBDCA management will liaise with KFS and the local mangrove users in rezoning the restricted use zone to provide for a productive mangrove sub zone (where sustainable harvesting can be allowed) and a non-productive mangrove sub-zone (where harvesting is not allowed). This rezoning will still maintain a closed subzone in areas that are breeding areas for marine fauna, and particularly breeding areas of species of special concern e.g. migratory bird species. Further, awareness will be created on the impacts of uncontrolled logging on the mangroves ecosystem. In addition, under the Community Partnership and Conservation Education Programme, local communities will be encouraged to form Community Forest Associations (CFAs) to co-manage specific mangrove sections.

Action 1.6: Carry out a land use/cover study for the KBDCA

Land use and land cover maps are useful tools for managers who are responsible for conserving and protecting expansive and remote forest ecosystems such as the KBDCA. Maps help the manager to better understand the impacts of human activities on the forest and consequently, timely and appropriate intervention measures can be taken to minimize threats. Currently, an updated land use/land cover for the KBDCA is lacking. Consequently, to ensure that KBDCA managers are aware of the impacts of land use changes in the conservation area, a land use/cover study will be carried out. Towards this, historical and current satellite images will be procured and interpreted to discern land use/ cover changes that have occurred in the area in the last two decades when agriculture is said to have increased in the area. This information will provide insights on the land use/cover trends that will help managers to design measures to counter any negative trends detected.

Action 1.7: Liaise with the Water Resources Management Authority (WRMA) in the management of water bodies and establishment of artificial water sources for wildlife

KBDCA's wildlife species depend on the rivers, lakes and swamps in the KBDCA for their drinking water. However, irrigated farming is expanding in the KBDCA adjacent areas and this has potential of denying wildlife access to their traditional water sources. Cultivation along Mangai River, the largest river in the area, could reduce water flow downstream, in DNR, with serious and irreversible consequences on wildlife populations, and particularly species that are water dependent such as elephants. On the other hand, indiscriminate mining of construction-grade sand is causing turbidity in Mangai River thereby damaging fisheries. To protect these critical wetlands, KBDCA will work closely with WRMA to enforce water rules and ensure that human activities do not pollute or degrade wetlands and fresh water ecosystems. Awareness will also be created to the communities to protect and use the wetlands and fresh water ecosystems on a sustainable basis. In addition, since it has been observed that a large number of wildlife die during drought when water is scarce and during which livestock incursion in the national reserves is at its peak, artificial water bodies will be established both inside and outside the PAs to mitigate wildlife loss during drought.

Action 1.8: Secure wildlife corridors and dispersal areas

Habitat loss and fragmentation is the greatest threat to biodiversity which poses severe biological consequence to species and population. The loss or fragmentation of wildlife habitats reduces the area for wildlife use, and disrupts dispersion and migration patterns. Currently, the wildlife migratory patterns in the KBDCA are not threatened partly because the community areas are sparsely populated and human activities in the landscape are not extensive. However, incompatible land uses and activities (e.g. agriculture) in wildlife dispersal areas, particularly around the villages along the Hindi-Kiunga road and Kiangwe areas is increasing. To address the threat posed by expansion of agriculture, KBDCA management will collaborate with local communities in identifying and protecting wildlife corridors through establishment of viable wildlife conservancies (see action 3.1 under the Community Partnership and Conservation Education Programme). However, under this action KBDCA researchers will work closely with the local communities in identifying, mapping and assessing the feasibility of critical wildlife migratory routes. The identification of the corridors will be carried out in the context of a comprehensive integrated land use planning process in the community land. This planning process will identify the best land use options for different areas and zone the land according to land suitability for different land uses.

Action 1.9: Carry out a study on impacts of livestock in the KBDCA protected areas

Seasonal livestock grazing in Dodori and Boni National Reserves is a major problem in the KBDCA as livestock is brought in large numbers from the adjacent pastoralist counties of Garissa, Wajir and Mandera. Impacts of livestock grazing on the KBDCA's conservation include overgrazing that lead to changes in vegetation structure and composition, and displacement of wildlife by livestock. To address this problem law enforcement efforts complemented by awareness raising and building relationships with KBDCA-adjacent communities will be used. In addition, to inform the education and awareness raising activity, a study on impacts of livestock incursions on the vegetation structure and composition of habitats in the KBDCA will be carried out.

> ## Action 1.10: Carry out an assessment of alien and invasive species in the KBDCA protected areas

Alien and invasive species management is vital for retaining indigenous flora values of the KBDCA. The distribution and abundance of invasive species across the KBDCA is not currently well understood. As such, it is essential that the potential threat of alien species is mitigated before it becomes a major issue, and before it requires significant investment in time and resources to combat. Therefore, as a first step to understand the nature and extent of this problem, a study will be conducted to provide information on the status of alien and invasive species in the KBDCA. Once the invading species and their distribution is known, environmentally friendly control measures will be implemented.

> ## Action 1.11: Implement measures to control pollution of sea waters and beaches

Improper disposal of solid waste and discharge of sewage from the villages around the KMNR causes environmental degradation and health risks. Solid waste and waste water disposal from the villages located within and adjacent to the KMNR is poor. Waste water systems, such as the latrines in the villages, are not controlled and either discharge directly into the sea or the ground water aquifers, which supply domestic water to the community. At the same time, waste disposal by tourism facilities is not monitored. In general, there exists no formal waste monitoring programme for either the tourist facilities within and adjacent to the KMNR. On the other hand, with the proposed Lamu port development, increased sea traffic will ensue and more vessels will visit the port and the marine reserve. Oil spills associated with these vessels will therefore impact negatively on the marine resources and thus the need to put in place and enforce waste disposal regulations. Further, non-biodegradable marine debris (e.g. flip flops, plastic bags, nylon fish nets, polystyrene objects and hard plastic water bottles) pose a threat to the animals that depend on the oceans for food. These debris, when washed ashore, degrade some of the key turtle nesting beaches. In view of the foregoing, under this management action, the KBDCA management will work closely with NEMA to ensure that all facilities, vessels and individuals observe waste disposal protocols as stipulated in the Environmental Management and Coordination Act (EMCA), 1999. A comprehensive system identifying all sources of pollution into the KBDCA as well as assessing the impacts and extent of waste pollution on the marine ecosystems will also be designed. KBDCA management will also work closely with the local community in carrying out regular beach cleaning campaigns to remove all non-biodegradable debris from the KBDCA beaches.

Objective 2: KBDCA species of conservation concern conserved

The future desired state at the KBDCA is where populations of species of conservation concern are increasing. The KBDCA hosts several species that have been listed by IUCN, CITES and CMS. For instance, five of the seven sea turtle species that range in the Western Indian Ocean are found within the KMNR and adjacent areas and all are on the IUCN Red List for threatened species. The Hawksbill (*Eretmochelys imbricata*) and the Leatherback (*Dermochelys coriacea*) are both categorised as Critically Endangered; the Green (*Chelonia mydas*), Olive Ridley (*Lepidochelys olivacea*), and Loggerhead (*Caretta caretta*) are listed as Endangered. They are also on Appendix 1 of CITES which means that international trade in live specimens or their products, such as carapaces and oil, is prohibited. Three among

these species - Green turtle, Hawksbill and Olive ridley breed in the area and the other two -Loggerhead and Leatherback have been reported to feed here. Fisheries (both artisanal and commercial fisheries) and poaching of nesting females (for meat and oil) and their nests (eggs)are thought to pose the most important threat to sea turtles in the area. On the other hand, a marine mammal, the Dugong (*Dugong dugon*), occurs in the KMNR and adjacent areas and it is classified by IUCN Red List Category & Criteria as being vulnerable, which indicates that they face a high-risk of extinction in the wild in the medium-term future. The CMS also lists the Dugong *(Dugong dugon)* in its Appendix II, meaning that the conservation of the species would benefit from international cooperative activities organized across the Dugong's migratory range. Their numbers in the KBDCA have declined significantly such that only one Dugong allegedly lives in the Dodori creek, Wange area. This is a non viable number, and unless well co-ordinated Dugong conservation and management measures are put in place, the Dugong of the KBDCA may become extinct.

Moreover, the KBDCA Recent research activities by the Zoological Society of London (ZSL) and KWS, with partners WWF and Whitley Wildlife Conservation Trust, in the Boni and Dodori national Reserves have revealed existence of rare and endangered species in the terrestrial part of the conservation are. The forests harbour unique and rare species such as the African elephant *(Loxodanta africana),* African wild-dogs (*Lycaon pictus*), leopards (*Panthera pardus*) and forest antelopes. The area also hosts globally threatened species like Aders' duiker (*Cephalophus adersi*), which is endemic to the coastal forests of east Africa, and the golden rumped sengi (*Rhynchocyon chrysopygus*). The major threat to these species is habitat conversion and poaching. The future desired state of the KBDCA is therefore where populations of threatened species are increasing. This management objective has therefore been designed to realise this state by ensuring that threats to threatened species are abated. The management actions that will be implemented to realise this objective are elaborated in the following sections.

Action 2.1: Improve the KWS/WWF sea turtle nesting monitoring programme

Sea turtles of KMNR are faced with numerous threats that are impacting their survival. The major threats to these turtles are: incidental capture and drowning in shrimp trawls, gillnets and other fishing gears; illegal exploitation for eggs, meat and oil; loss and degradation of nesting and foraging areas by marine debris; and predation of the nests by porcupines and baboons. In addition, many turtle nests below the high water mark become infertile if inundated by water. To address these problems KWS and WWF have been collaborating in a sea turtle nesting monitoring programme since 1997. The monitoring programme involves providing incentives to local community members for nests discovered and protected throughout a nesting season. Nesting beaches are at Chandani, Kongowale, Kiunga mwini, Mwanabule, Mtunumwe, Mongo Shariff, Mongomi (Kiunga), and Kiwayu.The project is working closely with local fisher groups in promoting sustainable fisheries, for example, using proper mesh size nets. To ensure that the turtle nesting monitoring programme is sustainable, KWS will continue its support to the current incentive programme as it engages the community in developing income generating projects (e.g. eco-tourism) that can improve community livelihoods. Turtle monitors will be assisted in forming a self help group which will be supported to establish an eco-tourism related community project. Moreover, the turtle monitors will be equipped with communication radios, where practicable, to ensure efficient transmission of monitoring information.

Action 2.2: Train sea turtle monitors from the local community

As mentioned above (action 2.1) the community has been actively involved in an ongoing monitoring of marine turtles and their habitats. However, there is need to continuously train monitors to ensure that all are using standardized methods. In view of this KWS and WWF will train monitors from the local community, KWS rangers, and local tour guides in sea turtle monitoring. This training will be carried out through workshops and on-beach, practical training to equip monitors with skills in: sea turtle species identification, on-beach signs of nesting activity, foot patrol techniques, nesting response and reporting requirements, marking a nest, prevention of impacts to nesting turtle, nests, eggs and hatchlings, signage requirements of on-going monitoring within a project site, stranded sea turtle and marine mammal response and reporting requirements, and daily monitoring log requirements. This monitoring information is expected to support KBDCA management in making decisions on recreational and protection management.

Action 2.3: Use zoning schemes to protect critical sea turtle nesting and foraging sites

The KBDCA zoning scheme has set aside the 30m swathe of terrestrial land, in KMNR, from the high tide mark and 600 metres from the high tide mark into the ocean waters of KMNR as a restricted use zone in order to protect breeding and foraging areas of marine animals. However, use of this zone by the marine animals is not uniform as there are areas that are preferred by specific species for breeding or foraging. For instance, the Kiunga/Ishakani, Mkokoni and Kiwayu sea grass beds are known to be foraging sites for sea turtles. However, since these sites are used for fishing the turtles are trapped and drowned in the gill nets set in these areas. Hence, to ensure that critical nesting and foraging sites of turtles are protected, the restricted use zones will be rezoned to ensure that critical sites are completely devoid of human activities that may impact on the sea turtles. To support rezoning, spatial data from the turtle tagging programme will be analysed and ground-truthed with assistance from the local fishing community to determine the critical breeding and feeding sites. Therefore, the identified sites will be rezoned as sanctuary zones where only research and monitoring activities will be allowed. This is expected to lead to reduction in the number of sea turtles trapped and killed in fishing nets within the KMNR and an increase in the number of resident feeding sea turtles.

Action 2.4: Raise the awareness of marine turtle conservation needs at local and national levels

To gain support for sea turtle conservation at the local and national levels requires that the public is made aware of the importance of these turtles, threats facing them, and what the public can do to protect turtles. Hence, KWS and its partners will enhance the turtle awareness and education programme by ensuring ecological information on turtles is included in KBDCA publicity and educational materials that will be developed under Action 3.2 of the Tourism Development and management Programme. In addition, the beach cleanup events that will be organised under action 1.11 of this programme will be used as forums to educate participants on the conservation of sea turtles. And to gain support from tourists, KBDCA management will include viewing turtle nesting as one of the tourist activities in the KMNR.

Action 2.5: Carry out a survey of dugong in the KMNR and adjacent areas

The critical habitats for Dugongs in the KBDCA are believed to be outside KMNR, within the Dodori and Mongoni Creeks and the Siyu Channel. The main threats to Dugongs are entanglement in gillnets, destruction of sea grass beds by prawn trawlers and harvesting for meat and medicine. Therefore, to enhance Dugong conservation detailed surveys will be carried out to determine the actual status of dugongs in the KBDCA. If the survey concludes that Dugongs occupy the area, individual animals will be identified and satellite-tagged to monitor habitat preference and movements. Further, if a viable population is discovered a dugong sanctuary at an identified dugong location will be established. In addition, KBDCA management will sensitize the local communities on the status of the Dugong and seek community support for conservation of this species. KBDCA management will also collaborate with researchers in the region, in the review, planning and implementation of dugong conservation strategies.

Action 2.6: Establish a bird monitoring programme in the KMNR

The offshore islands of KMNR are home to important seabird colonies. In addition, the micro-benthic fauna of mud and sand flats along the coastline form the basis of the food web for many shore and migratory birds. Mudflats are important areas for migrating bird species, including African spoonbills (*Platalea alba*), pelicans (*Pelecanus onocrotalus*) and greater flamingos (*Phoenicopterus ruber*) due to the availability of food and the adjacent roosting sights in mangroves. The most important bird species include the White-cheeked tern (*Sterna repressa*), Bridled tern (*S. anaethetus*), and Roseate tern (*S. dongallii*) and the Sooty gull *(Larus hemprichii)*. KMNR has the world's largest roseate tern breeding colony with an estimated 8,000-10,000 pairs. White pelicans (*Pelecanus onocrotalus)* breed in the mangroves. Hence, to ensure that birds and their habitats are protected, this plan has included a restricted use zone in the zonation scheme which sets aside the mangroves, the uninhabited islands, a 30m wide strip of land from the high tide mark, and 600m from the low tide mark into the sea. This restricted use zone not only protects bird habitats, but also protects fish and turtle breeding areas.

Moreover, local fishermen are known to collect seabirds' eggs and this impact negatively on the bird populations[4]. Hence, KBDCA researchers will create awareness and educate the local fishing community so that the collection of bird eggs is stopped. And to increase the understanding of the status and trends of bird species in the KMNR, which is listed as an Important Bird Area (IBA), KWS will collaborate with the National Museums of Kenya in establishing a bird monitoring programme in the KMNR.

Action 2.7: Establish an elephant monitoring programme

In the 1980s and 1990s the KBDCA elephant population experienced immense poaching pressure and declined significantly, such that KBDCA elephant population is estimated to be 150 down from thousands in the 1970s. A lull in poaching was experienced in the area from the late 1990s due to anti-poaching operations and lack of market for ivory. However, a resurgence in elephant poaching, which is currently being experienced in all elephant ecosystems in the country, is a major threat that needs to be addressed.

Little monitoring or research has been undertaken on the KBDCA elephant populations and the population dynamics, distribution and trends over the long-term are not well understood.

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[4] http://www.birdlife.org

As such, an elephant monitoring programme based on methodologies used to estimate elephant numbers in forest ecosystems will be established. The monitoring information will provide a baseline for assessing the effectiveness of the management actions focusing on protecting elephants and for improving management responses to changing conditions and threats.

Action 2.8: Carry out a study on elephant movement in the greater KBDCA

KBDCA elephant population migrates seasonally between BNR and DNR through the settled non protected area (Dodori Corridor) separating the two national reserves. The KBDCA elephants range also includes Lag Badana-Bushbush National Park (in Somalia), which borders Boni National Reserve. KBDCA elephants are also said to disperse to adjacent community land in Boni and Lungi forests and beyond. However, the extent of the elephant range and movement patterns are least understood as the KBDCA elephants have not been studied. Hence, under this management action, KWS and its partners will collaborate in carrying out an elephant movement study to monitor elephant ranging patterns both in and out of the KBDCA protected areas, in Lamu county and adjacent Counties, and across the international boundary between Kenya and Somalia. In regard to this, several elephants from the KBDCA elephant herds will be fitted with Global Positioning System (GPS) collars and tracked for two years to help discern the migration paths, wildlife corridors, and preferred habitats. This information will be used to inform land use planning in the KBDCA elephant range to minimize human-elephant conflicts.

Action 2.9: Establish a functional Area Elephant Management Committee for the greater KBDCA in line with the National Elephant Conservation and Management Strategy

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To ensure that elephant issues in the greater KBDCA are addressed in a coordinated manner, and thereby contribute to the achievement of the overall goals of the National Elephant Conservation and Management Strategy, all relevant elephant stakeholders (private sector, NGO partners, donors, county governments and communities) in the greater KBDCA will be required to work together under a well coordinated and managed system. In this regard, KBDCA management will liaise with the KWS Elephant Programme Coordinator in establishing an Area Elephant Management Committee, which will oversee elephant security, research and monitoring, and human-elephant conflict resolution activities in the area. The Committee will comprise of KWS and its partners including WWF, Lamu Conservancy, Kipini Conservancy, among others. The committee will be meeting regularly to discuss and make decisions on the aforementioned elephant issues in the KBDCA.

Objective 3: KBDCA's ecological components and dynamics understood and scientific information disseminated

The future desired state for the KBDCA is where the area's biological diversity and factors affecting it are well understood to ensure that management of ecological resources is based on sound information. Research activities in the KBDCA have been hampered by inaccessibility and insecurity reasons; hence little information exists that can support informed management decisions. In addition, KWS has no research presence at the KBDCA meaning that KBDCA management has to rely on other stakeholders for scientific information to support planning and management decisions. Due to lack of clear collaborative mechanisms be-

tween the research stakeholders and KWS, request for information can be denied or it can take a long time before the information is provided. It is expected that once security and accessibility problems are resolved through the expected implementation of this plan, a lot of interest for conducting research will arise. This objective has therefore been designed to streamline wildlife related research and dissemination of research outputs by research stakeholders. The management actions that will be implemented to realize this objective are outlined in the following sections.

Action 3.1: Assess and prioritize research needs

Lack of research prioritization often leads to too much research that does not successfully contribute to effective management. To prevent such a scenario from arising in KBDCA, an assessment of research needs for the area will be done and an inventory developed. All the areas of research needs will be identified and prioritized to guide researchers conducting studies geared towards addressing ecological challenges on priority basis. This inventory will then be disseminated widely to public and private research and educational institutions to guide them in identifying areas of their research interest that will be valuable to KBDCA management.

Action 3.2: Establish a research database for KBDCA

Considerable research has been carried out on the ecological components of the KMNR but not much has been done for the other two terrestrial protected areas (BNR and DNR). To ensure that research information is available to KBDCA managers, a comprehensive research database comprising historical as well as ongoing research outputs will be established at Mkokoni Station. As a first step, an annotated bibliography of all research work that has been carried out in the conservation area will be done. Efforts will then be made to solicit for the outputs (research papers, documents and data) that are not readily available to the public. In particular, long term ecological monitoring data from the WWF will be solicited to establish baseline ecosystem-data that will be up dated continuously.

Action 3.3: Conduct a comprehensive biodiversity survey of the Boni-Dodori ecosystem to assess its health and identify threats

Several biodiversity surveys focusing on the coral reefs, mangroves, fish, turtles, dugongs and echinoderms have been carried out in the KMNR. In addition some vegetation characterisation and general mapping of the Dodori and Boni National Reserves have also been carried out. Further, surveys of the Aders' duiker have recently been carried out in Boni and Dodori National Reserves using camera traps and this has revealed presence of species of interest such as the elephant shrew. Hence, comprehensive biodiversity surveys are needed in both KBDCA protected areas to document the biodiversity values contained in these protected areas. In view of this, the Senior Research Scientist-CCA will liaise with the KWS Head-Ecological Monitoring Department in designing and implementing biodiversity surveys for the KBDCA. To start with, initial biodiversity assessments will be carried out with support from the ongoing World Bank-funded Kenya Coastal Development Project (KCDP). The ecological data and information that will be generated from these surveys will be stored in an ecological database for ease of manipulation, analysis and retrieval by KBDCA managers.

Action 3.4: Establish a research station at Mkokoni KBDCA Headquarters

Currently KWS does not have research presence in the KBDCA; hence research is carried out by other stakeholders whose objectives are not necessarily similar to those of KWS. In order for research to play a central role in guiding the management of the KBDCA, it is essential that research is management oriented and it is driven by KWS needs. As such, realizing the scientific value of the KBDCA as a base for ecological research and studies on protected area–people interactions, a research station will be established at Mkokoni KBDCA headquarters. The research station will be equipped with the relevant staff and standard research equipment in line with the Biodiversity Research and Monitoring Divisions strategic plan. The functions of the research station will mainly focus on the following:

a) ecological monitoring;
b) ecological surveys;
c) management oriented research;
d) single species and communities research;
e) environmental Impact Assessments and Audits of facilities in the protected areas; coordinating wildlife research in the KBDCA ; and
f) Tsetse fly control.

Action 3.5: Create awareness on climate change mitigation and coping mechanisms

There is an urgent need for education and awareness programs targeting local communities on climate change since most communities at the KBDCA are vulnerable to the effects of climate change. The island communities (e.g. Kiwayu island residents) are vulnerable to changing climatic conditions which may result in rise in sea levels. The pastoralist community is also being affected by prolonged droughts and floods, which are attributed to climate change. Consequently, it is important that the local community at the KBDCA is made aware of impacts of climate change and how to mitigate or cope with these impacts. Towards this, climate adaptation mobilization workshops for pastoral and fishing communities will be conducted twice a year while continuous awareness creation will be done on every opportunity the KBDCA management gets. At the same time, through the Kenya Climate Change Working Group (KCCWG), the pastoral communities will be linked with the already established Pastoralist's Forum for Climate Change that was initiated to coordinate with the broader KCCWG fraternity on issues of climate change.

Action 3.6: Establish a tsetse fly control programme

Dodori and Boni National Reserves are heavily infested with tsetse flies. These flies are a vector for sleeping sickness, and hence their control is important if meaningful tourism is to be developed in these reserves. Therefore, under this management action KBDCA management will liaise with the KWS Ecological Monitoring Department in establishing a tsetse fly control programme in the KBDCA. The tsetse fly control programme will use traps to control the tsetse flies as has been done in Ruma and Meru National Parks.

Ecological Monitoring Plan

In addition to the programme's management objectives and actions, the other key component of the Ecological Management Programme is the KBDCA Ecological Monitoring Plan. This Plan is based on the conservation targets and their key ecological attributes and it provides a basis for both monitoring overall ecosystem health and assessing the effectiveness of, and recommending adaptations to, the management actions under this programme.

The framework for the development of the KBDCA Ecological Monitoring Plan is set out in Table 14. As shown in this table, the plan framework is set out by conservation target. The indicators of change provide easily measurable attributes for assessing the status and trends of the KEAs or threats to each conservation target. The indicators selected also provide an early warning of any serious threats that may develop during the lifespan of this plan, which may potentially require the development of new management actions. The framework also outlines the data collection methodology, which sets out how, when, where and who will collect the data for the indicators. This framework provides the outline for the development of a comprehensive KBDCA Ecological Monitoring Plan, which will be elaborated and developed by the Coast Conservation Area (CCA) Research Section early in the lifespan of this management plan. The CCA Research Section will be responsible for ensuring that monitoring activities are included in annual work plans, and will work together with KWS HQ to ensure appropriate budgets are approved to cover the activities stipulated.

Table 14: Framework for the development of the KBDCA Ecological Monitoring Plan

KEA/Threat	Indicator of change	Method of measurement	Collection frequency	Data source	Responsibility	Data currently collected?
Conservation Target 1: Marine mammals						
KEA: Available and quality habitat **Threat**: Insufficient habitat	Quantity and quality of preferred forage species; Population size verses carrying capacity	Transects to establish forage quantity and forage quality analysis	Bi-annual	Monitoring reports	KBDCA – RS/ collaborative institutions	No data is available
KEA: Population size, recruitment and structure	Number of individuals (age & sex)	Counts	Daily	ID reports	KBDCA – RS	Baseline data is available
Conservation Target 2: Sea turtles						
KEA: Available and quality habitat	Extent of suitable sea grass beds quantity and quality of preferred forage species	Mapping of habitat; forage quality analysis; transects & quadrants to establish forage quantity	Bi-annual	Monitoring and mapping report	KBDCA – RS/ consultant	No data is available
KEA: Population size, recruitment and structure	No. of individuals (age and sex); body condition	sample counts	Quarterly	Census reports	KBDCA – RS	baseline data is available
Threat: Extraordinary predation	No. of individual lost due to predation	Daily surveillance; counts	Daily	Daily surveillance and count reports	KBDCA – RS/security	Baseline data available
Conservation Target 3: Elephant						
KEA: Migration routes/ dispersal areas **Threat**: Settlement in key areas	Length and width of migratory routes; size of dispersal area	Collaring; mapping of available habitat through satellite images	3 years	Elephant movement patterns reports; land cover changes report	KBDCA – RS/ consultant	No data is available
KEA: Genetic diversity and variability	Number of individuals with similar genes; Quantitative characteristics of the popula-	Genetic mapping; Population performance	Every 3 years	Genetic mapping reports	KBDCA – RS/KWS Veterinary	No data is available

KEA/Threat	Indicator of change	Method of measurement	Collection frequency	Data source	Responsibility	Data currently collected?
Threat: Inbreeding	tion (phenotype)				department/ consultant	
Threat: Poaching	Number of poached elephants	Dung counts; mapping of carcasses through ground surveillance by security rangers	Every 3 years; daily	Dung count survey reports; daily surveillance;	KBDCA – RS/ Security	No baseline data available
Conservation Target 4: Coral reef						
KEA: Water quality	Algal blooms due to eutrophication as a result of nutrients enrichment	Nutrients quantification (nitrates, ammonium, phosphates, silicates), biological oxygen demand, chlorophyll a,	Bi-annually	Water quality reports	KBDCA -RS	No baseline data available
Threat: oil spill and chemical or industrial pollution	Organic pollutants such as crude oils and industrial chemicals arising out of shipping	Monitoring the levels of organic pollutants such as polychlorinated biphenyls, tributylene containing antifouling paints amongst other hosts of organic pollutants,	Annually and specifically after oil spills	Water quality reports	KBDCA -RS	No baseline data available
KEA: Diversity and abundance of coral community (coral, fish, sea urchins **Threat:** degradation due to human activities (fishing, tourism)	Change in fish and invertebrates families densities and composition, and population structure resulting in ecosystem shifts to single species domination	Ecological monitoring of key coral reef communities fish and invertebrate families	Bi-annually	Ecological monitoring reports detailing species composition, densities and population structure	KBDCA – RS, WWF, CORDIO, KMFRI	Baseline data available
KEA: Coral community size & structure	Changes in coral cover and species composition	Monitoring coral cover, species diversity and composition and human activities in coral reefs. Additionally, climatic changes such as temperature that causes bleaching is very important	Annually	Monitoring reports	KBDCA – RS, WWF, CORDIO, KMFRI	Baseline available

KEA/Threat	Indicator of change	Method of measurement	Collection frequency	Data source	Responsi-bility	Data currently collected?
KEA: Coral recruitment **Threat:** decline in coral diversity and cover	Low coral cover and diversity. The ecosystem shows a shift from coral dominated to algae dominated.	Monitoring coral cover percentages and species diversity (resilience) and recruitment	Bi-annually	KWS, CORDIO, WCS, WWF	KBDCA -RS	Some data exists
KEA: Fish populations (Abundance, biomass, density, diversity) **Threat:** decline in fish diversity and density	Decline in fish densities and loss of fish species	Monitoring fish population densities and structure	Bi-annually	Monitoring reports	KBDCA -RS	Some data is available KWS, CORDIO, WCS, WWF
Conservation Target 5: Mangrove forest						
KEA: sediment and water quality	Decline in soil productivity by build up of sulphur and anoxic conditions.	Nutrients quantification (nitrates, ammonium, phosphates, silicates), biological oxygen demand, chlorophyll a, and sediment characterization	Annually	Water quality reports	KBDCA -RS	No data currently exists
KEA: Biomass (fish, molluscs, mangroves) **Threat:** overfishing and logging affecting species composition and structure	Decline in biota diversity and biomass. In particular decline in fisheries	Establishing the densities of vertebrates and invertebrates within the mangrove ecosystem	Annually	Mangrove fauna reports	KBDCA - RS	No data currently exists
KEA: Mangrove productivity **Threat:** logging causing decline in detritus and forest regenera-	Decline in detritus macro and micro fauna, lowered mangrove regeneration	Measuring of litter fall and detritus in the under storey and assessment of regeneration	Annually	Litter fall, benthic detritus and regeneration assessments	KBDCA RS	Data currently missing

KEA/Threat	Indicator of change	Method of measurement	Collection frequency	Data source	Responsi-bility	Data currently collected?
tion						
Conservation Target 6: Forest grasslands						
KEA: Population of key grazing species	Number of individuals of different sex and age classes of key grazing species	Aerial surveys, ground counts	Seasonal (wet & dry) after every 3 years	Ground counts and aerial survey reports	KBDCA-RS	No data is available
Threat: Bush-meat poaching	Number of arrests made and snares removed	Analysis of occurrence book; removal	Monthly	Reports on arrests and snares	KBDCA – RS/security	Baseline data available
KEA: Extent of grassland **Threat**: Bush encroachment	Area under grassland	Analysis of satellite images and aerial photos	Every 5 years	Land cover changes report	KBDCA – RS/ consultant	Data available
KEA: Vegetation structure and composition	Number of species and vegetation cover	Sampling transects to assess vegetation composition & structure	Seasonal (wet and dry) after every 3 years	Reports on floral structure	KBDCA- RS	No data is available
Threat: Invasive species	Invasive species distribution and area covered	Sampling transects to assess invasive species composition & structure	After every 3 years	Monitoring reports	KBDCA – RS	No data is available
Threat: Fire	Number of fire outbreaks; Area burnt	Analysis of MODIS satellite reports; Mapping burnt areas using GPS points	Twice a year, end of dry season	Pre- and post-burning reports	KBDCA – RS	No data is available
Threat: Live-stock incursion	Number of livestock in PA	Aerial surveys; daily surveil-lance	After every 3 years; Daily	Livestock distribution reports	KBDCA – RS/security	No data is available
Conservation Target 7: Coastal forest						
KEA: Species composition and structure **Threat**: illegal logging and poaching	Mainly the loss of flora and fauna species, decline in forest cover and changes in forest structure	Forest flora and fauna spe-cies composition, population structure of species	After every three years	Species distri-bution reports	KBDCA RS	Some data is available and further survey planned under KCDP

KEA/Threat	Indicator of change	Method of measurement	Collection frequency	Data source	Responsi-bility	Data currently collected?
KEA: Forest productivity **Threat:** illegal logging	Decline in detritus macro and micro fauna, lowered regen-eration	Measuring of litter fall and detritus in the under storey and assessment of regenera-tion	Annually	Litter fall and regeneration assessments	KBDCA-RS	Data currently missing
KEA: Abun-dance and occurrence of keystone species such as Ader's duikers, elephant shrews **Threat:** Poach-ing and habitat degradation	Decline in species densities and degradation or loss of habitat	Population counts	Annually	population census reports	KBDCA War-den, KBDCA-RS	Some data is available, but there remains a big gap.
Conservation Target 8: Inland fresh water wetlands						
KEA: Water quality and quantity **Threat:** water pollution and drying up of fresh water bodies	Eutrophication of clean water ponds and low rainfall or blocking of rivers resulting in drying up of lakes	Water nutrients levels, rainfall amount and pattern, water level and volume	Annually	Meteorological data, monitor-ing reports and satellite im-agery	SRS Wetlands, Warden KBDCA, SRS-CCA, KBDCA-RS	Data not available
KEA: Percent-age cover of macrophytes **Threat**: pollution resulting in eutrophication and possible invasion by invasive species	Increased coverage by micro and macrophytes, low oxy-genated waters and high levels of nutrients	Measuring total biomass of micro and macrophytes, nutrients levels in the water body	Bi-annually	Satellite im-agery; water nutrient analy-sis reports	SRS Wetlands, Warden KBDCA, SRS CCA, KBDCA -RS	Data not available

KEA/Threat	Indicator of change	Method of measurement	Collection frequency	Data source	Responsi-bility	Data currently collected?
KEA: Fish abun-dance **Threat**: overfish-ing and loss of biodiversity	Low fish densities and diversity, habitat degradation and change in community structure	Establish fish density and diversity, habitat integrity and structure	Bi-annually	Fish assess-ment reports	Warden KBDCA, KBDCA - RS	Data not available
KEA: Abun-dance and diversity of Macro inverte-brates **Threat**: loss of biodiversity	Low density and diversity of macro-invertebrates, habitat degradation and change in community structure	Establish the density of macro-invertebrates, wetland community structure and wetland ecosystem integrity	Annually	Invertebrate assessment reports	SRS Wetlands, Warden KBDCA, SRS CCA, KBDCA RS	Data not available
KEA: Ecosystem flows **Threat**: disrup-tion of ecosys-tem functions and integrity	Loss of ecosystem connec-tivity, fragmentation of habi-tats through degradation, loss of functionality and diversity	Conduct a functional and biophysical assessment of key wetland habitats	Once every three years	Wetland as-sessment reports	SRS Wetlands, Warden KBDCA, SRS CCA, KBDCA RS	Data not available
Conservation target 9: Migratory birds						
KEA: Diversity of bird species **Threats:** loss of habitats for migratory and resident birds	Decline in bird species diversity, changes in bird species migratory routes, degradation and loss of key habitats	Establish the diversity of birds, identify critical bird habitats and assess the integrity of the habitats. Establish critical migratory routes and seasons	Annually	National Mu-seums of Kenya, KWS	SRS Wetlands, Warden KBDCA, SRS CCA, KBDCA RS	Limited data available
KEA: Migratory patterns **Threat:** Climate change and loss or degradation of critical habitats	Declining bird species diver-sity, changes in migration times and patterns for key bird species, loss of habitat	Establish the diversity of birds, identify critical bird habitats and assess the integrity of the habitats. Establish critical migratory routes, patterns and seasons	Annually	National Mu-seums of Kenya, KWS	SRS Wetlands, Warden KBDCA, SRS CCA, KBDCA RS	Limited data available
KEA: Diversity of habitats **Threats:** climate	Decline and loss of habitats, increase in human popula-tions and infrastructure	Spatial extent of habitats, infrastructure developments and human population growth	Annually	National Mu-seums of Kenya, KWS	SRS Wetlands, Warden KBDCA, SRS	Limited data available

KEA/Threat	Indicator of change	Method of measurement	Collection frequency	Data source	Responsi-bility	Data currently collected?
change and human en-croachment	developments				CCA, KBDCA RS	
KEA: Availability of prey/foraging species	Changes in migratory bird diversity, migration periods and sites or routes, loss in species and general biodi-versity	Baseline surveys to establish the key prey for the diverse migratory birds	After three years	National Mu-seums of Kenya, KWS	SRS Wetlands, Warden KBDCA, SRS CCA, KBDCA RS	No data avail-able
KEA: Abun-dance breeding pat-terns and suc-cess **Threat:** loss of breeding and foraging grounds	Declining bird populations, loss of breeding and foraging grounds, changing climate and shifting seasons that regulate availability of food for off-springs	Identify the different bird species that breed in the area, their breeding sites, their habits and preferred habitats and the status of the breeding grounds	Annually	National Mu-seums of Kenya, KWS	SRS Wetlands, Warden KBDCA, SRS CCA, KBDCA RS	No data avail-able

Tourism Development and Management Programme

Programme Purpose and Strategy

The purpose of the Tourism Development and Management Programme is:

To develop sustainable tourism that offers a distinctive and memorable visitor experience based on KBDCA's mix of special natural, cultural and historical values

The KBDCA is an unspoilt area filled with resources that when effectively marketed, and maximum product diversification is practised, it could attract many tourists which would eventually lead to growth of the local economy due to increased revenue. This Programme therefore focuses on tourism development, management, marketing and product diversification in the KBDCA. It aims at ensuring that tourism potential of the area is fully exploited and the interests and expectations of tourists met. The programme sets out a series of management objectives and actions that the KBDCA management will implement over the next 10 years aimed at realising the area's full tourism potential. It is based on a proactive and innovative tourism development and management strategy designed to overcome the obstacles that are presently holding back tourism development, by leveraging the area's many unique and presently underutilised attractions.

Guiding principles

The key principles, which will guide the implementation of the Tourism Development and Management Programme over the next 10 years and the achievement of the programme purpose, are set out below.

Tourism is developed as a major positive force in support of the KBDCA's conservation and management

Tourism in the KBDCA is still in its nascent stage of development its growth having been severely curtailed by general insecurity in the area over the years. However, in recent times security has improved and if the level of current security is maintained and enhanced, the area has potential to attract many visitors. Consequently, this programme aims to provide a conducive environment and opportunities for high levels of visitation to thrive. This will however be contingent on implementing effective measures to ensure visitor safety and security in the KBDCA for the 10-year duration of this plan (see The Protected Areas Operations and Security Programme for details of how this will be achieved). By developing tourism in the KBDCA, the area will gain relevance at local and national levels thereby attracting the much needed resources for conservation of the KBDCA protected areas. Nationally it will contribute to the achievement of one of the targets of the Vision 2030 which is to develop an additional 30,000 beds capacity spread throughout the country by 2017. In addition, by promoting and encouraging tourism investment in the KBDCA protected areas, and especially the remote areas that are rich in wildlife, it is hoped that this will encourage increased security coverage of the area deterring illegal activities such as poaching. For these reasons, tourism development will be a key pillar in this programme to support and facilitate conservation and management activities in the KBDCA.

Tourist activities in the KBDCA are currently focused on marine tourism activities. However, with enhanced security and development of tourism support infrastructure, the area has potential for a wide range of recreational activities. As such, the programme's tourism strategy aims to enable and support the development of a wide variety of distinctive visitor activities in the KBDCA.

Developing and maintaining a high quality, low impact tourism product which is consistent with conservation

Memorable visitor experiences are hinged on the quality of visitor services that a tourist destination offers. It is the aim of KWS management that KBDCA takes advantage of its unique qualities characterised by vast wilderness areas and low tourism density to establish tourism products that will offer high quality visitor experience and low impacts on the environment. Achieving this will require adherence to the prescriptions outlined in the zoning scheme during development, promotion and marketing of KBDCA's tourism products. Further, it will be mandatory that all proposed tourism investments are subjected to environmental impact assessments as specified by the Environmental Management and Coordination Act (1999) regulations.

Tourism products promoted and marketed

One of the flagship projects of Kenya's Vision 2030, is "better marketing of little-visited parks so as to bring more tourists to game parks that have not been receiving many visitors, and which are located in all parts of the country". KBDCA protected areas fall under the category of the least visited protected areas, and hence under this management programme, KBDCA tourism products will be promoted and marketed aggressively to attract tourists to the area.

Tourism development capitalises on the broader infrastructure development in the Lamu metropolitan region

Through the grand LAPSSET project, a resort city is planned at Mokowe, Lamu. One of the satellite resort sites[5] for this resort city is planned at Kiwayu Island in the KMNR where ecotourism activities will be developed. Moreover, safe and effective sea routes for local boats and a special port dedicated to local sea travel and well linked to the inland transportation systems will be developed for the growth of the satellite resort sites. Hence, KBDCA tourism development will take cognisance of the infrastructure projects envisaged under the Lamu Metropolitan development plan. The KBDCA tourism roads and accommodation facilities in the protected areas will be appropriately linked to the roads in the Lamu metropolitan region.

Community participation in tourism development is encouraged

To gain the support of local communities in the conservation of the KBDCA, it is imperative that the community benefits from the existence of the KBDCA. This can be achieved partly by encouraging community participation in ecotourism activities. The community areas have distinctive cultural values that can attract ecotourists to the areas. Historical and cultural sites in areas adjacent to the KBDCA include Pate town, Takwa ruins, Siyu fort among others. A key strategy of this tourism programme will therefore be to enhance the capacity of the local community to exploit tourism opportunities, such as tour guiding. This will be complemented

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[5] The eco-villages are proposed at Kipini, Bawaya, Manda Island, Pate Island, and Kiwaiyu Island.

by actions under the Community Partnership & Conservation Education Programme designed to promote direct community involvement in ecotourism and other community tourism-related benefits.

These guiding principles are intended to guide the implementation of the Programme's four management objectives that, when taken together, achieve the Programme Purpose. These four objectives are:

MO 1. **Tourism accommodation facilities developed**
MO 2. **Tourist activities diversified to enhance visitor experience and satisfaction**
MO 3. **Promotion and marketing of the KBDCA enhanced**
MO 4. **KBDCA's tourism management improved**

The following sections describe these management objectives and the management actions needed to achieve them. Under each management objective there is a brief description of the relevant management issues and opportunities, which provides the specific context and justification for the management actions.

Management Objectives and Actions

Objective 1: Tourism accommodation facilities and associated infrastructure developed

Visitor enjoyment of the KBDCA's resource values is currently hampered by lack of infrastructure to support various visitor activities. The Boni and Dodori NRs lack the requisite visitor facilities needed to attract visitors to the area. The reserves have no wildlife viewing roads and also they lack visitor accommodation facilities. Tourism facilities are only available in KMNR which has two facilities within it, Munira and Champali Camps, and Kiwayu Safari Village on the adjacent mainland. In view of this, this objective aims at improving visitor experience and satisfaction by developing adequate tourism infrastructure to ensure that visitors go back with memorable experiences from the KBDCA. The management actions that will be implemented to achieve this objective are elaborated in the following sections.

> ### Action 1.1: Identify suitable sites for establishment of ecolodges and tented camps

Currently, the KBDCA has three operational tourist accommodation facilities i.e. Kiwayu Safari Village which is located north of Mkokoni village, and Munira and Champali Camps that are located on Kiwayu Island within the KMNR. There are no facilities in either DNR or BNR. In view of this, under this management action, KBDCA management will collaborate with the tourism hospitality industry in identifying suitable sites for establishment of environmentally friendly tourist facilities such as ecolodges and tented camps. Some of the sites whose suitability will be assessed include KMNR islands such as Kui, Mwongo Shariff and Ngazini which have great potential for the development of such facilities. In addition, Hadhi dam in BNR, and Kibokoni and Kiangwe have ample wildlife and other tourist attractions making these sites ideal locations for tourist facilities.

Action 1.2: Identify sites for high end beach hotels

There is high potential for construction of high end tourism beach hotels in KBDCA but at present the inaccessibility of the area and security challenges do not encourage investors to establish such facilities in the area. However, with improvement of tourism support infrastructure that is envisaged under the LAPSSET project and enhanced security measures that will be put in place through the implementation of this plan (see Objective 4 of the Protected Areas Operations and Security Management Programme) the KBDCA is bound to attract diverse categories of visitors making beach hotel ventures viable investments. Hence, KBDCA management and tourism investors will identify sites along the coastline where beach hotels can be established. Currently, Mkokoni, Rubu, Kiangwe and Kiwayu village show potential for establishment of such facilities.

Action 1.3: Advertise and award facility sites for development

Once suitable sites for establishment of tourist facilities are identified under Action 1.1 and Action 1.2 above, site description information (geographic location and key attractions) for each site will be compiled in liaison with the KWS Business Development and Marketing Department. Thereafter, a facility site prospectus containing all the sites will be prepared. The prospectus and a request for expression of interest in the facility sites will be posted on the KWS website as well as the local dailies to seek for tourism investors. The facility sites will then be awarded in line with the standard KWS facility site development procedures.

Action 1.4: Draw and sign lease agreements with Champali and Munira Camps

Although Munira and Champali Camps are located in KMNR, which is under the jurisdiction of KWS, the two facilities do not have lease agreements with KWS. Lack of such agreements could be attributed to the land tenure conflicts at Kiwayu Island where the two facilities are located (see Action 1.5 of the Protected Areas Operations and Security management Programme). Once the land tenure conflicts are addressed, KWS will draw legally binding lease agreements with the proprietors of Munira and Champali Camps.

Action 1.5: Establish KWS Bandas at Mkokoni

The KWS Mkokoni station is located in an area with beautiful beaches and a mix of pristine marine and terrestrial life. This, coupled with the security offered by KWS rangers and accessibility to utilities makes the station an ideal site for establishing self-catering bandas, mainly for the domestic tourism market. In this regard, KBDCA management will liaise with the KWS Business and Marketing Department to develop five 2-bed bandas at Mkokoni station.

Action 1.6: Promote establishment of home stays in line with the Ministry of Tourism approved criteria for Home stays

The paucity of visitor accommodation facilities in the KBDCA is a major disincentive for tourists and researchers who would like to visit the area. However, lack of these facilities presents an opportunity for the local community to develop home stays in the fishing and agricultural villages in the KBDCA. A home stay is a unique hospitality system in which the tourist stays with the family as a member of the family. It aims at equipping the tourist with the

knowledge of the hosts' way of life such as the agricultural system, folk arts, sculptures sports and cuisine[6]. To increase visitor beds in the KBDCA as well as nationally and thereby contribute to the achievement of tourism targets under Vision 2030, KBDCA management will liaise with the Ministry of Tourism in identifying and registering home stays in the KBDCA villages in line with the approved *Criteria for home stays.* Further, to ensure that the registered home stays receive visitors, KBDCA management will liaise with KWS marketing Section to include these home stays in the tourism promotion and marketing strategies.

Action 1.7: Establish and maintain camping sites

The KBDCA zoning scheme specifies that campsites will be established in all zones. To facilitate this, KBDCA management in collaboration with tourism stakeholders will carry out an assessment to identify sites that are suitable for establishment of camping sites. To minimise pollution and disturbance to the fragile riparian vegetation, camp sites will not be located very close to rivers and ponds. And to promote use of camping sites, adequate non obtrusive directional and informational signage that blends well with the environment will be provided. In addition, information regarding location and facilities provided at each camp site will be included in brochures and disseminated to visitors as they enter the protected area.

Objective 2: Tourist activities diversified to enhance visitor experience and satisfaction

The future desired state for KBDCA is where there is a variety of tourism activities and attractions that have been identified and developed to enhance visitor satisfaction and experience. The KBDCA has a wide array of potential visitor attractions that, if exploited, can lead to a significant increase in visitation (see figure 9). The area is endowed with both marine and terrestrial ecosystems that support diverse landscapes and habitats and their associated biodiversity. Key visitor attractions include the coral reef, marine mammals, small islands, beaches, large land mammals and the culture of the inhabitants of the area. These attractions present an excellent opportunity to develop a wide range of visitor activities to enhance visitor experience and satisfaction. This objective has therefore been designed to diversify tourist activities by exploiting all appropriate tourism opportunities in the KBDCA. This is achieved through offering new visitor activities and associated support infrastructure targeted at various market segments. The management actions that will be implemented to realize this objective are elaborated in the following sections.

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[6] Republic of Kenya, Ministry of Tourism (undated). Criteria for Home stays

Figure 9: KMNR Visitor Numbers (2006-2012)
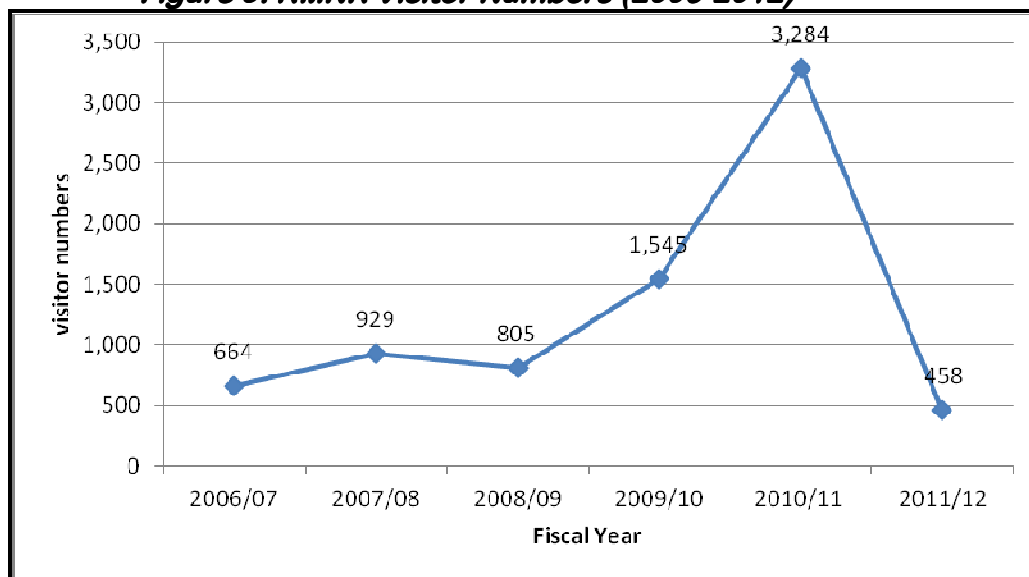
Data source: KWS Business and Marketing Department

NB: Already the area has been experiencing substantial growth in visitation with recorded visitor numbers quadrupling from 2008/09 to 2010/11. However, this growth was reversed in 2011/12 by insecurity in the area

Action 2.1: Support expansion of wildlife viewing in Boni and Dodori National Reserves

An elaborate road network is necessary to facilitate management functions in a terrestrial protected area. Roads are necessary to facilitate vehicle patrols thereby deterring illegal and destructive forest activities in Boni and Dodori National Reserves. In addition, roads facilitate movement of tourists assisting them to access and enjoy many diverse attractions.

A road network to facilitate wildlife viewing in Boni and Dodori National Reserves is lacking. The few roads that are available have been reduced to tracks by years of neglect. Therefore, to enhance tourism through wildlife viewing, efforts will be made to develop wildlife viewing circuits in the two national reserves. Towards this, tourist attractions, including wildlife concentration areas, will be mapped and circuits designed to link these attractions. This action will be carried out in conjunction with action 3.1 of the Protected Areas Operations and Security Management Programme.

Action 2.2: Establish walking safaris in collaboration with tour operators

The pristine status, wilderness character, and diverse and contrasting sceneries offer opportunities for establishment of walking safaris in the KBDCA's terrestrial national reserves. However, the major hindrance to this activity is the unpredictable security situation prevailing in the area. Hence, to establish walking safaris and indeed any tourist activity will require guaranteeing security to visitors. Therefore, to establish walking safaris, KBDCA management will liaise with tour operators who have specialised in offering walking safaris in identifying ideal walking routes. These routes will be designed in such a way that visitors can enjoy

the diverse natural and cultural values of the area. The walking routes will include stopovers at the Aweer villages for hikers to meet the local community and enjoy their culture. The routes will also be regularly maintained through vegetation clearing to facilitate movement of visitors. Further, to ensure that hikers are safe, KBDCA management will commit itself to offer ranger escort services to hikers in line with KWS regulations.

Action 2.3: Establish interpretive nature trails and short walks

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Alongside the establishment of walking safaris (Action 2.2 above), the development of nature trails and short walks can also contribute to enhancing the KBDCA visitor experience. Trails are the principal means used by visitors to have close experience of nature in recreation areas. Trails provide visitors with an opportunity to get out of their vehicles, thereby broadening the focus of a visit to the KBDCA from purely wildlife viewing.

Under this management action, new nature trails will be developed at some existing and already popular tourism attractions, such as Kiwayu and Kui Islands in KMNR, and Kibokoni in DNR and Hadhi lake in BNR. Appropriate interpretive signage will also be installed along the trails to enhance visitor experience. In this regard, plant species of interest will be identified and labelled to provide an educational opportunity for trail users. Picnic sites with seating benches, toilets and trash bins will be provided at intervals along the trails so that trail users can have places to rest. In addition, to increase use of these trails, each trail will be mapped and key features of the trail described in a trail brochure that will be availed to users at the KBDCA entry points. And in order to enhance their safety and security, the trails will be regularly maintained through clearing of vegetation and removal of any obstructions such as fallen trees to increase visibility. KBDCA management will also engage with lodge and camp operators and managers in the area to raise awareness of the opportunities and benefits of developing short walks/nature trails in the vicinity of their facilities, and provide support for the development of new trails as necessary.

Action 2.4: Develop KBDCA visitor interpretation centre and displays at key KBDCA entry points

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Informing and educating protected area visitors about the PAs' biodiversity values ensures that visitors get the most out of their visit, and provides a much-needed alternative activity to game viewing. Interpretation facilities provide an opportunity for PA managers to communicate directly with visitors, for example to raise awareness of PA rules and regulations. In order to ensure that the vast majority of visitors to the KBDCA have the opportunity to access visitor interpretation facilities, this action focuses on the development of a visitor interpretation centre at Mkokoni station as well as complementary visitor interpretation displays at key KBDCA entry points. The first step in this action will be developing interpretive information of the KBDCA (see Action 2.1 of the Community and Partnership and Conservation Education Management programme). Thereafter, designs of the KBDCA visitor interpretation centre and complementary KBDCA entry point displays will be developed by KBDCA management together with the KWS HQ Business Development and Marketing & Conservation Education Departments. KBDCA management will then liaise with the KWS infrastructure development section to construct the interpretation center and displays at key KBDCA entry points.

Action 2.5: Establish board walks in the mangroves outside the protected areas

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Walking through the mangroves along a purpose-built platform or boardwalk is the simplest, safest and most accessible for visitors interested in the mangrove forest. Walkways made of

wooden boards provide footpaths over water and mud allowing easy access at high or low tide. The boardwalk is a powerful tool for recreation and education. Currently, these structures are not available and the only way tourists can access the mangroves is through boat rides round the mangrove areas. To enhance visitor experience, a board walk will be constructed at a suitable site in the KMNR. In addition, board walks will be established in the mangroves located outside the KMNR as part of the community livelihood improvement strategy.

Action 2.6: Collaborate with tourism stakeholders to improve diverse marine-based recreational activities

Currently, visitors to KMNR have several activities that they can participate in. The most common are boat safaris to the mangrove forests to watch birds and view scenery. In addition, scuba diving and snorkeling is offered to visitors who have experience in diving. However, the marine environment offers other opportunities that could be exploited to diversify marine-based tourism activities. For instance, the beaches coupled with wind presents an opportunity for sand yachting; and the sea waters are excellent for boating, kayaking, sailing, water skiing, fishing and windsurfing. Therefore, to ensure that the marine-related tourism potential is fully exploited, KBDCA management will collaborate with tourism stakeholders to establish diverse marine-based activities at the KBDCA.

Action 2.7: Support establishment of bird watching in the KBDCA

KMNR is an internationally recognized Important Bird Area (IBA). It hosts significant congregations of water and forest birds making it an ideal destination for bird watching. To exploit the opportunity offered by the birds, KBDCA will endeavour to develop infrastructure to support bird watching. Towards this, in addition to the walking and nature trails to be established through Actions 2.2 and 2.3 of this programme, bird hides will be established at selected areas that are frequented by birds to ensure that birders enjoy viewing this rich bird diversity from a close range. These hides will be designed to blend with the landscape as much as possible to minimise visual intrusion.

Action 2.8: Improve sport fishing in the KBDCA

Sport fishing is a popular recreational activity carried out by visitors in the KBDCA. To be allowed to participate in sport fishing a fishing License, which is issued by the Fisheries Department, is required. To ensure that visitors acquire these licenses without delay, KBDCA management will liaise with the Fisheries Department to ensure that fishing permits are issued at the protected area access points. KWS will collect revenue accruing from fishing permits and remit it to the Fisheries Department.

Action 2.9: Support establishment of a cultural centre for the Aweer community

The Aweer community is one of the few ethnic groups that has been categorised as an indigenous community because of its persisting and well preserved authentic culture. This outstanding cultural distinctiveness is a tourist attraction which has not been marketed widely. Culture related tourism is currently low and it usually involves visits to the Aweer villages. Hence, in order to reap maximum benefits from the opportunities offered by the cultural experience, measures that consider the interests of visitors and respect the Aweer culture will be taken. Towards this, KWS will support members of the local Aweer community

to display their way of life in its unadulterated form. The Aweer community will be supported to establish a cultural center at one of the Aweer villages. The cultural center operators will be trained in management and governance issues to ensure that beneficiaries of this facility are not exploited by visitors through acts that demean the community and its culture. These operators will also be trained in basic ways of interpreting the cultural aspect of the area to visitors.

> **Action 2.10: Support establishment of voluntourism in the community areas**

Voluntourism is targeted at travellers who want to make a positive change in the world, while still providing a tourist experience. People generally volunteer in order to increase their international awareness, to contextualize poverty and its effects, as an education opportunity, and to help people while having a morally rewarding experience. Hence, the many challenges experienced by local communities and organizations working in the area, and the diverse tourist attractions present opportunities for development of voluntourism in the KBDCA. Under this management action, KWS will partner with the community and other stakeholders to design a volunteer programme that will exploit the opportunities offered in the KBDCA. Visitors will be encouraged to volunteer in the PAs and participate in various PA activities such as vehicle and plant maintenance, visitor education and park interpretation, construction and rehabilitation of PA infrastructure and wildlife research. In areas outside the PAs, volunteer opportunities exist in teaching and health institutions. Initially, volunteers will be accommodated at the KWS self catering Bandas (to be established under action 1.5 of this programme), but as the programme gains popularity, other alternative accommodation facilities such as 'home stays' will be provided by members of the local community.

> **Action 2.11: Monitor tourism activities at KMNR**

Although visitation at the KBDCA is currently low, and consequently tourism impacts are also low, this is expected to change with the implementation of this plan and the ongoing implementation of the LAPSSET project. Currently, there is limited monitoring of impacts of tourism activities, such as snorkelling, scuba diving, windsurfing, water-skiing and sailing. Hence, to ensure that tourism activities are not causing negative social and ecological impacts, KBDCA management will initiate a tourism monitoring programme. Aspects to be monitored will include damage to the coral reef, litter pollution, and crowding at popular attractions. The output from the monitoring programme will be used to support design of a tourist education programme that will aim at educating visitors on the impacts of their activities on the cultural and ecological environment.

Objective 3: KBDCA promotion and marketing improved

The future desired state of the KBDCA is where the visitation is increased considerably and revenues accruing from tourism generate local, national and international interest in the conservation of the area. To achieve this state will require an aggressive promotion and marketing campaign involving collaboration among KBDCA tourism stakeholders. Once tourism infrastructure is fully developed (see Actions under Objectives 1 and 2 above), it will be necessary to promote the supported tourism activities to raise awareness on the value of these activities and encourage dispersion of visitors across the KBDCA. For the destination, Kenya Tourism Board (KTB) is the government agency mandated to carry out tourism promotion and marketing nationally and internationally. However, KWS marketing section also does its own promotions and events and has a number of mechanisms to promote tourism in

protected areas. Therefore, to avoid duplication of efforts, under this programme, KWS will work closely with KTB to promote and market the KBDCA. Promotion will involve a variety of approaches including use of road shows, local and national events, electronic media, and newspapers among others.

This objective aims to promote and market the KBDCA tourism resources locally and internationally to ensure that the conservation area attracts significant number of visitors. The management actions designed to achieve this objective focus on developing and marketing new tourism products targeting specific tourism markets, marketing the area through the media and special events, and developing tourist information and promotion materials. These management actions are elaborated in the following sections.

Action 3.1: Liaise with KWS Marketing Department to develop a marketing strategy for KBDCA

To achieve a distinct identity, KBDCA management will liaise with KWS Headquarters Marketing Section to develop a marketing strategy that will focus on selling the conservation area as a single destination. Marketing will be based not only on KBDCA's exceptional natural resources, including coastal and marine species, but also on the area's special wilderness qualities and opportunities for solitude. Emphasis will also be given to the culture of the Aweer indigenous community in the area. The strategy will also consider linking the KBDCA with other upcoming wildlife-based tourist destinations in Garissa, Lamu and Tana River Counties (e.g. Ishaqbin, Biriko Buresacho, Kipini, Lamu, Awer, Dareem, Hanshack-Nyangoro, Ndera conservancies, and Tana River Primate and Arawale National Reserves).

Action 3.2: Develop a guide book, map and brochure for KBDCA

Guidebooks and tourist maps are very important in promoting tourism resources in a tourism destination. They provide the much needed information on what is on offer, where it can be found, and how to get there. This information helps a visitor to understand the tourism products enhancing visitor experience and satisfaction. As such, through this management action, a high quality guidebook, tourist map and brochure will be developed for the KBDCA. These tourist information resources will highlight cultural as well as natural resources that can be enjoyed both inside and outside the Conservation Area, encouraging visitors and tour operators to venture into community areas, hence spreading tourism benefits. These tourist information materials will be developed by KWS in liaison with the KBDCA stakeholders (KWS, WWF, Hoteliers and the local community) who will be required to provide the necessary content for these documents. Once the stakeholders have provided the information to KWS through the KBDCA Senior Warden, a publishing firm will be contracted to compile, produce and print the documents, which will be availed to all stakeholders through the KWS outlets.

Action 3.3: Organise and participate in special events to promote tourism in the KBDCA

An effective way of promoting the KBDCA is by organising special events that are attended by both local and international visitors. Some of the events that the KBDCA stakeholders will organise will be geared towards marketing cultural tourism and wildlife based tourism. In regard to this, under this management action, KBDCA management in collaboration with other stakeholders will organise a cultural festival for the three communities resident in the KBDCA (i.e. Somali, Bajuni and Aweer) to showcase their culture. This cultural festival will be held at Kiunga town which is the largest trading center in the area. In addition to this, the

Kiwayu annual cultural event used to show case the culture of the surrounding Bajuni community but this event fizzled out due to lack of proper support and marketing. KWS will therefore support the revival of this cultural event to boost tourism in the marine component of the KBDCA. Further, KBDCA management will participate in the annual Maulidi celebration at Lamu that displays the culture of the Lamu community. Towards this, the KBDCA management will develop posters on KBDCA tourist attractions for display during the Maulidi festival. In addition, KBDCA brochures (produced through Action 3.2 above) will be availed to visitors at the festival.

Action 3.4: Market the KBDCA through the local and international media

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KBDCA has not been marketed aggressively mainly because the area lacks tourism support infrastructure. However, with development of tourism support infrastructure outlined in this plan and improvement of security, there will be ample justification to draw tourists to the area. Hence, in order to ensure that tourism resources in the KBDCA are widely known by potential visitors, KWS will solicit regular local and international media coverage of the area's activities such as cultural events and biodiversity assessments. Moreover, KWS will collaborate with other stakeholders (researchers, community and tour operators) to ensure that at least two television interviews, two radio interviews, five newspaper articles and one magazine article regarding KBDCA are produced every year.

The conservation area's tourism activities are currently advertised in many internet websites including the KWS website. The web content of these sites is, however, shallow and does not display tourism resources in the KBDCA adequately to create continuous interest in the ecosystem. In order to enrich the web content and give updated and relevant information to visitors through the KWS website, KWS will solicit relevant information from KBDCA stakeholders and incorporate it in the KBDCA web page.

Action 3.5: Develop and market tourism products targeting the domestic tourism market

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The domestic tourism market, if tapped appropriately, has the potential to cushion the KBDCA tourism from the frequent unpredictable fluctuations in the international tourism market. In order to make significant inroads in this market, KBDCA stakeholders will collaborate in developing tourism products specifically targeting local visitors. First, the existing tourist camps and lodges will offer special discounted prices during the low tourism season to make the facilities affordable to a wide range of Kenyans. Secondly, visitor accommodation facilities targeting the middle class domestic tourism segment will be developed by the local communities in collaboration with tourism investors. These facilities will include self catering bandas, tented camps, and tents for hire.

The other market segment of domestic tourists that will be exploited is the educational market. This is currently hampered by lack of suitable accommodation facilities for students in the KBDCA. There is therefore significant room to grow this market if student hostels are provided for organised school groups. With regard to this, student hostels will also be constructed at Mkokoni station. These domestic tourism products will be marketed by KWS and KTB through awareness campaigns such as TV advertising through the weekly Travel Diaries programme on KTN, Thursday travel pullout in Standard Newspaper and 'Tembea Kenya" on social media.

> ### Action 3.6: Brand the KBDCA based on its outstanding marine and terrestrial values

The KBDCA is rich in natural values some of which are species of conservation concern (e.g. marine turtles, marine mammals, and elephants). Indeed, the KBDCA protected areas were established to protect these and other species that share the ecosystem. Hence, there is need to highlight these values to show the specialness of the place thereby raising awareness on the importance of the area. These values will therefore feature as part of the PA branding exercise that is scheduled to take place in the KBDCA over the next few years. All products of the area's branding, such as the logos, slogans and other key features, will be incorporated into the development of all publicity materials, new PA signage, and visitor interpretation materials (such as the interpretation displays, guide book and map) developed under this objective and discussed in the actions above.

> ### Action 3.7: Capitalise on the KMNR's Designation as a UNESCO Biosphere Reserve to market and create awareness on the KBDCA and its attractions

KMNR is a UNESCO biosphere reserve, but this designation has not been used to market the area locally and internationally. Therefore, KWS HQ and KBDCA management will capitalise on the biosphere reserve designation to promote and market the KBDCA. In this regard, KWS will work closely with UNESCO to organise biosphere reserve awareness workshops and other related events within the KBDCA. These events are expected to boost KWS' image and reputation nationally as well as internationally, and will help ensure on-going support for the KBDCA's conservation.

Objective 4: KBDCA tourism management improved

With the implementation of outlined under the previous three objectives, it is anticipated that visitation will increase during the 10-year lifespan of this plan. Consequently, if the KBDCA management is to meet KWS' obligations to tourism investors and operators, and ensure that the quality of the overall KBDCA visitor experience is maintained and tourism investment encouraged, the anticipated increases in the scale and complexity of tourism in the area need to be complemented by strengthening and enhancing of KBDCA tourism management systems.

Objective 4 therefore focuses on ensuring that tourism management in the KBDCA is strengthened through strong collaboration with other stakeholders. The management actions that have been developed under this objective are outlined in the following sections.

> ### Action 4.1: Form a tourism forum for KBDCA tourism stakeholders

In order to grow sustainable tourism in the KBDCA, there is need for close collaboration between stakeholders to address tourism related challenges. In this regard, a tourism stakeholder's forum for KBDCA will be established. The purpose of this forum will be to bring together tourism stakeholders to share knowledge and identify areas for cooperation (e.g. tourism promotion and marketing, visitor security issues among others) to boost tourism in the KBDCA. The forum will be composed of; KWS, WWF, boat operators, tour operators, local hoteliers, and other relevant stakeholders. The forum will meet quarterly and it will be chaired by the Senior Warden, KBDCA.

Action 4.2: Develop codes of conduct for various marine tourist activities

If the marine tourism activities that will be developed and promoted under action 2.6 of this programme are not properly regulated, undesired social and ecological impacts may arise. Hence, KWS will work closely with marine tourism stakeholders in developing KBDCA specific codes of conduct for each marine recreation activity to ensure appropriate behaviour of tourists and protection of the marine values. The codes will include wildlife interaction protocols, in addition to interactions between operators from different sectors, e.g. divers, fishers in order to avoid potential conflict. On the other hand, Mombasa and Coastal Tourism Association (MCTA) has posted general codes of conduct for diving and other tourism related water sports activities within Kenya's territorial waters on its website. These codes will be reviewed and adapted for KBDCA as appropriate. In addition, the developed codes will be published in brochures and leaflets, which will be availed at entry gates and tourist accommodation facilities.

Action 4.3: Promote high standards of KBDCA tour guides

Tour guiding provides a meaningful opportunity for local community members to benefit from tourism development in the KBDCA. However, the current standard of tour-guiding services in the KBDCA is generally poor. This is primarily due to the use of untrained guides who are not competent to interpret the KBDCA values to visitors. This not only undermines the overall experience of many visitors to the area, but can also contribute to negative impacts on the area's fragile environment. Hence, to ensure that tourism is benefitting the community and visitor satisfaction is enhanced through increased appreciation of KBDCA values, KWS will support training of community tour guides to increase their overall awareness of the area's values, rules, and the various codes that need to be observed by visitors in the KBDCA. In addition, the KBDCA tour guides will be supported to form an association which will be regulating their conduct.

Action 4.4: Improve communication and collaboration with KBDCA tourism stakeholders

Tourism investors and operators are major stakeholders in the KBDCA, and their concerns and advice need to be regularly solicited in order to successfully realise the area's tourism potential, and to implement a number of the actions set out in this programme. This group of stakeholders is also particularly well placed to advise KBDCA management on key issues that may be impacting on current tourism activities and operations in the area, or that may be discouraging the development of new activities or investments. KBDCA management will therefore implement two key mechanisms to improve collaboration and information exchange between themselves and the area's tourism stakeholders. The first and most regular of these will be quarterly meetings, chaired by the KBDCA Senior Warden, between management and the KBDCA tourism forum members (see action 4.1 of this programme). These meetings will address emerging tourism issues in the area, catalyze and monitor the implementation of the management actions set out under this programme. In addition, a wider KBDCA tourism stakeholders meeting will be held on an annual basis. This will involve a greater number and a wide selection of tourism stakeholders, and will aim to improve general awareness of management successes and challenges during the previous year, to inform stakeholders of anticipated works over the next 12 months, and enable them to provide feedback on key issues that they feel KBDCA management should also be addressing.

Community Partnership and Conservation Education Programme

Programme Purpose and Strategy

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

> The support and participation of KBDCA adjacent communities in conservation and sustainable use of natural resources is enhanced

The majority of community members in areas adjacent to the KBDCA directly depend on natural resources for their livelihood needs. The type of natural resource use in these areas varies greatly: from intensive agriculture around the Aweer villages, to pastoralism in much of the areas to the north and west of the KBDCA. These communities impact on the KBDCA, through, for example, the conversion of wildlife dispersal areas, and are also impacted by the KBDCA, for example, as a result of wildlife damage to crops or livestock, and even loss of human life. These reciprocal impacts are likely to escalate in the future as population density in the area continues to increase. The KBDCA Community Partnership and Conservation Education Programme will therefore work towards the mitigation of these impacts; improve awareness of the KBDCA's values; and foster a constructive and supportive relationship between KBDCA management, its adjacent communities, and other key stakeholders.

Guiding Principles

The key principles, which will guide the implementation of the Community Partnership and Conservation Education Programme over the next 10 years and the achievement of the programme purpose, are set out below.

Communities can express their concerns, ideas and opinions

Effective communication between Protected Area-managers and local communities is essential to enable both parties to raise common problems and work towards achieving shared goals. Without such two-way communication, it will be difficult to ensure community support for conservation, as minor issues are more likely to escalate into serious problems, and KBDCA management activities may not be optimally targeted towards community needs. As such, activities under this programme will aim to further develop and strengthen KBDCA management communication and collaboration mechanisms with local communities.

The KBDCA is having a positive impact on the lives of adjacent communities

Long term success of conservation efforts hinges on community support and participation in resource management and ensuring a balance between costs of conservation incurred by communities living around protected areas and benefits of conservation channelled to them. KBDCA-adjacent communities bear many of the direct and indirect costs of wildlife conservation, both through human-wildlife conflicts and the loss of access to forest land and natural resources. If these costs are not offset, community support necessary for the continued survival of the KBDCA will not be sustainable. As such, activities under this programme will

aim to mitigate the costs of wildlife conservation incurred by the adjacent communities, and increase the direct benefits communities receive from the KBDCA.

One of the most practical ways of giving direct benefits to communities neighbouring the KBDCA is to provide employment opportunities to local community members. The KBDCA already provides a variety of such employment opportunities for both skilled and unskilled casual labourers, and this programme will affirmatively give priority to local communities when new opportunities arise, e.g. maintenance of roads, buildings or compounds, so that as large a number of people as possible from the local communities benefit from employment opportunities in the area.

Communities and other stakeholders are aware of the KBDCA's values and importance

One of the core functions of KWS is to provide wildlife education and raise awareness of protected area values in order to improve support for wildlife conservation. As such, and in line with the KWS Education Strategy objective to *"develop conservation education programmes and disseminate information to targeted groups"*, activities under this programme will improve the scope, content and structure of KBDCA conservation education programmes, and focus partnership activities in community areas where support for conservation is poor, or where there are critical conservation issues that need to be addressed.

Communities have the capacity to manage land and natural resources sustainably

Increasing pressures on land and other natural resources outside the KBDCA threaten to undermine both the ecology of the KBDCA, and the long-term sustainability of community livelihoods. As such, activities under this programme will aim to mitigate the negative impacts of unsustainable natural resource use on PA biodiversity and community wellbeing, by improving the capacity of communities to sustainability manage land and natural resource uses.

There is collaboration between PA managers and other stakeholders in strengthening Community Based Natural Resource Management

Many of the threats to the ecology and natural resources in the KBDCA stem from human activities of communities living within or adjacent to the KBDCA protected areas. The scale and intensity of these impacts is increasing as users increase. As such, activities under this programme will pursue partnerships and collaborations with other institutions and organisations (such as CBOs, district authorities and NGOs) to address issues of mutual concern outside of the core protected areas.

The programme is sensitive to gender and marginalised community members

Different sectors of the communities adjacent to the KBDCA utilise natural resources in different ways. Marginalised community members (e.g. women or poorer individuals) or minorities, may have specific issues relating to the KBDCA conservation and natural resource use that other community members may not be aware of. As such, special attention

needs to be paid to ensure that activities under this programme respond to the needs and issues of all community members, not just those of the most visible or vocal.

These guiding principles are intended to guide the development and implementation of the six management objectives that have been identified by stakeholders to achieve the Programme Purpose. These are:

MO 1. **PA-community communication and collaboration mechanisms improved**
MO 2. **Conservation education and awareness programme strengthened**
MO 3. **Conservation-compatible community land uses and practises promoted**
MO 4. **Human-wildlife conflict reduced**
MO 5. **Opportunities for communities to benefit from the KBDCA improved**
MO 6. **Sustainable utilization of marine resources promoted**

The following sections describe these management objectives and provide an outline of the management actions needed to achieve them.

Management Objectives and Actions

Objective 1: PA-community communication and collaboration mechanisms improved

The desired future state of the KBDCA is where there are effective and efficient communication and collaboration mechanisms for building supportive and constructive relationships between PA managers and surrounding communities. These mechanisms need to ensure that issues can be raised and addressed by both sides before they escalate into serious problems, and enable managers and communities to work together to achieve shared goals. In order to achieve the desired future state, management actions focusing on establishing community consultative mechanisms and building their operational capacity have been developed. These management actions are described in the following sections.

> **Action 1.1: Support establishment of PA-community consultation mechanisms**

PA-community communication and dialogue forums are essential to ensure a harmonious relationship between the protected areas and adjacent communities. The KBDCA protected areas are experiencing immense pressure through uncontrolled or illegal exploitation of natural resources by the local community and if this is not addressed in a consultative and participatory manner, it could lead to heightened tensions between the community and protected area management. Hence, KBDCA management will support establishment of Community Consultative Committees (CCCs) for the three major communities living adjacent to the KBDCA (Bajuni, Boni, Somali). In addition, an umbrella Community Conservation Forum (CCF), comprising of two members from each of the three CCCs will be established for coordination of PA-community interactions in the entire KBDCA. The main purpose of the CCCs is to identify viable community projects, and then prioritise them and present them for funding. In addition, both mechanisms have the objective of sensitising and training the communities on conservation issues. And to ensure the community owns the committees, members of the committees will be selected using participatory approaches. Further, the constitution of

these committees will ensure that gender equity is adhered to as required by the Constitution of the Republic of Kenya. And in recognition of the immense influence that local leaders and development partners wield in shaping the attitude of local communities, Area Chiefs will be included in the CCCs, while the local MPs, County representatives and influential community development partners will be included in the CCF as *ex-officio* members.

On the other hand, to ensure that the CCCs and CCF will be effective in delivering conservation goals, KBDCA management will support these two entities by facilitating their activities. For effective facilitation, the functions of the CCCs and CCF will be clearly defined and work plans drawn. The CCCs will oversee biodiversity resource utilisation activities such as beekeeping projects, collection of fuel wood from dead wood, collection of medicinal plants, and ecotourism development. The committees will also participate in implementing measures to control activities destructive to the ecosystem, such as poaching, use of illegal fishing methods, and illegal grazing in protected areas.

Action 1.2: Build capacity of the CCCs and CCF to effectively manage community projects

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Sustainability of conservation-related community projects is dependent on the capacity of the community to maintain such projects. The CCCs and CCF will therefore need to be equipped with essential project management skills and knowledge to ensure that community projects initiated and implemented in collaboration with donors do not fail once the donors pull out. The committees will therefore be trained in the project management cycle and other aspects of project planning, management and maintenance of community projects. This will ensure that community projects do not stall because of poor management or lack of maintenance skills.

Objective 2: Conservation education and awareness programme strengthened

The desired future state for the KBDCA is one where local and national support for conservation of the KBDCA protected areas and the biodiversity therein is improved to ensure viable wildlife conservation in the long term. Conservation education amongst the local community ensures that the community is aware of controls on utilisation of resources and activities within the conservation areas. It ensures that communities have both the information about the controls and also the reasons for their introduction, the arrangements for review and how to get involved by commenting or helping to develop the provisions. In addition, education leads to increased knowledge, which in turn results in increased understanding of, and support for conservation.

Currently, the KBDCA faces several conservation issues that could be dealt with effectively through a robust conservation education programme. These challenges include lack of community appreciation of protected area status of the national reserves; low level of conservation education and awareness; and wild fires among others. Four management actions have therefore been developed under this management objective to realise the desired state and mitigate conservation issues. These actions focus on preparing interpretation materials targeting KBDCA adjacent communities; redesigning and implementing an education programme that targets diverse members of the community; establishing sponsored protected area tours for the local community; promoting the KBDCA through the mass media and the Internet, organising and participating in both local and international conservation awareness events; and supporting WWF's education and awareness activities. These actions are described further in the following sections.

Action 2.1: Prepare interpretation materials targeting local communities

Several marketing materials such as, information leaflets, posters and maps have been developed for the KBDCA and in particular for Kiunga Marine National Reserve. However, these interpretation materials (and others developed under the Tourism Development and Management Programme) mainly target tourists. These interpretation materials are therefore inadequate in bringing out the importance of diverse resource values of the KBDCA to the local community. To rectify this, a review will be carried out to identify interpretation themes that illustrate the uniqueness of the natural and cultural resource values of the KBDCA. Interpretation materials, targeting various age groups in the community, will then be prepared and disseminated through the Mkokoni Resource Centre and the wildlife education outreach activities, to educate communities on the importance of the continued existence of the KBDCA.

Action 2.2: Redesign the KBDCA Education Programme to target key sectors of the community

The KBDCA Education Programme is mainly implemented by WWF and it is focused on creating conservation awareness and appreciation of the KBDCA among the KBDCA-adjacent communities. Programme activities involve giving environmental talks at Mkokoni Resource Centre and local schools. Public meetings organised by the local administration as well as environmental awareness events are also used to disseminate information on wildlife conservation. Despite these efforts, however, minimal success has been achieved in gaining broad community support for the KBDCA. This is attested to by the frequent human-wildlife conflict-related tensions between KBDCA management and local communities.

In order to create awareness on the KBDCA's biodiversity and gain support for the KBDCA from the local and national public, under this management action, the KBDCA Education Programme will be revamped and deliberately re-designed to target opinion leaders and organised community groups that can influence community attitude towards wildlife conservation. The programme will target formal leaders in the civil service like county representatives and chiefs, and leaders in schools and the religious sector. These community groups will be reached through workshops, seminars, and sponsored education trips to areas undertaking wildlife management. These forums will be used to create awareness on conflict prevention and mitigation as well as problem animal control measures. Further the community will be sensitized on wildlife compensation procedures to ensure that compensation claims are raised and processed expeditiously.

Action 2.3: Promote the KBDCA through the mass media, internet, and organise and participate in both local and international conservation awareness events

The mass media (radio, television and the press) plays an important role in conveying conservation education messages to the community. Special radio and TV programmes will therefore be designed and aired through radio and TV stations that can be received in the KBDCA-adjacent area. Efforts will also be made to prepare articles on the KBDCA and publish them in the local dailies. It is expected that this strategy will increase the variety of audiences that are educated on conservation issues within the KBDCA enhancing appreciation of the area.

In addition, KBDCA management will participate in local as well as international events such as World Environment Day, World Wetlands Day, and Agricultural Society of Kenya (ASK)

shows, among others. During these events, the community will be enlightened on the unique KBDCA natural resources, and issues and challenges facing their conservation.

Action 2.4: Support WWF's education and awareness activities

The WWF has a conservation education and awareness programme that has been operational in the KBDCA for more than a decade. Local schools and the local community have been involved in various environmental awareness and education activities through the WWF education and awareness programme. Several environmental clubs have been established in schools in the KBDCA and many awareness creating workshops and seminars have been organised for community members. The WWF liaises with KWS personnel to enhance efforts to gain public support for conservation. Hence, to strengthen the relationship between the KBDCA management and the local WWF office, KWS will support WWF's wildlife education activities, such as organising conservation rallies, seminars and workshops for teachers and students. In addition, KWS will collaborate with WWF in organising protected area visits for community members and school groups.

Objective 3: Conservation-compatible land use activities promoted

The desired future state for KBDCA is one where land uses that are both sustainable and compatible with conservation are practiced in community areas adjacent to the KBDCA. The vast majority of KBDCA-adjacent communities directly depend on the use of natural resources for their livelihoods. The population of these communities has grown rapidly over the years leading to pressure on forest land as community members clear the forest to pave way for cultivation. Conservation-incompatible land use practices, such as shifting cultivation, are threatening wildlife dispersal areas and migration corridors that are important for several of the KBDCA's large mammal species e.g. elephants.

To address these issues, six management actions have been developed. These focus on: supporting establishment of community wildlife conservancies; building capacity of community wildlife conservancies; supporting formation of a Forest Users Associations; supporting preparation and implementation of integrated water resource management plans; supporting formation of Water Resource Users Associations; and supporting establishment of community-managed livestock grazing blocks in Garissa County. These actions are elaborated further in the following sections.

Action 3.1: Support establishment of community wildlife conservancies

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To enhance community benefits from conservation for improved livelihoods through exploitation of the tourism potential, KBDCA-adjacent communities will be encouraged to pool land together and establish community conservancies and/or community locally marine managed areas. Since land in Garissa County is categorised as community land, like most of the pastoral land in Kenya, and land in Lamu is mainly public land, KWS will collaborate with the Garissa County government, the National Land Commission, and the local community (through the CCCs and CCF) in the establishment of the conservancies. Once the conservancies are established, the community will then either lease the conservancies to private entrepreneurs for tourism development, or manage the conservancies as other communities are doing elsewhere in the country. The Aweer community has already identified an area that they hope to establish a conservancy named AWER Conservancy. This area borders Dodori

National Reserve to the west. Similarly, the Somali community in southern Ijara district intend to establish a conservancy named Dareem, which is west of Boni National Reserve.

Action 3.2: Build capacity of community wildlife conservancies

Once the proposed conservancies in under Action 3.1 above are established, KWS and its conservation partners, such as the North Coast Conservation Trust, will provide both technical and logistical support to strengthen the capacity and operations of the community conservancies. In this regard, KWS will provide basic paramilitary drill training to a number of conservancy game scouts at its Law Enforcement Academy at Manyani. In addition, KBDCA management will work with KWS Business Development and Marketing section to ensure that wildlife conservancies are incorporated in the KBDCA marketing and promotional materials, and are also included in any KBDCA-level tourism marketing activities. Moreover, KWS and its partners will provide logistical support to develop tourism infrastructure in the conservancies.

Action 3.3: Support preparation and implementation of integrated water resource management plans and formation of Water Resource Users Associations for management of the major rivers that flow through the KBDCA

Sources of potable water in Dodori Corridor include wells and the Mangai/Dodori River. The fresh water in Mangai/Dodori River is communal and accessible to all, although it is used mainly by the nearest villages of Mangai and Mararani. During droughts, water is transported to villages such as Basuba, Milimani, Bargoni, and Kiunga. However, increasing irrigation in the 'Dodori Corridor,' if not checked, could lead to reduced water flow downstream affecting people and wildlife. Moreover, construction sand is being extracted from Mangai/Dodori River in an uncontrolled manner and as a result, the riverbed in the storage zone is declining, leading to physical, biological, and environmental damage in the River. To redress this, the KBDCA management will support preparation of an integrated water resources management plan for Mangai/Dodori River. These plans will analyse water resource uses and management issues in the river watershed and develop relevant management actions to be implemented by the water resource users. KWS's support to the planning process will be in form of attending and facilitating community planning meetings and providing other assistance as may be requested by the County Water Resources Management Authority and the Water Resource Users Associations (WRUAs). It is expected that subsequent implementation of these plans will secure river sources, control over-abstraction of water, improve the rivers' water quality and restore riparian vegetation, leading to increased water flow in the KBDCA. In addition, in order to further curb the problem of reduced water flow in the river, KWS will support formation of WRUAs, in particular by co-funding meetings that will be organised during the community mobilisation stage.

Action 3.4: Support formation of Community Forest Associations for management of forests in community areas

Illegal logging and uncontrolled shifting cultivation are the major threats facing forest conservation in the "Dodori Corridor", which lies between Dodori and Boni National Reserves. The Forest Act (2005) recognizes the role of forest-adjacent communities in conservation and management of forests where they reside. It provides for registration of a Community Forest Association (CFA) comprising of community members who have traditional association with a forest for purposes of livelihood, culture or religion. The CFA can apply to the Director of Forests for permission to conserve the forest in accordance with a forest management plan and reap benefits that accrue there from. In light of this, the KBDCA Community Partnership

& Conservation Education Programme will assist the Aweer community in the CFA registration process. This will include facilitating key decision-making meetings and the preparation of a management plan for the forest. In all this, the KBDCA Management will work very closely with the Kenya Forest Service.

Action 3.5: Support establishment of community managed livestock grazing blocks in Garissa County

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Livestock incursion in Dodori and Boni NRs is an annual occurrence that threatens ecological integrity of these reserves. Arresting herders and arraigning them in court has not worked elsewhere as the sentences required by law are not punitive. Therefore, it is prudent to try new and complementary measures that are community based and socially acceptable to the pastoralists in the KBDCA-adjacent areas. This action will therefore establish a grazing buffer zone around the protected areas to be managed by the local pastoralists, making it difficult for pastoralists from far-off districts to access the protected areas. The establishment of these grazing blocks will require extensive consultations with stakeholders and particularly the local pastoralists who hold the major stake. Other important stakeholders to be consulted include Ministry of Agriculture, Livestock and Fisheries, and Garissa and Lamu County Governments. The local community will develop and enforce traditional grazing control mechanisms, requiring community members to contain livestock in designated grazing blocks according to a rotational grazing system (this action will be carried out in conjunction with Action 3.1 of this programme). KWS and other stakeholders will provide infrastructure such as water supply and cattle dips to support livestock production in the designated grazing blocks. Boreholes with wind pumps will be sunk in strategic areas around Boni National Reserve.

Objective 4: Human-wildlife conflict reduced

The future desired state at the KBDCA is where human-wildlife conflict (HWC) around the KBDCA, in particular crop raiding, livestock attacks/predation, and human injury or loss of life, are minimised in order to improve KBDCA-community relations. To achieve this objective, six management actions have been developed. These focus on: establishing a human-wildlife conflict monitoring and evaluation system; initiating pilot fencing projects in conflict prone areas; establishing an effective communication network to facilitate prompt reporting of human-wildlife conflict incidents; developing participatory land use plans that separate conflicting land uses; establishing problem animal control (PAC) outposts; building capacity of the community game scouts to address human-wildlife conflicts; and identifying and recommending gazettement of honorary wardens. These Actions are elaborated below.

Action 4.1: Establish a human-wildlife conflict (HWC) monitoring and evaluation system

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A significant amount of HWC data is available at the KBDCA, but it is not organised and stored in a format that can facilitate quick analysis to discern the nature, extent, spatial distribution and trends of the conflicts. The data is stored in occurrence books making retrieval a very tedious task. To correct this and facilitate monitoring of HWC cases, a computerised HWC database will be designed and implemented and, to ensure that the database is functional, KBDCA Community staff will be trained on aspects of database maintenance. This database will complement the Management Information System (MIST), which is in place in the KBDCA that mainly handles spatial and non spatial data collected during ranger patrols. In addition, to ensure that KWS acts promptly on HWC cases, HWC hotspots will be identified through a participatory process involving thorough analysis of HWC data, and extensive

consultations with the affected local communities. The identification of HWC hotspots will inform the selection of priority areas for constructing wildlife barriers (Action 4.2), the establishment of HWC communication facilities (Action 4.3), and the establishment of HWC outposts (Action 4.5).

Action 4.2: Initiate pilot fencing projects in conflict prone areas

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Crop Farming is increasingly becoming the main source of livelihood for the Aweer community. However, their villages are all sandwiched by Boni and Dodori National Reserves that harbour large herbivores, such as elephants, buffaloes, hippos and topi, which are a source of human-wildlife conflict (HWC) in the area. Crop raiding is the most common HWC reported by KBDCA-adjacent communities, and it is mainly caused by buffaloes. However, the conflict is not severe compared to high agricultural potential areas bordering protected areas elsewhere in the country. To curb crop raiding by problem animals, KWS has used wildlife barriers, such as electric fences, moats and stone walls, to keep away wildlife from farms. However, installation of such barriers requires clear demarcation between wildlife foraging areas and cultivated areas. Installing such barriers in the KBDCA where shifting cultivation is taking place and land use zoning has not been carried out in community land will be a challenge. Hence, to enhance problem animal management, and in particular to control crop raiding, KBDCA management will initiate pilot projects that will seek to fence cultivated areas in the Aweer and Bajuni community areas. These pilot project sites will be selected based on the HWC hotspots identified under Action 4.1 of this programme and after the completion of the local level participatory land use planning envisaged under Action 4.4 of this programme. In order to ensure that the fences are functional throughout the year, KWS will carry out regular maintenance to the community fences.

Action 4.3: Establish an effective communication network to facilitate prompt reporting of human-wildlife conflict incidents

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One reason attributed for the poor relations between local communities and KBDCA management is undue delay in responding to human-wildlife conflict incidents. This could be due to lack of an effective communication mechanism to enable the affected community to report problem animal incidents in time before extensive damage to crops or injury to people occurs. Therefore, to ensure that incidents are reported to KBDCA management rapidly, the communities living in areas prone to perennial HWC will be provided with telecommunication radios that are linked to the KWS radio communication network. The radios will be provided to HWC hotspot areas (identified under Action 4.2 above) through the CCCs, which are the forums for dialogue between KBDCA management and local communities. Also, the KBDCA management will establish a HWC mobile telephone hotline to further boost the mechanisms of reporting HWC incidents.

Action 4.4: Develop participatory land use plans that separate conflicting land uses

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Lack of a comprehensive legally anchored integrated land use plan coupled with often conflicting sectoral policies and strategies on land use that are implemented in an uncoordinated manner have fuelled land use changes in the KBDCA. This is leading to loss of wildlife migratory routes particularly in the Lamu port development area. Although a land use plan for the Lamu metropolis has been developed, this plan is generalised necessitating a local level and participatory planning process that will consider the interests of the indigenous communities residing in the KBDCA as well as the welfare of wildlife. Once developed, this detailed

land use plan will clearly zone the land according to the best land use options ensuring that conflicting land uses are segregated.

> ### Action 4.5: Establish problem animal control (PAC) outposts

Certain areas, due to their location on wildlife migratory routes, experience very frequent HWCs (especially from buffaloes), warranting constant attention. A good example of this is the Aweer inhabited Dodori Corridor where most of the buffalo-human conflict in the KBDCA occurs. To mitigate the human-wildlife conflicts, PAC outposts manned by well-equipped rangers will be established in the HWC hotspots identified through Action 4.1 above.

> ### Action 4.6: Build capacity of the community game scouts to address human-wildlife conflicts

A team of community game scouts from KIBODO trust has been trained in problem animal management and basic wildlife protection and management techniques at the KWS Law Enforcement Academy at Manyani. However, these game scouts are not able to cover the KBDCA adequately as they operate mainly around the Aweer villages in the Dodori Corridor. During the plan period, additional game scouts will be trained from the three main communities in the KBDCA (i.e. Bajuni, Aweer and Somali) to ensure that the KBDCA is patrolled extensively. The game scouts will be trained in human-wildlife conflict mitigation techniques to enable them to assist local communities in managing and controlling problem animals. Further, radio communication will be maintained between the game scouts and KWS community wildlife service team at the KBDCA to ensure that all HWC incidents are reported and responded to expeditiously.

In addition, in order to respond to Human-Wildlife Conflict incidents effectively, mobile PAC teams comprising of KWS rangers and community game scouts will be constituted during the peak HWC period. These teams will be provided with complete sets of camping gear, such as tents, torches, raincoats and food ration, to enable them to set camp in the affected areas and respond to incidents from close proximity.

> ### Action 4.7: Identify and recommend gazettement of honorary wardens

The Wildlife Act (CAP 376) provides for the appointment of honorary wardens to further strengthen wildlife conservation and management, especially outside the protected area network. Such a warden exercises the same powers as a KWS warden and therefore can be useful in carrying out problem animal management activities. In order to further boost HWC response measures management will identify from among the local community persons of integrity who have a passion for conservation and recommend them to the Director of KWS for gazettement as honorary wardens.

Objective 5: Opportunities for local communities to benefit from the KBDCA improved

The desired future state of the KBDCA is one where KBDCA-adjacent communities are benefiting directly from support given through KWS' corporate social responsibility projects or through income-generating projects. This is expected to enhance good will for conservation and promote co-existence between the local community and wildlife in the KBDCA. To realise this objective, KBDCA management will implement the following management actions:

implement and support maintenance of community social projects; support communities in identification and exploitation of ecotourism opportunities; establish cultural tourist attractions and events; promote beekeeping in KBDCA adjacent areas; support community self help groups that engage in environmentally friendly activities; enhance employment opportunities for local community members; develop a mechanism to enable regulated access to cultural sites, food and medicinal plants in the KBDCA protected areas; build entrepreneurship capacity among the local community; and support communities in preparation of proposals to seek donor funding. These actions are expanded in the following sections.

Action 5.1: Implement and support maintenance of community social projects

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Assisting communities by funding community projects not only helps KWS to fulfil its corporate social responsibility, but also increases community support for local conservation initiatives. KWS and its partners have therefore been funding a wide range of social projects in KBDCA-adjacent areas, key among these being construction of classrooms, health clinics, and rehabilitation of community water supply systems. The KBDCA management and its partners will continue to fund community projects to increase support for conservation. And to ensure that the projects are sustainable, members of the local community will be trained in project management skills. New community projects that may be funded during the implementation period of this plan will be identified and prioritised by the CCCs, supported under Action 1.1 of this programme.

Action 5.2: Support communities in identification and exploitation of ecotourism opportunities

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Involving local communities in tourism development can provide a means to gain community support for conservation outside the protected areas. Aside from direct employment, tourism also offers opportunities for development of enterprises that supply inputs to the tourism industry. Income can also be earned through leasing access to land if the custodianship of the land is bestowed on the community. This action will seek to assist communities in identifying and mapping all potential ecotourism opportunities outside the protected areas. These include wildlife concentration areas in the proposed conservancies, areas with plants of medicinal, scientific or cultural significance, strategically located hills or high ground that provide vantage points for scenic viewing, picnicking and sundowners, and potential cultural villages. Sites that have potential for development of tourist accommodation facilities, such as ecolodges and tented campsites will also be identified. This information will be used by KWS and local stakeholders to raise the interest of tour operators in the tourism opportunities in areas adjacent to the KBDCA. Where appropriate, information on community tourism ventures and attractions will also be included in new KBDCA interpretation materials, such as the KBDCA map and guidebook in order to raise visitor awareness of the existence of these attractions.

Action 5.3: Establish cultural tourist attractions and events

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Tourism development in the KBDCA is still at its embryonic stage. Hence, potential tourist attractions, such as indigenous culture of the local communities have not been exploited as in other areas with authentic indigenous culture in the country (e.g. Masai land). Since it is anticipated that tourism volume will increase during the plan implementation period, cultural activities of the communities living in the KBDCA-adjacent area will be promoted to attract visitors. In addition, cultural events will be organised in collaboration with the communities and tourism stakeholders to show visitors the rich culture of the KBDCA communities. Other

events which will aim at reaching out to tourists and create awareness on natural resources in the KBDCA will also be organised. These will include water based sport tournaments that will involve KWS, the community and tour operators in the KBDCA.

Action 5.4: Promote beekeeping in KBDCA adjacent areas

The Aweer community that live in the Dodori Corridor are dependent on Dodori National Reserve for honey harvesting. If well managed, conservation linked activities such as bee-keeping can be viable alternative sources of income for the local community. However, bee keeping ventures can fail due to lack of technological know-how on production of bee products and lack of a ready market, which often leads to producers of bee products being exploited by middlemen. Through this action, community members will be trained in modern technologies in beekeeping to maximize production of commercial production of high quality bee products, and efforts will be made to link beekeepers with established dealers in bee products. It is expected that increased economic benefits from beekeeping and other natural resource utilisation projects will be strong incentives to counter threats posed by illegal logging and honey harvesting related forest fires in the KBDCA.

Action 5.5: Support the local community to establish salt harvesting ventures

There is high potential for salt production along the coastline, but this resource has not yet been exploited by the local community, partly because of lack of knowledge and skills. Hence, to diversify the livelihoods of the KBDCA communities, areas that have potential for salt production will be identified. Preliminary surveys have identified Kiangwe village as one of the areas where salt harvesting could be piloted. The KBDCA management in collaboration with the KWS Community Enterprise Department will support the community in assessing the feasibility of salt harvesting as a commercial venture. If the feasibility study finds the venture viable, community members will be trained through training in salt harvesting. However, to ensure that ecological integrity is maintained environmentally friendly approaches will be used. For example, pond construction will be located behind the mangroves (where possible) to ensure successful production, since the mangroves would serve as windbreaks. Furthermore, treated effluents from the salt ponds will be directed to the sea to safeguard mangroves from excessive salinity.

Action 5.6: Support community self help groups that engage in environmentally friendly activities

In 1997, WWF supported a self help group in starting an eco-friendly handicrafts project that focuses on collection of flip-flops washed up on beaches by youth and women and transforming these into creative artifacts such as key rings, necklaces, bracelets, curtains, cushions and mosaic pictures. Several artists, both women and men, are involved, operating from their homes on Kiwayu Island and in Mkokoni village. Products are sold locally, regionally and internationally, through various channels including private companies, WWF and its partners. The project is one of the few alternative livelihood projects that appears to be successful from a business perspective, and has genuinely brought additional income to participants, notably women. However, despite the innovative nature of the project, market access remains a constraint. Hence, KWS will partner with WWF to support the self help group in marketing the flip-flop handicraft products to ensure that the project does not fail, but instead it expands beyond Mkokoni and Kiwayu villages.

Action 5.7: Enhance employment opportunities for local community members

The employment of members of KBDCA-adjacent communities in various tasks necessary for the successful management of the KBDCA is one of the most direct ways to improve the linkages between the conservation of the area and community livelihoods. Currently, a few members of the local community are employed by KWS as casual labourers at Mkokoni station. To enhance relationships with surrounding communities, KBDCA management will liaise with KWS HQs to ensure that these casual workers are, wherever possible, employed as permanent employees, and, as such, enjoy the improved security and benefits associated with this type of employment. In addition, as and when necessary for specific tasks in the KBDCA, casual employees will continue to be sourced from the local communities.

Action 5.8: Develop a mechanism to enable regulated access to cultural sites, food and medicinal plants in the KBDCA protected areas

KBDCA's protected areas have a number of sites of cultural importance to the local community (Table 13). These sites are used to offer special traditional prayers by the Aweer community. In addition, the Aweer community harvests food, honey, building materials, salt, fuel wood and medicinal plants from the two National Reserves. Hence, there is need to ensure that a mechanism is put in place to facilitate controlled community access to the cultural sites and other sites where natural resources are harvested. As a first step towards achieving this, most sites of social and cultural importance have been identified and mapped through a participatory mapping process carried out through the USAID-funded SECURE project. Therefore, to facilitate access to the resources needed by the local community, KBDCA management and community members will work together to develop the modalities, including the rules and regulations, that will govern community access to sites of social and cultural importance. After these modalities have been agreed, community visits will be facilitated on a pilot basis, and rules and regulations subsequently adjusted as necessary according to these experiences and any lessons learnt. These rules and regulations will thereafter be gazetted and enforced under the Wildlife Conservation and Management Act, Cap 376.

Table 15 Examples of Sacred Groves and Shrines in and around Boni-Dodori Corridor[7]

Within Dodori NR	Within Boni NR	Within Boni-Lungi Forest
Wareli	Durwi	Doula
Kibokoni	Hadhi	
Lugo	Humbi	
Havuruu	Nkondoni	

Action 5.9: Build entrepreneurship capacity among the local community

The communities living adjacent to the KBDCA lack entrepreneurial skills to exploit opportunities available in the tourism and conservation sectors. Because of this handicap, it will be difficult for them to participate fully in the conservation-compatible income generation projects that will be promoted and supported under this objective. This action therefore seeks to impart entrepreneurial skills among community members to enable them to initiate and operate businesses successfully. Training will be tailor made with special focus being put on the

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[7] Tetra tech ARD, 2010. Endangered forest, endangered people: the case of the Boni

type of businesses that community groups would like to engage in, and will be targeted at those groups that are being supported in the development of income-generating activities through this objective.

Action 5.10: Support communities in preparation of proposals to seek donor funding

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It is vital that sustainability of stakeholder-funded community projects is ensured, otherwise there is a likelihood of establishing community structures that cease to be of use when donor funding is no longer available. A very effective way of mobilising funds to support maintenance of community projects is through the development of project proposals targeting identified donor funds. The KBDCA Community Partnership and Conservation Education Programme will assist the communities in preparing and marketing funding proposals to potential donor agencies with an aim of generating funds for maintaining community projects.

Objective 6: Sustainable use of marine resources promoted

The future desired state for the KBDCA is where fisheries and the wider marine environment are sustainably managed for the benefit of all stakeholders, now and in the future. The KBDCA fisheries resources are sources of livelihood for a large number of fishers and they are also a source of protein to the local community. These resources are also valuable to the tourism industry as they support recreation activities such as sport fishing. However, poor fishing methods and non adherence to fisheries regulations threaten the KBDCA fisheries. Hence, this management objective has been designed to ensure effective management of KBDCA fisheries and guarantee a viable fishing industry in the area. The management actions that will be implemented to realize this objective are set out in the following sections.

Action 6.1: Strengthen a collaborative fisheries management approach, which involves, NGOs & CBOs

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The key conservation problems related to fishing include use of undersized nets and other illegal fishing gears; trapping of undersized crustacean and fish; destruction of major habitats (i.e. coral reefs, sea grass beds and mangroves) killing sea turtles and Dugongs. To address these problems, KBDCA management will liaise with the Fisheries Department (FiD) to ensure that the capacity of the Beach Management Units (BMU) to regulate the local fishing industry is enhanced. In regard to this, BMUs will be trained in fishing aspects through the BMU assemblies and the already developed BMU training model. In addition, a well established gear exchange program will be established and implemented in consultation with the Fisheries Department. To ensure that conflicts arising from use of fisheries resources are managed effectively, conflict resolution skills and mechanisms will be imparted to the BMU sub-committees. In addition, social projects e.g. schools, scholarships and health care facilities will be provided to the fishing community to gain good will for conservation of marine resources. And to ensure efficient storage of fish, sustainable power supply will be provided to fish storage facilities, and ice facilities will be expanded to improve storage capacity.

Action 6.2: Develop alternative livelihood activities

The economic activities within the Lamu seascape are based on marine resources, in particular fishing, processing and trade in fish and fish products. These economic activities need to be diversified to ensure continuity and sustainability, as well as maximise the benefits to the local communities. This will first require participatory mapping of potential alternative livelihoods (e.g. mariculture and ecotourism); creating awareness of the availability of the alternative livelihoods through pilot projects; conducting a need based skill development training (e.g. empowering women who have been collecting shells in Kiunga to fetch good returns). In addition, KWS and FiD will facilitate establishment of a micro-credit form of microfinance partnership to assist communities in starting income generating ventures (e.g. supporting women in Mkokoni and Kiwayu who have been producing artefacts from sea trash (flip flops) to get market for their products.

Action 6.3: Develop a good market structure for fish and fish products to enhance community economic empowerment

Fisheries products in the Lamu seascape fetch some of the lowest prices in the coast. In the existing marketing set-up and trading systems, the fisher has little power to bargain for higher prices since he deals in fish which is a perishable commodity. This results in low earnings by the fisher community. The main constraints are infrastructure, technological (processing) and capital limitations (in terms of storage, gears and crafts) which contribute to low market prices mainly determined by fish traders/dealers. This is mainly due to limited storage capacity and transport from villages far from the market. Hence, further to implementation of action 6.2 under this objective, fishers will be trained and encouraged to adopt modern fish processing technologies (smoking and sun drying), especially in remote areas of Mangai where cold preservation is not available to add value to the fish. Fishers will also be empowered to explore new fish markets beyond the local ones (Malindi and Mombasa) through the on-going certification process. Finally, community members in the fishing industry will be supported to improve fish quality through fish quality assurance initiatives (e.g. *mama karanga* facilitated with energy saving *jikos*, deep freezers for fish preservation and hygienically designed fish vetting boxes).

Action 6.4: Develop a culture of credit and saving for economic growth

The lack of access to affordable credit and the inability to generate savings to increase investments in suitable gears, vessels and other equipment like ice containers is a major constraint to the improvement of fishing operations and final benefits to the fishing communities. Experiences from other fishing communities show that fishers take fishing as a way of subsistence and not a gainful employment or business with potential of growth and improving livelihoods. The culture of saving and obtaining credit is not engrained in the culture of fishers. Therefore to develop a culture of saving and credit amongst the fisher folk, an assessment of the terms and availability of credit to fishers will be carried out; the fishers will be sensitized on saving and credit to catalyse change from subsistence fishing to an economic occupation; and finally, fishers will be encouraged to increase savings through establishment of co-operative societies.

Protected Area Operations and Security Management Programme

Programme Purpose and Strategy

The purpose of the Protected Area Operations and Security Management Programme is:

> The KBDCA operational systems and structures are effectively and efficiently supporting the delivery of the management programmes outlined in this management plan

As discussed elsewhere in this management plan, the KBDCA faces an increasingly complex array of management challenges and issues, originating from both within and outside the conservation area's boundaries. Many of these threats, such as those resulting from adjacent community land-uses and livelihood activities, are likely to intensify during the 10-year duration of this plan as land use conversion increases in the area. Targeted and complementary management responses will be vital if all these emerging management issues are to be adequately addressed, and these are set out in the management strategies, objectives and actions included in each of the plan's management programmes. However, delivering these management responses in a remote and logistically difficult environment as is the KBDCA is a significant and ambitious undertaking. If the KBDCA management is to be successful in the implementation of this management plan, it will also be essential to strengthen Protected Area (PA) operations to enable the effective and efficient delivery of the plan's management actions, by establishing a conducive working environment and supportive management systems and structures. In particular, the effort spearheaded through this management plan to manage the KBDCA as a single management unit will require the establishment of effective collaboration mechanisms between KWS and the two concerned county governments (Lamu and Garissa), and the expansion and strengthening of PA operations to fully encompass all three PAs making up the conservation area. The Protected Areas Operations and Security Management Programme provides the means for strengthening the KBDCA's management systems, structures and human resources to support the implementation of the other three management programmes, and the overall achievement of the KBDCA's Purpose Statement.

Guiding Principles

The key principles, which will guide the implementation of the Protected Area Operations and Security Management Programme over the next 10 years and the achievement of the programme purpose, are set out below.

Collaboration with key stakeholders is strengthened

The KWS mission statement emphasizes that conservation will be carried out in collaboration with others who share common goals and objectives. Conservation areas cannot be managed in isolation from the regions in which they are situated. KBDCA managers will therefore seek to integrate its programs with the surrounding landscapes, ecosystems, regions and communities to encourage the achievement of mutually supportive environmental, conservation, social and cultural objectives.

Despite the significant expansion of management presence and improvement of security operation effectiveness outlined in this management programme, communication and collaboration with key stakeholders in and around the KBDCA will remain essential to improve security responses, strengthen deterrent against illegal activities in the area, and improve the overall effectiveness of security operations. Although the KBDCA Management will participate in appropriate County and District level committees (see Protected Area Operations Programme for details), operational collaboration with key stakeholders in and around the KBDCA is also vital. As such, and in particular to ensure a safe and secure environment for visitors and tourism investments in the area, this programme will strengthen security collaboration with key stakeholders, such as tourism investors and local police.

Management is integrated and unified across the KBDCA

A fundamental premise of this management plan is that the KBDCA will be managed holistically as a *unified and integrated single management unit*. This approach will maximise the efficiency and effectiveness of the area's administration and management, ensure the conservation of the area's shared Exceptional Resource Values, and facilitate the development of tourism across the entire conservation area in an appropriate and compatible manner. As such, this programme will aim to ensure that agreements and mechanisms to enable the effective management of the KBDCA as an integrated and unified management unit are put in place, and that KWS, and Garissa and Lamu County Governments are collaborating together in the management of the KBDCA.

In addition to the County Governments, the efficient and effective management of the KBDCA is also heavily dependent on positive and constructive relationships with a variety of institutional stakeholders, such as tourism industry stakeholders operating in and around the area. Therefore this programme will also aim to ensure mechanisms are established to enable management collaboration and communication between key stakeholders.

Adopt adaptive management

The complex and dynamic nature of the ecosystems in the KBDCA, coupled with lack of sound knowledge to help in understanding these ecosystems and predicting how they will respond to management actions, calls for adoption of an adaptive management approach during plan implementation. Therefore, implementation of management actions specified in this plan will be flexible. In this regard, management activities will be modified based on experience and information gained during plan implementation.

Good communications and access

The KBDCA is vast and remote and it has been traditionally beset by problems of both access to the area, and ease of movement once in the conservation area itself. This has been a major challenge to administration of the area and a disincentive to tourism development. Good communications and access throughout the entire KBDCA is essential to support the effective and unified management of the area, enable KBDCA management to respond rapidly to specific issues as they arise (most notably issues relating to security and HWC), and to support the dispersal of tourism investment and use across the KBDCA, and in particular into the Boni and Dodori National Reserves. As such, this programme will emphasise the continuing improvement of communication systems in support of management activities as well as cooperation between KBDCA Management and other stakeholders, such as tourism industry actors. In addition, improvements in infrastructure across the area will be planned and targeted to provide maximum support for the effective management of the KBDCA, and to support tourism development across the area.

Sufficient and well-allocated human and financial resources

Underpinning every management action designed to achieve each of the management objectives outlined in this management plan, are the KBDCA staff that will be responsible for implementing them. The staff not only require a conducive working environment and facilities, but also the necessary equipment and training to carry out their duties. As discussed above, the scope of work set out in the plan's four programmes is an ambitious undertaking, and will require increases in both the levels of human resources available in the KBDCA, and in the financial resources required to support the implementation of the management actions set out in this plan. As such, this programme will aim to ensure that KBDCA human resources are of sufficient number and efficiently allocated in order to implement this plan's management actions, and that the financial resources required to deliver the plan's management actions are made available, through expeditious development of the appropriate budgets and their submission to KWS Headquarters and donors as appropriate.

Security presence is extended across the KBDCA

The KBDCA faces security challenges related to wildlife poaching, illegal logging and livestock incursion in the two terrestrial protected areas (Boni and Dodori NRs). The persistence of these illegal activities could partly be attributed to the vastness of the conservation area and its remoteness, which make patrolling a daunting task. However, if wildlife populations are to recover, ecosystem degradation stopped, and beneficial tourism developed, then investment in a robust security strategy is inevitable. As such, a high priority of this management programme is the intensification and extension of security and management presence across the entire KBDCA. This will be supported by the decentralised sectoral management of the area that aims to increase management presence and infrastructure development across the KBDCA.

These guiding principles are intended to guide the implementation of the Programme's four management objectives that, when taken together, achieve the Programme Purpose. These are:

MO 1. **Effective management systems and collaboration mechanisms established and operational**
MO 2. **Performance and motivation of KBDCA staff improved**
MO 3. **Infrastructure, transport and communications to support PA management and tourism development improved**
MO 4. **Wildlife, visitor, and KWS asset Security enhanced**

The following sections describe these management objectives and provide an outline of the management actions needed to achieve them.

Management Objectives and Actions

Objective 1: Effective management systems and collaboration mechanisms established and operational

The desired future state of the KBDCA is where its three component PAs are managed by one management authority as a single ecological unit, conservation stakeholders have a forum through which they can participate effectively in the conservation efforts at the KBDCA, and KBDCA management is integrated in the County government administrative structures. This is expected to, among other things, secure a minimum viable conservation area for the conservation targets identified under the Ecological Management Programme, raise essential funds to support conservation efforts at the KBDCA, and gain support for conservation from the administration at the County and district levels.

In order to realize this objective, nine management actions focusing on strengthening collaboration between stakeholders have been designed. These are expounded in the following sections.

> **Action 1.1: Draw MoU agreements between KWS, Garissa and Lamu Counties for the implementation of the KBDCA management plan**

Many of the principles underlying the development of a single management plan covering the entire KBDCA involve management collaboration and agreements on a number of key management issues. In particular, for long-term viability, it is important that the KBDCA protected areas are conserved and managed as a single ecological unit. This necessitates a high level of institutional collaboration between KWS, and Garissa and Lamu County Governments. Unless successful management collaboration can be achieved amongst these authorities, the implementation of this management plan will be seriously undermined, with an increased risk of conflicting management strategies, and potential long-term negative impacts on the KBDCA's conservation and revenue generation. As such, collaborative agreements between KWS and the County governments are essential to ensure that the KBDCA is managed in accordance with the guiding principles specified in this plan. This can only happen if KWS, Garissa and Lamu County governments agree on how the KBDCA will be managed in the future, and how benefits accruing from the area will be shared among the three partners. To realise this, workable MoUs will be drawn between KWS and the two County Governments. These MoUs will spell out the obligations of each party in the management of the KBDCA, what resources each party will provide, and how they will participate in the implementation of this management plan. During the 10-year implementation period of this plan, the three parties will be meeting twice a year to review progress in the implementation of the plan. The focal point for the MoU will be the Senior Warden KBDCA, who will be responsible for organising semi-annual meetings and preparing plan implementation progress reports.

> **Action 1.2: Establish a KBDCA Management Advisory Committee**

Collaboration between stakeholders who operate within the KBDCA (such as tourism industry investors or operators, Conservation NGOs or CBOs, and scientific researchers) and the area's management is a key aspect of effective management. To ensure that this manage-

ment plan is fully implemented, it is important that stakeholders are involved in plan implementation. Stakeholders can participate in a wide range of activities including tourism promotion and marketing, supporting community projects, and ecological research. Through this action therefore, a Management Advisory Committee will be established comprising of key stakeholders in the KBDCA, such as KWS, WWF, KMFRI, KFS, FiD, hoteliers, and other relevant conservation NGOs working in the Coast Conservation Area.

The role of this committee will be to promote and market the KBDCA in line with the management actions specified in the Tourism Development and Management Programme, mobilize funds to implement management actions specified in this management plan, and to monitor plan implementation.

> ### Action 1.3: Liaise with, and participate in relevant County and District level committees

Although covering a large geographic area, the KBDCA is still greatly influenced by activities and developments in the surrounding areas. Linkages between KBDCA Management and the County and District Authorities that have jurisdiction over parts of the KBDCA (Lamu and Garissa County governments, and Lamu East and Ijara Districts) have traditionally been weak, leading to minimal support for KBDCA management activities. It is important that collaboration with district authorities be streamlined and enhanced to help maximise the benefits from the KBDCA to the surrounding areas and district activities, and to help raise and address issues of mutual concern (such as security, community issues, or any proposed developments). However, current representation of the KBDCA in District Committees is poor. To remove ambiguity on KBDCA representation at County and District levels, and so that KWS-funded community projects are given due recognition in the county or districts that share the KBDCA, this action will ensure that an officer from the KBDCA attends County and District Committee Meetings. The Senior Warden KBDCA will attend County level committee meetings and attendance at district-level meetings will be by officers outlined in Table 14 below.

Table 16: Responsibility for attending district level meetings

District	District Committee	Officer responsible
Lamu East	District Development Committee District Environmental Committee District Compensation Committee	Warden-Kiunga Marine National Reserve with advance briefing from warden-Dodori National Reserve
	District Security Committee	Warden- Kiunga Wildlife Protection department
Ijara	District Development Committee District Environmental Committee District Compensation Committee	Warden-Ijara with advance briefing from Warden-Boni National Reserve
	District Security Committee	Warden-Ijara with advance briefing from Warden-Boni National Reserve

> ### Action 1.4: Collaborate with District Security Committees to control illegal encroachment on the KBDCA protected areas

Livestock incursion in both Dodori and Boni National Reserves is a major threat to wildlife conservation as livestock displaces wildlife which in turn invades cultivated and settled areas adjacent to these protected areas. The problem is particularly serious during droughts when large herds of cattle are brought to graze in the national reserves. To resolve this problem, KWS will work closely with the Lamu East and Ijara District Security Committees to design

effective intervention measures to curb livestock incursion in the national reserves. This will involve implementing integrated solutions including, enhancing patrols, providing water for livestock and improving range management outside the PAs, environmental education and awareness among the local community, and drawing agreements with pastoralists regarding when, where and under what conditions livestock can be grazed in the national reserves.

Action 1.5: Liaise with the National Land Commission (NLC) to resolve the land tenure conflict regarding Kiunga Marine National Reserve (KMNR) islands

During the gazettement of KMNR in 1979, KMNR encompassed fifty islands and one of these, Kiwayu, which is the largest, was inhabited. This island is still inhabited today and it has also attracted tourism investors who have established two tourist accommodation facilities, Munira and Champali Camps, in the island. As a National Reserve that was alienated from government land, the competent authority in regard to the national reserve is the Kenya Wildlife Service. However, due to lack of KWS presence in the National Reserve in the 1980s and 1990s, illegal land allocations and transactions took place at Kiwayu Island with at least thirty four (34) land titles and letters of allotment for land on Kiwayu Island being issued to land speculators by the Ministry of Lands. This is despite the National Reserve Boundary Plan No. 216/39 clearly showing that the Island is part of Kiunga Marine National Reserve. Hence to ensure that KMNR's integrity is restored, and to remove any ambiguity on land ownership in the national reserve, KBDCA management will liaise with KWS Lands Department and NLC to revoke all titles acquired after the 1979 gazettement of the KMNR. In addition a tripartite dialogue between KWS, NLC and the local community living in Kiwayu Island will be initiated to discuss and agree on conditions for continued occupation of the island.

Action 1.6: Develop participatory natural resource management guidelines for KBDCA

There is lack of co-operation and integration of policies/regulations between different Government agencies that have mandate to manage different natural resources within and adjacent to the KMNR. For instance, KWS is responsible for wildlife conservation and management; the Fisheries Department is responsible for controlling and regulating fishing activities; and the KFS has mandate over conservation and management of mangrove forests. All these activities take place in the same geographic area and as such, sectoral conflicts are bound to occur as each government organisation pursues its mandate. To resolve these conflicts, KBDCA management will collaborate with KFS and FiD to develop natural resource management guidelines, which will specify the roles and obligations of each organisation in the KBDCA; and how natural resources will be protected and utilised for the benefit of the local community and other national and international stakeholders. These guidelines will be gazetted under the Wildlife Act, Cap 376 to ensure that they are enforceable. Further, these organisations will develop specific resource management plans for fisheries and mangroves to act as day to day guiding tools for managers responsible for managing fisheries and mangrove forests in the KMNR.

Action 1.7: Develop a detailed participatory management plan for Boni National Reserve

Due to the poor security and remoteness of the Boni National Reserve, comprehensive assessments of natural resources have not been carried out. Hence, this management plan is not very explicit on the management actions that will be implemented in the reserve. However, Dodori and Kiunga Marine National Reserves have benefited from WWF and KWS

supported research and management projects that have generated useful management oriented information. Therefore, once security is enhanced through implementation of actions specified under Objective 4 of this programme, KWS and its partners will increase research activities in Boni National Reserve. In addition, comprehensive natural resource assessments will be carried out with the aim of identifying resource uses that are compatible with conservation. A detailed participatory management plan for the reserve will thereafter be developed in close collaboration with Garissa County Government.

Action 1.8: Liaise with other stakeholders in the establishment of a KBDCA information management system

Timely and relevant information is a key pillar in an efficient and effective protected area management system. The many diverse activities and managers involved in the natural resource stewardship at the ecosystem level require information to support decision making. The managers and projects involved with activities such as PA inventories, short and long-term monitoring, research studies, threatened and endangered species management, fire management, trail and road maintenance, law enforcement, and interpretation, all require and/or provide natural resource information to others.

As such, under this management action, KBDCA management, will develop, organize, and make available natural resource data and facilitate the transformation of data into information through analysis, synthesis, and modelling. To realize this, a comprehensive resource information management system will be implemented at Mkokoni Station. This will require provision of adequate infrastructure (e.g., staffing, hardware, software) to support database establishment and ensure that relevant resource data collected by various stakeholders, such as KWS, KFS, FiD, KMFRI, WRMA, WWF and individual researchers are entered, quality-checked, analyzed, reported, archived, documented, catalogued, and made available to others for management decision-making.

Action 1.9: Explore ways of initiating a cross-border cooperation programme to support the management of Boni National Reserve in Kenya and Laga Badana-Bushbush National Park in Somalia

The presence of cross-border protected areas (Boni National Reserve in Kenya and Laga Badana-Bush Bush National Park in Somalia) along the Kenya Somalia border presents an opportunity for establishing a collaborative cross-border conservation initiative between Kenya and Somalia. Such an initiative can be designed to address poaching which is one of the major threats to biodiversity in these two cross-border protected areas that has resulted in a sharp decline of targeted wildlife species e.g. elephants. Collaboration between Kenya and Somalia wildlife authorities in the fight against poaching is critical if the war on poaching is to be won. Hence, under this management action, KBDCA management will partner with other stakeholders in developing a cross-border biodiversity funding proposal and solicit for funding from donors, such as the *Peace Parks Foundation,* whose mission is to facilitate the establishment of trans-frontier conservation areas for conservation of biodiversity, and promoting regional peace and stability.

Action 1.10: Ensure that Kiunga Biosphere Reserve (KBR) Joins the World Network of Island and Coastal Biosphere Reserves

The Kiunga Marine National Reserve is designated as a UNESCO biosphere reserve and as such it is a member of the World Network of Biosphere Reserves (WNBR), which is composed of 610 biosphere reserves in 117 countries. The WNBR promotes North-South and

South-South collaboration and represents a unique tool for international co-operation through sharing knowledge, exchanging experiences, building capacity and promoting best practices. Since its establishment in 1980, Kiunga Biosphere reserve has not benefitted much from its international designation as a biosphere reserve. Therefore, to promote Kiunga Biosphere Reserve (KBR) at the international scene, KBDCA management will liaise with the KWS Conventions Department and the National Man and Biosphere Committee to have KBR join the World Network of Island and Coastal Biosphere Reserves. This network aims to study, implement and disseminate island and coastal strategies to preserve biodiversity and heritage, promote sustainable development, and adapt to and mitigate the effects of climate change.

Objective 2: Performance and motivation of KBDCA staff improved

Although the KBDCA's remoteness and wilderness characteristics attract visitors to the area, as a place of work it is a difficult and isolated environment that presents many challenges to the area's workforce. These factors, combined with poor transport and communication links, can have negative impacts on the morale of KBDCA staff, and consequently their ability to perform to their maximum potential. Under this management objective, therefore, the following management actions will be implemented to boost staff performance: implement the sector management organisational structure; provide and maintain adequate staff welfare facilities; liaise with Ministry of Health to enhance the management of health clinics in the area; provide necessary working tools and gear to staff; and liaise with KWS Training Section in carrying out a staff training needs assessment and training staff in relevant skills. These actions are elaborated in the following sections.

Action 2.1: Implement the sector management organisational structure

This management plan recommends establishment of a sector based administrative structure similar to the ones established in Mt Kenya, Tsavo, Aberdare and Meru Conservation Areas. The sector administrative structure is implemented in large conservation areas that require decentralised management to ensure management presence in all parts of the conservation area. Apart from KMNR where KWS has some management presence, the other two national reserves have no management and administrative infrastructure. The only ongoing management is wildlife protection in form of security operations to counter wildlife poaching, and particularly of elephants. With the ongoing developments in the adjacent LAPSSET corridor, it is envisaged that KBDCA will become an important recreation area for the Lamu port residents and visitors, and therefore the KBDCA should be developed and managed to exploit the anticipated increase in tourism.

To ensure that there is strong and effective management system that is able to develop tourism opportunities and at the same time offer security to visitors and wildlife, a new management structure is proposed. In this regard a Senior Warden will oversee the management of the KBDCA while Park Wardens will be posted to each of the three protected areas. This new structure will require substantial increase in staff at all levels. In view of this during the plan period, KBDCA management will liaise with KWS Headquarters, Human Capital Division to ensure that adequate staff is deployed in line with the new KBDCA organisational structure.

Action 2.2: Provide and maintain adequate staff welfare facilities

KWS recognises the importance of providing recreational facilities to field staff as a morale booster. Already, most KWS stations are provided with DSTV facilities at staff canteens to enhance staff morale. However, welfare facilities are lacking from KBDCA administration centres, and recreational clubs are yet to be established. In order to boost staff morale in the staff residential areas, satellite TV will be installed at canteens that will be established at all the sector headquarters (Mkokoni, Mangai, and Sangailu). Further, sports facilities and equipment will be provided at each of the sector headquarters.

Action 2.3: Lobby the Ministry of Health to enhance the management of health clinics in the area

A healthy work force is an important prerequisite for effective delivery of conservation and management objectives. For enhanced staff performance, it is essential that staff has easy access to affordable medical treatment whenever they fall sick. Currently there exist three health clinics (Mkokoni, Mangai and Milimani) that provide health care services to KBDCA staff. However, these health facilities do not have adequate medical personnel and they are not sufficiently equipped with medical equipment and drugs to effectively provide the re-quired service. In view of this, under this management action, the Senior Warden-KBDCA will lobby the Ministry of Health, Lamu County Government and other stakeholders to have the clinics equipped and staffed appropriately to ensure that KBDCA staff and the local community are provided with quality health services.

Action 2.4: Provide necessary working tools and gear to staff

Providing staff with working tools in accordance with the requirements of their professions enhances, not only staff motivation, but increases productivity as well. It also plays an essential role in achieving timely and good quality results. Hence, where practicable, KBDCA staff will be provided with equipment needed to perform their duties effectively. Such equipment includes office equipment, such as computers and their accessories, and diving and snorkel-ing equipment. The staff will also be trained in use of the working tools to increase efficiency and effectiveness.

Action 2.5: Liaise with KWS Training Section in carrying out a staff training needs assessment and train staff in relevant skills

Staff training is vital in ensuring that staff has necessary and up-to-date skills to carry out their work efficiently. To focus staff training on relevant skills, management will first carry out a training needs assessment of the current KBDCA staff and based of the identified needs, staff will be trained in relevant skills in line with KWS training policy. In particular, focus will be on training staff in management of a complex mix of forest and marine ecosystems that face a wide range of challenges. For instance, it is important that rangers receive scuba diving skills to enable them, access, monitor and map activities in the deeper coral reef eco-system effectively.

Objective 3: Infrastructure, transport and communications to support PA management and tourism development improved

The desired future state of the KBDCA is one where essential infrastructure to support effective tourism development and PA management is available. This will be supported by decentralising management of the KBDCA to the three KBDCA management sectors (discussed under the KBDCA Zonation Scheme), and then channelling management resources to these sectors. In order to realize the above-stated desired state, management actions focusing on improvement of infrastructure, transport and communications have been designed. These actions are described in the following sections.

Action 3.1: Prepare a road network plan and construct roads in the KBDCA

The road network in Dodori and Boni NRs is currently limited to tracks that are only accessible using 4WD vehicles. Most of the roads in the two reserves are currently overgrown with vegetation because of a long period of neglect. There are however, plans by the government to have the main access road from Mokowe to Kiunga tarmacked to improve transportation in the Lamu metropolitan region.

Through this action therefore, KBDCA management will develop a road network plan for roads that have been proposed by the tourism programme and roads that will be used for patrols. The technical and engineering designs for the roads and other infrastructural developments proposed under Actions 3.2, 4.4 will be developed with support from the ongoing World Bank-funded Kenya Coastal Development Project (KCDP). In addition KCDP will support the construction of roads in Dodori National Reserve. However, before construction of the roads and any other infrastructure that can result in significant environmental impacts, Environmental Impact Assessments (EIAs) of the planned constructions will be carried out.

Action 3.2: Construct residential and non-residential buildings

The main staff accommodation and welfare facilities in the KBDCA are located at Mkokoni station, which serves as the administration center for both KMNR and DNR. However, currently, staff houses are not adequate, hence limiting the number of staff that can be posted to manage the KBDCA. During the plan period, additional staff houses will be constructed in line with the sector management approach that is being implemented in the KBDCA. To start with, ranger houses and an office block will be constructed in Dodori National Reserve with support from the KCDP. A summary of residential and non-residential buildings to be constructed in the KBDCA is given in table 16.

Table 17: Construction and rehabilitation of buildings at the KBDCA

Management Sector	Administration Station	Type of buildings	Description of work
Kiunga MNR	**Mkokoni** (KBDCA and Sector HQ)	Residential houses	Construction
		Office block	Construction
Dodori NR	**Mangai** (Sector HQ)	Residential houses	Construction
		Office block	Construction
Boni NR	**Sangailu** (Sector HQ)	Residential houses	Construction
		Office block	Construction

Action 3.3: Provide water to all the three sector headquarters (Mkokoni, Mangai, Sangailu)

Fresh water for the Mkokoni Headquarters is provided from a rain water-harvesting tank *(Jabia)* and the Mkokoni village well, two Kilometres away. The well is only fresh during the rainy season and is not potable. There is also, a serviceable water bowser that is used to fetch water from Mangai River during the dry season when water is scarce. This is, however, inadequate especially with the changing climatic conditions. Therefore, KBDCA management (in collaboration with its Management Advisory Committee and other stakeholders) will lobby for funds from KWS and donors and liaise with the Ministry of Water to ensure adequate water provision at the administrative centers. This may imply sourcing water from Mangai River to supply the proposed Mangai station and constructing a *Jabia* at Sangailu.

Action 3.4: Maintain airstrips in the KBDCA

 Aerial patrols and accessing KBDCA by air require well maintained airstrips. The KBDCA has a number of airstrips distributed in the area, but most of them are not operational due to lack of maintenance e.g. Mangai, Kiunga, Hadhi, Mararani and Dodori. However, Mkokoni and Bodhei airstrips are operational and they are regularly used by KWS and tour operators. Hence, to improve aerial surveillance and access to tourist attractions, KBDCA management will liaise with KWS Headquarters to ensure that Mangai, Kiunga, Hadhi and Mararani airstrips are maintained and through regular clearing of vegetation.

Action 3.5: Construct tourist jetties at Kiwayu, Mkokoni and Mvundeni

Accessing the KBDCA by boat is the most interesting and the most popular preferred means of arriving at KBDCA as people get to experience the scenic view of the open sea and the mangroves along the shoreline. However, once at Mkokoni or Kiwayu Island as well as other coastal KBDCA villages, visitors have to alight in knee deep water to get to land as there are no jetties. Similarly they have to wade through water to get back to the boat. Hence, to ensure comfort of visitors, tourist jetties will be constructed at Kiwayu Island, Mkokoni and Mvundeni coastal villages.

Action 3.6: Provide additional vehicles in KBDCA

Availability of reliable transport is critical to effective implementation of management activities. The entire KBDCA is faced with inadequate vehicles with all the platoons namely Kiunga, Mokowe and Baomo being served by an old fleet of six land cruisers and one lorry. Mkokoni station has one land cruiser for problem animal control and other administrative activities. Due to their condition the vehicles require regular maintenance which is carried out at the Shimba Hills workshop, which is far away from the KBDCA. To ensure that the KBDCA management has adequate transport to be effective in its management duties, each platoon will be provided with three serviceable four wheel drive vehicles. Further, each protected area headquarters (Mkokoni, Mangai, and Sangailu) will be provided with a four wheel drive vehicle.

Action 3.7: Replace the old boat and procure a new 200HP engine one

For smooth and efficient operation in the marine reserve, the Senior Warden will liaise with KWS headquarters to fast track procurement of a new boat and 200HP engine. This is ex-

pected to enhance movement of KBDCA staff, improve on provision of visitor and natural resource security, and curb other vices such as illegal fishing, poaching among illegal activities taking place in the Kiunga Marine National Reserve.

Action 3.8: Establish a mechanical workshop

Prompt repairs of vehicles and machinery pre-empts lengthy work disruptions and unnecessary loss of working hours. Currently, vehicle repairs are carried out at the KWS Shimba Hills Workshop, in the south coast. This occasions delays grounding PA management activities. Hence, to ensure timely repair of vehicles, a small mechanical workshop will be established in the KBDCA. The workshop will strive to maintain an optimal fleet of vehicles and ensure that all KBDCA sections are functional at all times. In addition to this, the workshop will be staffed with competent mechanics to carry out vehicle and machinery repairs.

Action 3.9: Provide electricity to residential and non-residential buildings at the sector headquarters

Currently, Mkokoni station's power supply is from an electric generator owned by WWF. Power is supplied to staff quarters and bandas during the night and to offices when needed. However, operating a generator is expensive and not eco-friendly. It is therefore important that a green source of power be installed at Mkokoni and the other administration stations that will be established. In this regard, solar power will be installed at the three proposed administration stations (i.e. Mkokoni, Mangai, and Sangailu).

Action 3.10: Identify appropriate sites for construction of entry gates

The tourism programme in this management plan has set up an ambitious road map for opening up the KBDCA for tourism development. Therefore, to facilitate controlled entry of visitors to the KBDCA protected areas, KBDCA management will identify suitable sites for establishment of entry gates. Some of the potential sites that could be evaluated include Mangai, Milimani and Kiangwe in DNR; Sangailu in BNR; and Mkokoni and Kiwayu in KMNR.

Action 3.11: Improve signage throughout the KBDCA

The KBDCA has paucity of directional and information signage. This could be attributed to lack of basic protected area infrastructure, such as roads and administration stations. However, the implementation of the management actions outlined under Objective 3 of the Protected Area Operations and Security Management Programme will require that signage is provided to direct and inform visitors. To facilitate visitor movement and add interest to the KBDCA's resource values, the signposts will be constructed using the KWS signpost design adopted in other branded protected areas, and where appropriate information on distance to destination and other relevant interpretive information will be included. Additional informational signage will be installed at tourist facilities, such as gates, lodges, camps, campsites and bandas.

Action 3.12: Demarcate PA boundaries

Increased ecosystem degrading activities like livestock incursions, encroachment of agriculture, and illegal bush meat poaching can partly be attributed to unclear and unmarked protected area boundaries between the KBDCA and adjacent community land. To remove this

ambiguity, and stem illegal activities in the KBDCA's protected areas, the protected area boundaries will be surveyed, cleared and marked to inform people when they are entering the protected area. Boundary markings with clear signs indicating, "Y*ou are now entering a protected area*", will be installed at all major incursion points. And to mark the KMNR boundary in the Indian Ocean waters, marker buoys will be used.

Action 3.13 Improve KBDCA fire preparedness capacity

Wild fires in the KBDCA are mainly caused by honey gatherers who use inappropriate honey harvesting methods and herders who use fire as means of controlling pests and for pasture improvement, and farmers when clearing forest areas to cultivate. Wild fire often spreads across a large area indiscriminately burning most of the forest biodiversity, thereby affecting the propagation and regeneration of some species, and modification of land cover from wood land to grassland. It is therefore vital that fire preparedness is enhanced to effectively tackle fires when they occur. As such, under this management action, KBDCA management will develop and maintain communication systems to support its fire management activities. In regard to this, sufficient and effective telecommunication systems (radio and telephone) will be maintained. In addition, the community villages in fire prone areas will be linked by radio to facilitate communication. And to ensure efficient use of the radio communication equipment during fire management activities, all personnel required to use radios will be provided with the requisite basic training in radio communication. Further, KBDCA management will, as far as is practicable, ensure that selected staff that are physically fit to fight fires receive basic fire fighting training. In connection with this KBDCA management will liaise with the KWS Headquarters fire section to organize in-house fire fighting training for relevant staff.

In addition, to ensure rapid and effective response to wild fires, KBDCA management will provide adequate resources in all the KBDCA administration stations to fight fires. These stations will be provided with adequate and serviceable firefighting equipment, such as power saws, shovels, *pangas,* and slashers. KBDCA management will also ensure that vehicles are appropriately distributed and readily available to facilitate quick response to fires. And to ensure quick access to fires, KBDCA management will maintain all the major roads, tracks and access routes necessary for fire management purposes. The protected area boundaries in fire prone areas will also be cleared and maintained to act as effective fire breaks.

Action 3.14: Install a repeater station, HF Radio and base transceiver for Mkokoni Station

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Radio communication is an important component of KWS' telecommunication network. The main reason for selection of this mode of communication is because of the ease of use and the low cost it takes to use radio communication. In addition, most of the protected areas are located in very remote areas that are poorly covered by telephone networks making radio communication the best mode of communication in the protected area network. Hence, to improve communication between KBDCA and other KWS sections elsewhere, KBDCA management will liaise with the KWS Headquarters telecommunications section in identifying a suitable site for installation of a repeater station; installation of a HF Radio and base transceiver station at Mkokoni; and establishing a common channel to be used by KWS and other partners.

> **Action 3.15: Liaise with KWS HQs for installation of internet services at Mkokoni**

Internet connection in KBDCA is very poor due to inadequate coverage by mobile service providers. However, WWF-Mkokoni has VSAT internet services and they share these services on request. To enhance communication, and in particular e-mail services, the Senior Warden will liaise with KWS headquarters to have satellite based internet services at Mkokoni station.

> **Action 3.16 Lobby for KBDCA to be branded**

Branding is a promotion and marketing strategy employed by KWS to advertise the outstanding values that give a visitor memorable experiences of a protected area. The branding process involves improvement of protected area infrastructure and giving the PA a distinct identity based on the exceptional resources protected in it. Currently basic housing for KWS staff and administration at KBDCA is inadequate. In addition, there are no tourist roads in the terrestrial PAs (Boni and Dodori NRs). In view of this, KBDCA management will lobby KWS headquarters to have the conservation area branded to establish basic PA infrastructure and to promote the area as a pristine tourist attraction.

Objective 4: Wildlife, visitor, and KWS asset security enhanced

Due to the KBDCA's location close to Somalia, which has been at war since early 1990s, and the remoteness of the area, safety of KBDCA visitors and staff, and the protection of the area's natural resources, remains an issue of paramount importance; a situation that is unlikely to change during the 10-year lifespan of this plan. As such, efficient, effective and extensive security operations are particularly important in the KBDCA, and are key to the successful implementation of various aspects of this plan; including, perhaps most importantly, the proposed expansion of tourism in currently underused parts of the KBDCA (such as Dodori and Boni national reserves). This objective has therefore been designed to ensure that the KBDCA and surrounding community areas are a safe and secure environment, and encroachment, livestock grazing and other illegal natural resource uses within the core protected areas are minimised. Therefore, a high priority of this management objective is the intensification and extension of security and management presence across the entire KBDCA. This will be supported by the decentralised sectoral management of the area, which aims to increase management presence and infrastructure development across the KBDCA, and the establishment of new ranger outposts in line with the sectoral management strategy. Management actions developed to achieve this objective focus on: establishing a communication mechanism between the KBDCA security section and tourist facilities in the KBDCA; liaising with the local police to enhance security at the tourist facilities throughout the KBDCA; developing a KBDCA security database; reviewing security operations and identify new outpost locations; carrying out intense ground, marine and aerial patrols; providing adequate security to staff both at the work stations and during field work; and establishing contacts with key informants to increase community involvement in gathering intelligence information. These actions are elaborated in the following sections.

Action 4.1: Establish a communication mechanism between the KBDCA security section and tourist accommodation facilities

Visitor security is, and will remain for the foreseeable future, a very important management issue in the KBDCA. Unless visitor security is guaranteed over the entire area, tourism development and use will not expand. Therefore, with the anticipated increase in visitors and visitor facilities, security measures, and especially proactive ones, need to be implemented to maintain and also boost visitor security in the KBDCA. To ensure visitor security in the area, security will be strengthened by establishing a communication mechanism between the KBDCA security section and tourist facilities in the KBDCA. All tourist facilities will be provided with communication radios, which will have a channel for communicating with the KBDCA security team. In addition, a 24-hour security hotline (cell phone number) will be established, where network is available, to further boost communication between KWS, tourist facilities and the general public.

Action 4.2: Liaise with the local police to enhance security at tourist accommodation facilities

KWS is mandated to provide a safe environment for wildlife in the protected areas, but the security of tourist facilities and tourists falls under the ambit of the Kenya Police Service. It is therefore essential that KBDCA management liaises with the police to ensure that law and order is maintained at the tourist facilities, especially given that these facilities will be employing many staff in future as tourism grows. Through this action therefore, KBDCA management will liaise with the police to ensure that police officers are deployed at large tourist facilities in the area to maintain security.

Action 4.3: Establish a KBDCA security database and identify security hotspots

A security database is essential in order to monitor and evaluate the effectiveness of the overall security strategy at the KBDCA, and to inform timely changes to the strategy if appropriate. Information from the database can be used to support planning of security operations and patrols, and help identify the optimal location of new security outposts. As such, in order to enhance security operations, a comprehensive security database for the KBDCA will be developed and maintained through this action. Key elements of this database will be details on patrols carried out per month (such as patrol route, observations made, and action taken in case of observed illegal activity), details on arrested individuals and action taken, and intelligence information on wildlife-related criminal activities. The database will be linked to a Geographic Information System (GIS) to facilitate display and output of information in the form of maps. This will enable the identification of areas where security issues are most pressing, and the revision of KBDCA security operations and location of new outposts (Action 4.4 of the Protected Areas Operations and Security Management Programme).

Action 4.4: Review security operations and identify new outpost locations

KBDCA security patrols are currently poorly structured, with some geographic areas being covered intensely while others are rarely patrolled due to lack of roads. Patrols carried out in this fashion have proved ineffective in deterring wildlife-related offences, and especially poaching. As such, and incorporating the information collected on security hotspots identified in the previous action, areas for increased patrol effort and the appropriate location of new patrol outposts will be identified. In some cases these areas may also vary on a temporal

basis as, for example, pressure from livestock incursions intensifies at different times of year in different parts of the area. This analysis will provide the basis for development of new patrol outposts, and for intensifying security patrols.

Action 4.5: Carry out intense ground, marine and aerial patrols

The main protected area offences committed within the KBDCA are illegal logging, illegal livestock grazing, illegal fishing, and bush meat and trophy poaching. Although significant advances have been made in securing the KBDCA since the 1990s, with elephant poaching now vastly reduced, significant challenges remain (such as livestock incursions). This is particularly important in Boni and Dodori National Reserves, and unless illegal activities are reduced in these areas, tourism will not expand. As a result, the expansion and intensification of security patrols to curb illegal activities over the entire KBDCA is paramount during the implementation period of this plan.

In order to combat illegal activities through deterrence means, aerial, marine and ground patrols will be intensified within the KBDCA. The expansion and intensification of these patrols will be based on the review of security operations carried out under Action 4.4 above. In addition, to further facilitate the patrols, an efficient patrol road network will be designed and constructed as one of the activities under Action 3.1 of the Protected Area Operations and Security Management Programme. The patrol teams will also be equipped with modern security equipment including Global Positioning Systems (GPS) to record spatial data on patrol routes. This data will contribute to the security database that will be established under Action 4.3, and will be used to monitor efforts made by the patrol teams to curb wildlife crime in the KBDCA.

Further, large marine vessels passing through the KMNR are unaware of the Reserve boundaries and usually trespass into the reserve and carry out activities that contravene reserve regulations, such as trawling. Therefore, to reduce uncontrolled, non sustainable and non-eco-friendly activities and uses of the marine resources within the reserve, KBDCA management will enhance surveillance patrols to detect and warn vessels that trespass into the reserve. In addition, since fishers from the local community are out in the sea most of the times, KBDCA management will develop a community-based sea vessel monitoring programme. In regard to this, fishers' cooperation will be solicited to monitor sea vessels spotted in the reserve.

Action 4.6: Provide adequate security to staff both at the work stations and during field work

The KBDCA is prone to bandit attacks because of its close proximity to the Somalia border. It is therefore critical that security of staff is given priority as the administration stations and staff on field work can become a target for bandits. Hence, to ensure security of KWS staff and assets, adequate rangers will be provided to carry out both sentry and escort duties. Sentry will be carried out day and night in line with the standard operating procedures for sentry duties. Further, ranger escort will be provided to all KWS vehicles on official duty in the KBDCA.

Action 4.7: Establish contacts with key informants to increase community involvement in gathering intelligence information

A robust intelligence network is essential to obtain advance warning of events and movements of individuals that pose a threat to wildlife or tourism security in the KBDCA. Commu-

nity members can be a vital source of intelligence information as criminals live and operate within the community. Even in cases where criminals come from outside the KBDCA-adjacent areas and beyond, there are always local contacts collaborating with them in perpetrating wildlife-related crimes. In areas where a strong relationship, based on trust, exists between KWS and the local community, the security section is usually tipped off about impending wildlife crimes by members of the local communities, and prompt pre-emptive actions are taken, saving wildlife in the process. In order to enhance intelligence information gathering, the existing intelligence network will be revamped with new contacts being established among key informants in the community. The number of intelligence cells in the KBDCA adjacent areas will also be increased for comprehensive coverage of the area.

Plan Monitoring

The plan monitoring framework set out in the following tables has been designed to provide guidance for the assessment of the potential impacts resulting from the implementation of each of the plan's four management programmes. The framework sets out the impacts of each programme's objectives that may possibly occur. The framework also includes easily measurable and quantifiable indicators for assessing these impacts, and potential sources of the information needed. Monitoring the impacts of the plan implementation is a key aspect of the ultimate success of the plan and for informing adaptive management of the area, and as such ensuring that overall benefits from plan implementation are maximised, and that any negative impacts are appropriately mitigated.

Table 18: Ecological Management Programme Monitoring Plan

Objective	Potential Impacts (Positive and Negative)	Verifiable Indicator	Sources and means of verification
Objective 1: KBDCA's Key habitats (marine and terrestrial) and important dispersal areas are managed and maintained	Habitat connectivity between the DNR and BNR and the natural habitats adjacent to these two national reserves is maintained	Extent of permanent agriculture/settlements and wildlife habitat adjacent to the BNR and DNR	KBDCA land cover change study, satellite imagery and ground observations
	Elephants and other key species are able to continue moving between the BNR and DNR and surrounding dispersal areas	Elephant movements	GPS collaring of individuals
	The coral reef integrity is maintained	Coral diversity	Coral monitoring reports
	Sea turtles continue to nest on KMNR beaches	Number of nests	Turtle nest monitoring reports
	The area of grassland available for key grazing species in the KBDCA is maintained	Area of grassland	Land cover study, Satellite imagery and ground observations
Objective 2: KBDCA species of conservation concern conserved	The populations of all threatened species in the KBDCA are increasing at target rates	Population size and recruitment rates	Population counts
Objective 3: KBDCA's ecological components and dynamics understood and scientific information disseminated	The ecological composition and dynamics of key habitats is studied	Species composition	biodiversity inventory reports

Table 19: Tourism Development and Management Programme Monitoring Plan

Objective	Potential Impacts (Positive and Negative)	Verifiable Indicator	Sources and means of verification
Objective 1: Tourism accommodation facilities developed	Increased number of visitors to the KBDCA	Annual visitor numbers	KWS HQ visitor database
	Improved financial sustainability of the KBDCA	Annual revenue	KBDCA Finance Dept records
	New developments impact on the KBDCA's wilderness characteristics	KBDCA visitor and investor satisfaction	Feedback from KBDCA investors
Objective 2: Tourist activities diversified to enhance visitor experience and satisfaction	Increased use of the Low Use and Wilderness Zones	Percentage of KBDCA visitors staying overnight in the Low Use and Wilderness Zones	KWS HQ visitor database and concession holder records
	Increased length of stay in the KBDCA	Average number of nights spent in the KBDCA per visitor	Concession holder records and bed night fees
	Visitor security incidents as a result of using remote parts of the KBDCA	Number of visitor safety and security incidents	Incident reports
	Environmental degradation from new tourist facilities and/or supporting infrastructure	Evidence of pollution/litter or habitat degradation at sites where facilities or infrastructure are located	Targeted inspections by KBDCA staff
Objective 3: KBDCA promotion and marketing improved	Improved visitor understanding of the KBDCA's ERVs, conservation issues and history	Number of guidebooks and maps sold	KWS HQ tourism records
	The KBDCA's wilderness and environmental qualities are compromised around attractions	Evidence of litter and environmental damage at KBDCA's attractions	Targeted inspections by KBDCA staff
Objective 4: KBDCA tourism management improved	Increased collaboration between KWS and KBDCA investors	Number and participation at tourism investor and KBDCA management meetings	Meeting minutes

Objective	Potential Impacts (Positive and Negative)	Verifiable Indicator	Sources and means of verification
	Reduced infringement of PA code of conduct for visitors	Number of visitors that Are found to have infringed the PA code	Patrol records

Table 20: Community Partnership and Conservation Education Management Programme Monitoring Plan

Objective	Potential Impacts (Positive and Negative)	Verifiable Indicator	Sources and means of verification
Objective 1: PA community communication and collaboration mechanisms improved	Enhanced relationships between KBDCA management and surrounding communities	Incidences of KBDCA - community conflict	Community Wildlife Service records
Objective 2: Conservation education and awareness raising programme strengthened	Improved understanding of the KBDCA's conservation importance Increased community awareness of and respect for KBDCA rules and regulations	Number of participants in conservation workshops and seminars Number of local community members arrested for illegal activities in the KBDCA	Community Wildlife Service records Security Section Records
Objective 3: Conservation compatible land uses and practices promoted	Decreased conversion of wildlife habitat to permanent agriculture around the KBDCA	Area covered by permanent agriculture, and trends in rate of conversion	KBDCA land cover change study and satellite imagery
	Reduced illegal natural resource use in the KBDCA	Number of local community members arrested for illegal natural resource use the in KBDCA	Security Section Records
Objective 4: Human - wildlife conflict reduced	Reduced costs of wildlife to KBDCA adjacent communities	Incidents of human-wildlife conflict around the KBDCA	Community Wildlife Service records (monthly reports and occurrence books)
Objective 5: Opportunities for communities to benefit from the KBDCA improved	Increased value and importance of the KBDCA to surrounding communities	Income from activities linked to the conservation of the KBDCA	Community Wildlife Service records

Objective	Potential Impacts (*Positive* and *Negative*)	Verifiable Indicator	Sources and means of verification
	Benefits exacerbate inequalities within the surrounding communities	**Socio-economic make up beneficiaries from schemes supported by the KBDCA Community programme**	**Community Wildlife Service records**
	Increased immigration to KBDCA adjacent areas as a result of benefits	**Trends in population growth and immigration in KBDCA adjacent areas**	**District records, national census, community surveys**
Objective 6: Sustainable utilization of marine resources promoted	**Increased fish resources**	**Fish landed**	**Fisheries Department fish landing records**

Table 21: Protected Area Operations and Security Management Programme Monitoring Plan

Objective	Potential Impacts (*Positive* and *Negative*)	Verifiable Indicator	Sources and means of verification
Objective 1: Effective management systems and collaboration mechanisms established and operational	**Enhanced management collaboration between KWS and County Governments of Garissa and Lamu, and other key government and non governmental agencies**	**Joint activities implemented**	**KBDCA annual reports**
	Increased stakeholder support for management of the KBDCA	**Number of KBDCA advisory meetings or other stakeholder collaboration events held**	**Meeting minutes or KBDCA management records**
Objective 2: Performance and motivation of KBDCA staff improved	**Improved efficiency of KBDCA staff undertaking their roles**	**Staff performance against 3-Year Activity Plan "milestones"**	**KBDCA annual reports**
	Improved morale of KBDCA staff	**Number of poor morale related incidences**	**KBDCA annual reports**
Objective 3: Infrastructure, transport and communications to support PA management and tourism development improved	**Enhanced visitor use of the Low and Wilderness Activity Zones**	**Percentage of KBDCA visitors staying overnight in the Low Use and Wilderness Zones**	**KWS HQ visitor database and concession holder records**

Objective	Potential Impacts (Positive and Negative)	Verifiable Indicator	Sources and means of verification
	Improved visitor and management access across the KBDCA	Kilometres of roads built and/or improved	KBDCA management records and KWS HQ GIS database
	Improved efficiency in management operations (especially security and PAC responses)	Ratio of operational to non-operational vehicles	KBDCA management records and/or periodic surveys
	Improved management response to security or HWC incidents	Number of security and HWC incidences successfully responded to	Community surveys and investor feedback
	Environmental disturbance and pollution during road, gate or airstrip construction	Evidence of litter, pollution or excessive environmental damage	Targeted inspections by KBDCA staff
Objective 4: Wildlife, visitor, and KWS asset security enhanced	The establishment of the KBDCA as a safe and secure destination for visitors and investors	Number of visitor security incidents in the KBDCA	KBDCA Security Section records (incident reports)
	Reduced impact of poaching and livestock incursions on KBDCA natural resources	Size and frequency of cattle incursions into the KBDCA	KBDCA Security Section records
	Improved security situation in KBDCA adjacent areas	Security incidents around the KBDCA	KBDCA Security Section records (incident reports)
	Increased efficiency of law enforcement efforts	Number of arrests made per law enforcement effort	KBDCA Security Section records (patrol records and monthly, quarterly and annual reports)
	Increased disincentive for undertaking illegal activities in the KBDCA	Number of repeat offenders caught in the KBDCA	KBDCA Security Section records

Annexes

The following pages set out the first 3-Year Activity Plans for the four management programmes. The activity plans detail the activities, responsibilities and timeframe necessary for the delivery of each management action over the first 3-year timeframe of this management plan. In addition, the plan sets out specific and time bound "milestones" that KBDCA management aims to achieve in implementing the plan.

Ecological Management Programme Activity Plan

Management Actions and Activities	Persons Responsible	Timeframe FY 2013-14				FY 2014-15				FY 2015-16				Milestones
		1	2	3	4	1	2	3	4	1	2	3	4	
Objective 1: KBDCA's Key habitats (marine and terrestrial) and important dispersal areas are managed and maintained														
Action 1.1: Monitor coral reef resilience														Coral reef map developed by April 2016
1.1.1 Map the coral reef ecosystems in the KMNR	SRS-CCA/WWF	■	■	■	■	■	■	■	■	■	■	■		
1.1.2 Collect and analyse existing coral reef monitoring data to establish trends	"	■	■	■	■	■	■	■	■	■	■	■		
1.1.3 Collect new coral reef monitoring data	"	■	■	■	■	■	■	■	■	■	■	■		
1.1.4 Disseminate coral reef information to KBDCA managers	"	■	■	■	■	■	■	■	■	■	■	■		
Action 1.2: Initiate coral transplantation to mitigate impacts of coral damage at Lamu port development area														Transplantation corals identified by June 2014 and a coral transplantation pilot project initiated by December 2015
1.2.1 Identify corals that need to be transplanted	SRS-CCA/WWF			■										
1.2.2 Carry out an ecological assessment to identify suitable sites for coral transplantation	"			■	■	■	■	■						
1.2.3 Transplant corals in the KMNR and monitor their establishment	"										■			

Management Actions and Activities	Persons Responsible	Timeframe												Milestones
		FY 2013-14				FY 2014-15				FY 2015-16				
		1	2	3	4	1	2	3	4	1	2	3	4	
Action 1.3: Mitigate threats to sea-grass beds														One community sensitization workshop held annually
1.3.1 Liaise with the Community Wildlife Service Department in sensitizing the KBDCA community on sustainable agricultural and fishing practices	SRS-CCA/WWF			X					X				X	
Action 1.4: Conduct research on the ecology of sea grass beds														
1.4.1 Assess the status of sea grass beds	SRS-CCA/WWF													
1.4.2 Monitor marine water quality and sediment load	"													
Action 1.5: Collaborate with KFS and the local community to establish a co-management mechanism for the mangroves														Mangrove zoning carried out by June 2014
1.5.1 Liaise with KFS in rezoning the restricted use zone to provide for a productive mangrove sub zone	SRS-CCA/WWF			X										
1.5.2 Create awareness on mangrove conservation	"	X	X	X	X	X	X	X	X	X	X	X	X	
Action 1.6: Carry out a land use/cover study for the KBDCA														Land Use/Cover map of the KBDCA prepared by June 2014
1.6.1 Develop a land use/cover mapping concept	SRS-CCA/WWF	X												
1.6.2 Solicit for funds to support the land use/cover mapping project	"		X	X										
1.6.3 Collect and digitise historical land use/cover maps and other land use reports for the area from the Department of Resource Surveys and Remote Sensing (DRSRS)	"		X	X	X	X	X	X	X					
1.6.4 Procure and interpret satellite imagery data for the KBDCA	"					X	X							
1.6.5 Prepare and ground-truth preliminary land use/cover maps	"								X					
Action 1.7: Liaise with the Water Resources Management Authority(WRMA) in the management of water bodies and establishment of artificial water sources for wildlife														Sites for construction of artificial water points identified by December 2014 and at least two water pans constructed by June 2015
1.7.1 Create awareness among the river water users on sustainable water management practices	SRS-CCA/WWF	X	X	X	X	X	X	X	X	X	X	X	X	
1.7.2 Collaborate with WRMA in enforcement of water rules	"	X	X	X	X	X	X	X	X	X	X	X	X	

Management Actions and Activities	Persons Responsible	Timeframe												Milestones
		FY 2013-14				FY 2014-15				FY 2015-16				
		1	2	3	4	1	2	3	4	1	2	3	4	
1.7.3 Identify suitable sites for construction of artificial water points for wildlife	"	█	█	█	█	█	█	█	█					
Action 1.8: Secure wildlife corridors and dispersal areas														Wildlife corridors identified and secured by June 2016
1.8.1 Identify, map and assess feasibility of wildlife corridors in the KBDCA	SRS-CCA, HEL,	█	█	█	█	█	█	█	█	█	█	█	█	
1.8.2 Initiate an integrated land use planning process in the influence zone	SW-KBDCA	█	█	█	█	█	█	█	█	█	█	█	█	
Action 1.9: Carry out a study on impacts of livestock in the KBDCA protected areas														Livestock impact study carried out by June 2015
1.9.1 Identify and map areas prone to livestock incursions in the national reserves	SRS-CCA	█	█	█	█	█	█	█	█	█	█	█	█	
Action 1.10: Carry out an assessment of alien and invasive species in the KBDCA protected areas														Invasive species survey carried out by June 2014
1.10.1 Carry out a sample survey of alien and invasive species	SRS-CCA					█								
1.10.2 Identify pilot sites for alien and invasive species eradication	"					█								
1.10.3 Remove invasive species from the pilot sites manually and monitor reestablishment	SRS-CCA	█	█	█	█	█	█	█	█	█	█	█	█	
Action 1.11: Implement measures to control pollution of sea waters and beaches														Beach clean up campaigns carried out monthly
1.11.1 Liaise with KWS gazetted Environmental Inspectors in enforcing the EMCA, 1999	Warden-KMNR	█	█	█	█	█	█	█	█	█	█	█	█	
1.11.2 Conduct regular beach clean-up campaigns	"	█	█	█	█	█	█	█	█	█	█	█	█	
Objective 2: KBDCA species of conservation concern conserved														
Action 2.1: Improve the KWS/WWF sea turtle nesting monitoring programme														At least one eco-tourism project identified and piloted by June 2015
2.1.1 Support turtle monitors in establishing an eco-tourism project	Warden-KMNR	█	█	█	█	█	█	█	█	█	█	█	█	
2.1.2 Procure communication radios for turtle monitors	"									█				
Action 2.2: Train sea turtle monitors from the local community														At least one training workshop organised annually
2.2.1 Organise training workshops for turtle monitors	Warden-KMNR			█				█				█		

Management Actions and Activities	Persons Responsible	Timeframe FY 2013-14				FY 2014-15				FY 2015-16				Milestones
		1	2	3	4	1	2	3	4	1	2	3	4	
Action 2.3: Use zoning schemes to protect critical sea turtle nesting and foraging sites														Turtle monitoring data analysed and used to establish turtle sanctuary zones by December 2014
2.3.1 Identify and map turtle nesting and foraging areas using turtle monitoring data	SRS-CCA, Warden-KMNR	■	■	■	■	■	■	■	■	■	■	■	■	
2.3.2 Establish turtle sanctuary zones where fishing activities will be excluded	"	■	■	■	■	■	■	■	■	■	■	■	■	
Action 2.4: Raise the awareness of marine turtle conservation needs at local and national levels														Turtle information compiled and included in KBDCA marketing information by December 2014
2.4.1 Liaise with the KWS Marketing Section to have turtle information included in KBDCA marketing information	Warden-KMNR	■	■	■	■	■	■	■	■	■	■	■	■	
2.4.2 Give conservation talks to communities during the beach clean-up exercises	Warden-KMNR	■	■	■	■	■	■	■	■	■	■	■	■	
2.4.3 promote viewing turtle nesting as a unique tourist attraction	Warden-KMNR	■	■	■	■	■	■	■	■	■	■	■	■	
Action 2.5: Carry out a survey of dugong in the KMNR and adjacent areas														Dugong survey carried out by June 2014
2.5.1 Prepare a concept proposal for a dugong survey and solicit for funds from KWS and other stakeholders	SRS-CCA		■											
2.5.2 Carry out the dugong survey in collaboration with the local community	"			■										
Action 2.6: Establish a bird monitoring programme in the KMNR														Water fowl counts carried out annually
2.6.1 Create awareness on bird conservation	Warden-KMNR	■	■	■	■	■	■	■	■					
2.6.2 Carry out regular water fowl counts	SRS-CCA				■				■				■	
Action 2.7: Establish an elephant monitoring programme														Elephant dung transects established in Boni and Dodori NRs by June 2014
2.7.1 Establish elephant dung transects in Boni and Dodori National Reserves	SRS-CCA, EPC			■	■									
2.7.2 Collect and analyse elephant dung data to determine elephant densities	"					■	■	■	■	■	■	■	■	
Action 2.8: Carry out a study on elephant movement in the greater KBDCA														Elephant collaring carried out by June 2016
2.8.1 Procure GPS collars	SRS-CCA,EPC												■	
2.8.2 Collar and monitor elephant movement	"												■	

Management Actions and Activities	Persons Responsible	Timeframe												Milestones
		FY 2013-14				FY 2014-15				FY 2015-16				
		1	2	3	4	1	2	3	4	1	2	3	4	
Action 2.9: Establish a functional Area elephant management committee for the greater KBDCA in line with the National Elephant Conservation and Management Strategy														
2.9.1 Liaise with the KWS Elephant Programme Coordinator in establishing an Area Elephant Management Committee	SRS-CCA, EPC			■										Area Elephant Management Committee constituted by June 2014
2.9.2 Hold regular Area Elephant Management Committee meetings	"	■	■	■	■	■	■	■	■	■	■	■		
Objective 3: KBDCA's ecological components and dynamics understood and scientific information disseminated														
Action 3.1: Assess and prioritize research needs														A scientific workshop organised by December 2014
3.1.1 Organize a scientific workshop to identify priority research needs	SRS-CCA					■								
3.1.2 Disseminate priority research topics to academic institutions	"					■								
Action 3.2 Establish a research database for KBDCA														An annotated bibliography prepared by June 2014
3.2.1 Prepare an annotated bibliography of research work carried out in the KBDCA	SRA-CCA	■	■	■	■									
3.2.2 Collect and digitise KBDCA research documents	"	■	■	■	■									
Action 3.3: Conduct a comprehensive biodiversity survey of the Boni-Dodori ecosystem to assess its health and identify threats														Biodiversity assessments completed by June 2014 and a comprehensive report available
3.3.1 Liaise with the KWS Head-Ecological Monitoring Department in designing and implementing biodiversity surveys for the KBDCA	SRA-CCA	■	■	■	■									
Action 3.4: Establish a research station at Mkokoni KBDCA Headquarters														A research scientist deployed to the KBDCA by June 2016
3.4.1 Deploy a research scientist to Mkokoni station	SRA-CCA											■		
3.4.2 Procure a vehicle and provide funding to the research scientist to facilitate research work	"											■		
Action 3.5: Create awareness on climate change mitigation and coping mechanisms														Climate change adaptation workshops held annually
3.5.1 Organize climate adaptation workshops for the local community	SRA-CCA			■				■					■	

Management Actions and Activities	Persons Responsible	Timeframe												Milestones
		FY 2013-14				FY 2014-15				FY 2015-16				
		1	2	3	4	1	2	3	4	1	2	3	4	
Action 3.6: Establish a tsetse fly control programme														Proposal for Tsetse fly control developed and submitted to KWS Headquarters by June 2014
3.6.1 Prepare a concept proposal on tsetse fly control in the KBDCA	SRA-CCA													
3.6.2 Solicit for funds for the tsetse control programme	"													

Tourism Development and Management Programme Activity Plan

Management Actions and Activities	Persons Responsible	Timeframe												Milestones
		FY 2013-14				FY 2014-15				FY 2015-16				
		1	2	3	4	1	2	3	4	1	2	3	4	
Objective 1: Tourism accommodation facilities developed														
Action 1.1: Identify suitable sites for establishment of ecolodges and tented camps														Site assessment carried out by December 2013
1.1.1 Constitute a site assessment team comprising of KWS Headquarters staff from the EIA and Marketing Sections, and local stakeholders														
1.1.2 Prepare a preliminary list of all potential sites from local knowledge														
1.1.3 Carry out field work to assess the suitability of each site based on KWS site assessment criteria														
Action 1.2: Identify sites for high end beach hotels														Site assessment carried out by December 2013
1.1.1 as in 1.1 above			█	█	█									
Action 1.3: Advertise and award facility sites for development														Sites awarded by June 2014
1.3.1 Compile site description information for each site	SW-KBDCA, H-MBD													
1.3.2 Prepare a site prospectus and advertise in the local news papers	"													
1.3.3 Select successful bids and award sites for facility development	"													
Action 1.4: Draw and sign lease agreements with Champali and Munira Camps														Lease agreements drawn by June 2014
1.4.1 Organise meetings with Directors of Munira and Champali Camps to discuss site leases			█	█	█									
Draw lease agreements with Munira and Champali Camps			█	█	█									
Action 1.5: Establish KWS Bandas at Mkokoni														Bandas constructed by June 2015
1.5.1 as in action 1.1			█	█										
1.5.2 Construct bandas														

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Management Actions and Activities	Persons Responsible	Timeframe												Milestones
		FY 2013-14				FY 2014-15				FY 2015-16				
		1	2	3	4	1	2	3	4	1	2	3	4	
Action 1.6: Promote establishment of home stays in line with the Ministry of Tourism approved criteria for Home stays														At least two home stays registered by December 2015
1.6.1 Identify suitable home stays in the KBDCA	SW-KBDCA, H-MBD		■	■	■	■	■	■	■	■	■	■	■	
1.6.2 Liaise with the Ministry of Tourism in registering home stays	"	■			■	■	■	■	■	■	■	■	■	
Action 1.7: Establish and maintain camping sites														Two camp sites established in Dodori NR by June 2014
1.7.1 Identify suitable camp sites	SW-KBDCA, H-MBD													
Objective 2: Tourist activities diversified to enhance visitor experience and satisfaction														
Action 2.1: Support expansion of wildlife viewing in Boni and Dodori National Reserves														Tourist attractions mapped by December 2013
2.1.1 Identify and map tourist attractions														
Action 2.2: Establish walking safaris in collaboration with tour operators														Walking routes mapped by December 2013
2.2.1 Identify and map walking routes			■	■										
2.2.2 Clear vegetation along walking routes						■	■		■	■			■	■	
2.2.3 Provide ranger escort to hikers						■	■		■	■			■	■	
Action 2.3: Establish interpretive nature trails and short walks														One nature trail established at Kiwayu Island by June 2014 and two in Dodori NR by December 2014
2.3.1 identify and design nature trails	SW-KBDCA, H-MBD													
2.3.2 Clear vegetation along nature trails	"					■	■	■	■	■	■	■	■	
2.3.3 Install information signage along nature trails	"					■	■	■	■	■	■	■	■	
2.3.4 Provide picnicking facilities along nature trails	"					■	■	■	■	■	■	■	■	
2.3.5 Produce a nature trail brochure	"								■	■	■	■	■	
Action 2.4: Develop KBDCA visitor interpretation centre and displays at key KBDCA entry points														Interpretation material compiled by December 2013
2.4.1 Collect relevant information on natural and cultural resources														

Management Actions and Activities	Persons Responsible	Timeframe												Milestones
		FY 2013-14				FY 2014-15				FY 2015-16				
		1	2	3	4	1	2	3	4	1	2	3	4	
2.4.2 Design the visitor interpretation centre and associated display materials										■	■	■	■	
2.4.3 Construct the interpretation centre										■				
Action 2.5: Establish board walks in the mangroves outside the protected areas														Potential board walk construction sites identified by December 2013
2.5.1 Identify a suitable site for construction of a board walk	SW-KBDCA, H-MBD	■	■											
2.5.2 Liaise with KWS headquarters in constructing the board walk	"			■		■	■	■	■	■	■	■	■	
Action 2.6: Collaborate with tourism stakeholders to improve diverse marine-based recreational activities														An inventory of potential marine-based tourist activities compiled by December 2013
2.6.1 Liaise with tourism investors in identifying and initiating new marine-based visitor activities						■	■	■	■	■	■	■	■	
Action 2.7: Support establishment of bird watching in the KBDCA														Construct one bird hide by December 2013
2.7.1 Identify suitable sites for establishing bird hides						■	■	■						
2.7.2 Construct bird hides							■							
Action 2.8: Improve sport fishing in the KBDCA														Hold a consultative meeting with Fisheries Department and address sport fishing issues by December 2013
2.8.1 Liaise with the Fisheries Department in enhancing licensing of sport fishing in the KMNR	Warden-KMNR					■	■							
Action 2.9: Support establishment of a cultural centre for the Aweer community														A meeting to discuss establishment of the cultural center held and a cultural centre steering committee constituted by December
2.9.1 Organise a meeting for representatives from the Aweer community to discuss establishment of a cultural center	Warden-DNR					■	■							
2.9.2 Establish a cultural center management committee	"							■	■	■	■	■	■	
2.9.3 Provide funding for construction of the cultural center	"							■	■	■	■	■	■	

Management Actions and Activities	Persons Responsible	Timeframe												Milestones
		FY 2013-14				FY 2014-15				FY 2015-16				
		1	2	3	4	1	2	3	4	1	2	3	4	
2.9.4 Train committee members in governance and project management	"			X	X	X	X	X	X	X	X	X	X	2013
Action 2.10: Support establishment of voluntourism in the community areas														Volunteer opportunities advertised in the internet by June 2014
2.10.1 Design a volunteer programme based on the opportunities at the KBDCA	SW-KBDCA, H-MBD	X	X	X	X	X	X	X	X	X	X	X	X	
2.10.2 Advertise the volunteer programme locally and internationally	"	X	X	X	X	X	X	X	X	X	X	X	X	
Action 2.11: Monitor tourism activities at KMNR														A tourism monitoring system established by June 2014
2.11.1 Liaise with researchers in designing an appropriate tourism monitoring protocol	Warden-KMNR, SRS-CCA	X	X	X										
2.11.2 Test and implement the monitoring protocol designed under activity 2.11.1 above	Warden-KMNR, SRS-CCA	X	X	X	X	X	X	X	X	X	X	X	X	
Objective 3: KBDCA promotion and marketing improved														
Action 3.1: Liaise with KWS Marketing Department to develop a marketing strategy for KBDCA														A marketing strategy developed by June 2015
3.1.1 Carry out a comprehensive inventory of tourism resources	SW-KBDCA, H-MBD	X	X	X										
3.1.2 Prepare a tourism marketing strategy to market tourism resources identified under activity 3.1.1 above	"	X	X		X	X								
Action 3.2: Develop a guide book, map and brochure for KBDCA														Guide book, tourist map and information brochure produced by December 2015
3.2.1 Collect and collate relevant information on natural and cultural resources	SRA-CCA					X	X	X						
3.2.2 Update infrastructure map of the KBDCA	"					X	X							
3.2.3 Produce tourist guide book, brochure and map in liaison with the KWS Marketing Section	"					X	X	X	X					
Action 3.3 Organise and participate in special events to promote tourism in the KBDCA														Kiwayu cultural festival held annually and participate in the annual
3.3.1 Initiate meetings to discuss revival of the Kiwayu cultural festival	SW-KBDCA, H-MBD	X	X	X										

Management Actions and Activities	Persons Responsible	Timeframe												Milestones
		FY 2013-14				FY 2014-15				FY 2015-16				
		1	2	3	4	1	2	3	4	1	2	3	4	
3.3.2 Support the community to organise the Kiwayu cultural festival	"						■				■			Lamu Maulidi festival
3.3.3 Participate in the Lamu Maulidi festival														
Action 3.4 Market the KBDCA through the local and international media														At least two news paper articles published and two radio conservation talks organized annually; KBDCA website launched by June 2014
3.4.1 Participate in local radio interviews and conservation talks	SW-KBDCA, H-MBD	■	■	■	■	■	■	■	■		■	■	■	
3.4.2 Contribute articles to national newspapers	"	■	■	■	■	■	■	■	■		■	■	■	
3.4.3 Establish a KBDCA website		■	■	■	■	■	■	■	■		■	■	■	
Action 3.5 Develop and market tourism products targeting the domestic tourism market														Student hostels constructed by June 2016
3.5.1 Establish student hostels	SW-KBDCA, H-MBD									■	■	■	■	
3.5.2 Advertise domestic tourism products		■	■		■	■	■		■	■	■	■	■	
Action 3.6: Brand the KBDCA based on its outstanding marine and terrestrial values														KBDCA branded by December 2015
3.6.1 Design branding logo and slogan	SRA-CCA	■	■	■										
Action 3.7: Capitalise on the KMNR's designation as a UNESCO Biosphere Reserve to market and create awareness on the KBDCA and its attractions														A MAB workshop organised by December 2014
3.7.1 Liaise with the Man and Biosphere Programme of UNESCO in organising workshops to raise awareness on Kiunga Biosphere Reserve	SW-KBDCA					■	■	■	■	■	■	■		
Objective 4: KBDCA tourism management improved														
Action 4.1: Form a tourism forum that includes all KBDCA tourism stakeholders														A KBDCA tourism forum established by December 2013
4.1.1 Organise a meeting to bring together tourism stakeholders to discuss formation of a tourism stakeholders forum	SW-KBDCA, H-MBD	■	■	■										
4.1.2 Support establishment of the tourism stakeholders forum	"					■	■	■	■	■	■	■	■	
4.1.3 Organise regular forum meetings	"					■	■	■	■	■	■	■	■	

Management Actions and Activities	Persons Responsible	Timeframe												Milestones
		FY 2013-14				FY 2014-15				FY 2015-16				
		1	2	3	4	1	2	3	4	1	2	3	4	
Action 4.2: Develop codes of conduct for various marine tourist activities														Codes of conduct developed by December 2013
4.2.1 Review existing visitor codes from other marine areas	SW-KBDCA, H-MBD													
4.2.2 Develop visitor codes specific to KMNR	"													
4.2.3 Avail the visitor codes in tourist facilities, entry gates and the internet	SW-KBDCA, H-MBD					■	■	■	■	■	■	■	■	
Action 4.3: Promote high standards of KBDCA tour guides														A tour guide training workshop held by June 2014 and a tour guide association formed by December 2014
4.3.1 Organise a training workshop for community tour guides	SW-KBDCA				■									
4.3.2 Support formation and operationalization of a KBDCA tour guide association	"					■	■	■	■	■	■	■	■	
Action 4.4: Improve communication and collaboration with KBDCA tourism stakeholders														The first tourism stakeholders meeting held by June 2014
4.4.1 Organise an annual tourism stakeholders meeting	SW-KBDCA	■	■	■	■									

Community Partnership and Conservation Education Management Programme Activity Plan

Management Action and Activities	Persons Responsible	Timeframe												Milestones
		FY 2013-14				FY 2014-15				FY 2015-16				
		1	2	3	4	1	2	3	4	1	2	3	4	
Objective 1: PA-community communication and collaboration mechanisms improved														
Action 1.1: Support establishment of PA-community consultation mechanisms														CCCs and CCFs formed by December 2014
1.1.1 Hold discussions with community members, leaders and decision makers on need for establishing a functional Community Consultative Forum (CCF)	SW-KBDCA	■	■	■	■									
1.1.2 Develop a simple action plan for constituting CCF and agree with key decision makers	"	■	■	■	■									
1.1.3 Incorporate mechanisms for ensuring gender balance and participation of youth and marginalised community members in community forums	"	■	■	■	■									
1.1.4 Assist CCF in establishing governance systems, election procedures and bylaws	"	■	■	■	■									
1.1.5 Support and participate in CCF meetings and promote linkages between the community groups and wider community	"					■	■	■	■					
1.1.6 Support and facilitate sharing of information among all stakeholders through different media e.g. workshops, field days, barazas, e.t.c	"					■	■	■	■					
Action 1.2 Build capacity of the CCCs and CCF to effectively manage community projects														CCCs and CCF trained by December 2014
1.2.1 Provide training to CCF members in project cycle management - proposal writing, implementation, and monitoring	SW-KBDCA					■	■	■	■					
1.2.2 Review project proposals and interact with CCF in revising and improving proposals ready for approval	"					■	■	■	■					
1.2.3 Provide follow-up support to CCF in project development and implementation	"					■	■	■	■					

Management Action and Activities	Persons Responsible	Timeframe FY 2013-14				FY 2014-15				FY 2015-16				Milestones
		1	2	3	4	1	2	3	4	1	2	3	4	
1.2.4 Support visits to existing successful projects and highlight lessons learnt in project management	"					■	■	■	■	■	■	■	■	
Objective 2: Conservation education and awareness programme strengthened														
Action 2.1 Prepare interpretation materials targeting local communities														Posters prepared by June 2016
2.1.1 Liaise with the KWS Education and Marketing sections in the production of leaflets and brochures for distribution to the public	SW-KBDCA, H-CE	■	■	■	■	■	■	■	■	■	■	■	■	
2.1.2 Prepare posters for distribution in the KBDCA adjacent areas	"	■	■	■	■	■	■	■	■	■	■	■	■	
Action 2.2 Redesign the KBDCA Education Programme to target key sectors of the community														At least one workshop for leaders organised annually and monthly seminars for students
2.2.1 Organise conservation workshops and seminars for local leaders	SW-KBDCA, H-CE		■			■			■	■			■	
2.2.2 Organize workshops for students	"	■		■	■	■		■	■	■			■	
Action 2.3: Promote the KBDCA through the mass media, internet, and organise and participate in both local and international conservation awareness events														First issue of a quarterly newsletter targeting the local schools produced by December 2014
2.3.1 Organize a monthly children call-in programme with a local radio channel	SW-KBDCA, H-CE	■	■	■	■	■	■	■	■	■	■	■	■	
2.3.2 Organize conservation radio talks shows (e.g. with radio Salamu and Rahma)	"	■	■	■	■	■	■	■	■	■	■	■	■	
2.3.3 Produce quarterly conservation education newsletter	"	■	■	■	■	■	■	■	■	■	■	■	■	
2.3.4 Participate in international conservation events (World Wetlands Day - February, World Environment Day - June, World Tourism Day - September)	"	■		■		■	■		■		■	■		
2.3.5 Develop and maintain a KBDCA website	"	■	■	■	■	■	■	■	■	■	■	■	■	
Action 2.4: Support WWF's education and awareness activities														At least one conservation talk given every month
2.4.1 Collaborate with WWF in organising conservation education activities e.g. conservation talks/lectures to organized groups	SW-KBDCA, H-CE, WWF		■	■	■	■	■	■	■	■	■	■	■	

Management Action and Activities	Persons Responsible	Timeframe												Milestones
		FY 2013-14				FY 2014-15				FY 2015-16				
		1	2	3	4	1	2	3	4	1	2	3	4	
Objective 3: Conservation compatible community land uses and practises promoted														
Action 3.1: Support establishment of community wildlife conservancies														One conservancy established by December 2014
3.1.1 Hold community and stakeholder meetings to sensitize local communities and partners	SW-KBDCA	■	■	■	■	■	■	■	■	■	■	■	■	
3.1.2 Map the conservancies	"	■	■	■	■	■	■	■	■	■	■	■	■	
3.1.3 Develop and submit a proposal on the conservancy to the District Development Committees and County Governments for approval	"	■	■	■	■	■	■	■	■	■	■	■	■	
3.1.4 Survey and demarcate conservancy boundary	"	■	■	■	■	■	■	■	■	■	■	■	■	
3.1.5 Participate in zoning the conservancy according to land-use	"	■	■	■	■	■	■	■	■	■	■	■	■	
3.1.6 Support development of conservancy management plan	"	■	■	■	■	■	■	■	■	■	■	■	■	
3.1.7 Support development of co-management agreements including on responsibilities and benefit-sharing	"	■	■	■	■	■	■	■	■	■	■	■	■	
Action 3.2: Build capacity of community wildlife conservancies														At least 20 conservancy game scouts trained at Manyani by December 2014
3.2.1 Train game scouts at the KWS Law Enforcement Academy-Manyani	SW-KBDCA	■	■	■	■	■	■	■	■	■	■	■	■	
3.2.2 Identify and gazette the managers as honorary wardens	"	■	■	■	■	■	■	■	■	■	■	■	■	
3.2.3 Work with KWS-HQ to market and promote the conservancies	"	■	■	■	■	■	■	■	■	■	■	■	■	
3.2.4 Support establishment of conservancy infrastructure such as roads, water supply	"	■	■	■	■	■	■	■	■	■	■	■	■	
Action 3.3: Support preparation and implementation of integrated water resource management plans and formation of Water Resource Users Associations for management of the major rivers that flow through the KBDCA														At least two WRUAs established and functional by December 2014
3.3.1 Identify and map all water catchment areas in KBDCA and record existing usage patterns	SW-KBDCA	■	■	■										
3.3.2 Liaise with District Water Officers to develop strategies and activities to support establishment of WRUAs	"	■	■	■	■	■	■	■	■	■	■	■	■	

Management Action and Activities	Persons Responsible	Timeframe												Milestones
		FY 2013-14				FY 2014-15				FY 2015-16				
		1	2	3	4	1	2	3	4	1	2	3	4	
3.3.3 Support awareness-raising and capacity building to promote WRUA establishment	"													
3.3.4 Participate in WRUA/community meetings as required	"													
3.3.5 Support established WRUAs as necessary, especially by providing guidance regarding wildlife water uses	"													
3.3.6 Facilitate the creation of a water management and utilization plan for Mangai River	"													
Action 3.4: Support formation of Community Forest Associations for management of forests in community areas														A stakeholders meeting to discuss CFA formation organised by June 2015
3.4.1 Hold stakeholder meetings with KFS to develop a management strategy for forests outside PAs and possible role for KBDCA management	SW-KBDCA													
3.4.2 Provide practical and technical support as necessary to support formation and operationalization of CFAs	"													
3.4.3 Collaborate with KFS to develop Participatory Forest Management Plans (PFMPs) for forests adjacent to KBDCA	"													
3.4.4 Support the development of a CFA-KFS agreement on forest management	"													
Action 3.5: Support establishment of community managed livestock grazing blocks in Garissa County														Nature and extent of livestock grazing in Boni and Dodori NRs established by December 2015
3.5.1 Partner with Ministry of Livestock to monitor the extent of use of the Boni and Dodori National Reserves for grazing purposes	SW-KBDCA													
3.5.2 Work with the Ministry of Livestock to identify potential grazing areas and water sources outside the National Reserves	"													
3.5.3 Collaborate with communities to develop grazing blocks	"													
3.5.4 Negotiate with pastoral communities in Garissa keep out of Boni and Dodori National Reserves	"													

Management Action and Activities	Persons Responsible	Timeframe												Milestones
		FY 2013-14				FY 2014-15				FY 2015-16				
		1	2	3	4	1	2	3	4	1	2	3	4	
Objective 4: Human-wildlife conflict (HWC) reduced														"
Action 4.1 Establish a human-wildlife conflict monitoring and evaluation system														A HWC monitoring system in place by June 2014
4.1.1 Identify monitoring objectives and key species causing HWC	SW-KBDCA	■	■											
4.1.2 Conduct a participatory mapping of patrol blocks and locations with scouts	"	■	■	■	■	■	■	■	■	■	■	■	■	
4.1.3 Procure necessary equipment and software and train relevant staff in use of the MIST system.	"	■	■	■	■	■	■	■	■	■	■	■	■	
4.1.4 Train problem animal control rangers on data collection and management	"	■	■	■	■	■	■	■	■	■	■	■	■	
4.1.5 Review the monitoring system and modify patrol blocks and conflict hotspots where necessary	"	■	■	■	■	■	■	■	■	■	■	■	■	
4.1.6 Hold community meetings to identify HWC hotspots based on information collected	"	■	■	■	■	■	■	■	■	■	■	■	■	
4.1.7 Produce human wildlife conflict quarterly reports	"	■	■	■	■	■	■	■	■	■	■	■	■	
Action 4.2: Initiate pilot fencing projects in conflict prone areas														Pilot fencing projects implemented by June 2016
4.2.1 Install an electric fence around Aweer farms (the communal farms at Basuba and Mangai villages)	SW-KBDCA									■	■	■	■	
4.2.2 Identify a pilot project (electric fence) in the Bajuni areas (Kiunga zone)	"									■	■	■	■	
Action 4.3 Establish an effective communication network to facilitate prompt reporting of human-wildlife conflict incidents														A mobile telephone hotline established by December 2013 and the community informed.
4.3.1 Identify additional areas to install radio communication equipment to enhance the existing HWC radio network.	SW-KBDCA	■	■	■	■	■	■	■	■	■	■	■	■	
4.3.2 Install radio communication equipment as required	"	■	■	■	■	■	■	■	■	■	■	■	■	
4.3.3 Establish a HWC mobile telephone hotline to boost the mechanisms of reporting HWC incidents	"	■	■											
Action 4.4: Develop participatory land use plans that separate conflicting land uses														

Management Action and Activities	Persons Responsible	Timeframe FY 2013-14				FY 2014-15				FY 2015-16				Milestones
		1	2	3	4	1	2	3	4	1	2	3	4	
4.4.1 Develop a land use/cover map of the KBDCA	SW-KBDCA, H-PEC, W-DNR	■	■	■	■	■	■	■	■	■	■	■	■	Land use plans developed by June 2016
4.4.2 Develop a land use zoning map	"	■	■	■	■	■	■	■	■	■	■	■	■	
4.4.3 Develop and implement village level land use plans	"	■	■	■	■	■	■	■	■	■	■	■	■	
Action 4.5: Establish problem animal control (PAC) outposts														
4.5.1 Identify conflict hotspots	SW-KBDCA, W-DNR&BNR	■	■	■	■	■	■	■	■	■	■	■	■	Conflict hotspots identified by December 2015
4.5.2 Establish PAC outposts based on the outcome of activity 4.5.1 above	"	■	■	■	■	■	■	■	■	■	■	■	■	
Action 4.6: Build capacity of the community game scouts to address human-wildlife conflicts (See Action 3.2 above)														"
Action 4.7: Identify and recommend gazettement of honorary wardens														At least three new honorary wardens from the local community gazetted
4.6.1 Identify honorary wardens from among members of the local community	SW-KBDCA				■									
4.6.2 Liaise with KWS Director for the gazettement of the honorary wardens to be effected	"				■									
Objective 5: Opportunities for local communities to benefit from the KBDCA improved														"
Action 5.1: Implement and support maintenance of community social projects														At least one community project supported annually
5.1.1 Identify new social projects in collaboration with CCCs and CCF	SW-KBDCA	■	■	■	■	■	■	■	■	■	■	■	■	
5.1.2 Organise training workshops for members of the local community on implementation and maintenance of project infrastructure	"	■	■	■	■	■	■	■	■	■	■	■	■	
Action 5.2: Support communities in identification and exploitation of ecotourism opportunities														Tourist attractions and facility sites identified by December 2014
5.2.1 Carry out a survey of potential tourist sites (attractions and facilities) in KBDCA adjacent areas	SW-KBDCA				■									
5.2.2 Liaise with KWS Marketing Section to ensure inclusion of sites in all relevant KBDCA interpretation materials (e.g. map and guidebook)	"					■								

Management Action and Activities	Persons Responsible	Timeframe FY 2013-14				FY 2014-15				FY 2015-16				Milestones
		1	2	3	4	1	2	3	4	1	2	3	4	
Action 5.3: Establish cultural tourist attractions and events														
5.3.1 Organize cultural dances at tourist facilities	SW-KBDCA	■	■	■	■	■	■	■	■	■	■	■	■	
Action 5.4: Promote beekeeping in KBDCA adjacent areas														One apiary pilot project established by June 2015
5.4.1 Support establishment of apiaries by the Aweer community	Warden-DNR, Warden-BNR	■	■	■	■	■	■	■	■	■	■	■	■	
5.4.2 Organise training seminars on production and marketing of honey	"	■	■	■	■	■	■	■	■	■	■	■	■	
5.4.3 Link bee keepers with the honey product market	"	■	■	■	■	■	■	■	■	■	■	■	■	
Action 5.5: Support the local community to establish salt harvesting ventures														Feasibility study report ready by December 2014
5.5.1 Carry out feasibility study on salt harvesting at Kiangwe	SRS-CCA	■	■	■	■	■	■	■	■	■	■	■	■	
Action 5.6: Support community self help groups that engage in environmentally friendly activities														Community groups identified by December 2013
5.6.1 Identify groups engaging in eco-friendly activities	Warden-DNR, Warden-BNR Warden-KMNR		■											
5.6.2 Assist groups identified in 5.6.1 above in adding value and marketing their products	"			■	■	■	■	■	■	■	■			
Action 5.7: Enhance employment opportunities for local community members														
5.7.1 Employ local community members in the KBDCA as casual labourers as well as offering permanent employment	SW-KBDCA	■	■	■	■	■	■	■	■	■	■	■	■	
Action 5.8: Develop a mechanism to enable regulated access to cultural sites, food and medicinal plants in the KBDCA protected areas														
5.8.1 Develop rules and regulations to control access to natural resources and cultural sites in consultation with community representatives	SW-KBDCA	■	■	■	■	■	■	■	■	■	■			Regulations for access to natural resources developed and gazetted by June 2016
5.8.2 Collaborate with community representatives to facilitate access to natural resources and cultural sites and adjust rules and regulations according to lessons learnt	"	■	■	■	■	■	■	■	■	■	■	■	■	

Management Action and Activities	Persons Responsible	Timeframe												Milestones
		FY 2013-14				FY 2014-15				FY 2015-16				
		1	2	3	4	1	2	3	4	1	2	3	4	
5.8.2 Gazette the rules and regulations relating access to resources in the KBDCA national reserves													█	
Action 5.9: Build entrepreneurship capacity among the local community														At least one training workshop held annually
5.9.1 Organise entrepreneurship training workshops for members of the local community	SW-KBDCA	█	█	█	█	█	█	█	█	█	█	█	█	
Action 5.10: Support communities in preparation of proposals to seek donor funding														At least two project proposals developed and submitted annually
5.10.1 Organize seminars/workshops on proposal writing	Warden-DNR, Warden-BNR Warden-KMNR	█	█	█	█	█	█	█	█	█	█	█	█	
5.10.2 Prepare community project proposals and submit to donors for funding	"	█	█	█	█	█	█	█	█	█	█	█	█	
Objective 6: Sustainable Utilization of Marine Resources Promoted														
Action 6.1: Strengthen a collaborative fisheries management approach, which involves, NGOs and CBOs														
6.1.1 Train BMUs through the assemblies														
6.1.1.1 Identify potential BMUs within the KBDCA	FiD													
6.1.1.2 Formalize the new BMUs through registration	"													
6.1.1.3 Mobilize for training	"													
6.1.1.4 Train BMUs using the already developed BMU training model	"													
6.1.2 Establish and implement a well established gear exchange program														
6.1.2.1 Evaluate the performance of earlier gear exchange program and learn from experience.	FiD													
6.1.2.2 Carry out a participatory survey on how the gear exchange will be implemented	"													
6.1.2.3 Develop a budget and solicit for funding	"													
6.1.3 Develop conflict resolution skills and mechanisms through the BMU sub-committee														
6.1.3.1 Identify how many BMUs already have conflict resolution sub-committees	FiD													

Management Action and Activities	Persons Responsible	Timeframe												Milestones
		FY 2013-14				FY 2014-15				FY 2015-16				
		1	2	3	4	1	2	3	4	1	2	3	4	
6.1.3.2 Fill the gaps by forming new conflict resolution sub-committees where they are not existing	"													
6.1.3.3 Train the sub-committees	"													
6.1.3.4 Develop a Monitoring and Evaluation mechanism to determine the effectiveness of the sub-committees														
6.1.4 Establish social projects incentives e.g schools, scholarships and health care														
6.1.4.1 Identify needy school children and provide them with scholarships	FiD													
6.1.4.2 Provide portable water in the landing sites within the KBDCA	"													
6.1.4.3 Install fish landing bandas in the landing sites	"													
6.1.4.4 Install toilets in the landing sites	"													
6.1.4.5 Demarcate landing sites for the purpose of acquiring title deeds	"													
6.1.4.6 Install fisheries offices at Kiangwe and Mkokoni	"													
6.1.5 Train the community and monitor their capacity to disseminate information														
6.1.5.1 Mobilize the BMUs assemblies for training	FiD													
6.1.5.2 Train them on data collection methodologies	"													
6.1.5.2 Equip data collectors with data collection tools	"													
6.1.5.3 Equip data collectors with computers for data storage and management	"													
6.1.5.4 Develop a mechanism for information dissemination	"													
6.1.5.6 Develop a M&E mechanism for effective data collection, management and dissemination	"													
6.1.6 Carry out M&E through follow ups to ascertain effectiveness of BMU training														
6.1.6.1 Visit BMUs and hold meetings with assembly members	FiD													
6.1.6.2 Prepare and submit monthly reports on BMUs progress	"													

Management Action and Activities	Persons Responsible	Timeframe												Milestones
		FY 2013-14				FY 2014-15				FY 2015-16				
		1	2	3	4	1	2	3	4	1	2	3	4	
Action 6.2: Develop alternative livelihood activities														
6.2.1 Identify and conduct a comprehensive mapping of the potential alternative livelihoods e.g mariculture, ecotourism														
6.2.1.1 Conduct meetings with the BMUs to create awareness on the importance of alternative livelihoods	FiD													
6.2.1.2 Carry out a survey and identify the potential alternative livelihoods within the KBDCA	"													
6.2.1.3 Map the identified alternative livelihoods	"													
6.2.2 Conduct a viability study on the alternative livelihoods taking into consideration the socio-cultural environment														
6.2.2.1 Develop a list of all alternative livelihoods and march each one of them with the social cultural issues	FiD													
6.2.2.2 Discuss the viability of alternative livelihood with the communities	"													
6.2.3 Create awareness of the availability of the alternative livelihoods through pilot projects														
6.2.3.1 Identify viable pilot projects within the KBDCA together with the community	FiD													
6.2.3.2 Create awareness of the identified viable pilot projects	"													
6.2.3.3 Implement the identified viable pilot projects	"													
6.2.4 Conduct a need-based skill development training														
6.2.4.1 Identify the skill development areas through the BMUs	FiD													
6.2.4.2 Support capacity building in identified skills gaps	"													
6.2.5 Facilitate micro-credit microfinance partnerships to assist communities in starting income generating ventures														
6.2.5.1 Conduct a survey to determine the viability of microfinance partnerships	FiD													
6.2.5.2 Sensitize the BMUs on the importance of micro-credit systems	"													
6.2.5.3 Discuss with the BMUs the most practical and effective form of micro-credit system	"													

Management Action and Activities	Persons Responsible	Timeframe												Milestones
		FY 2013-14				FY 2014-15				FY 2015-16				
		1	2	3	4	1	2	3	4	1	2	3	4	
6.2.5.4 Seek support/partnerships with collaborators(financial institutions, NGOs, Government e.t.c) to assist the community to start the micro-credit system	"													
6.2.5.5 Start supporting already existing projects (e.g. Mkokoni and Kiwayu flip flop project)	"													
6.2.5.6 Develop an effective M&E system	"													
6.2.6 Provide power to the fish storage facilities														
6.2.6.1 Develop an inventory of existing fish storage facilities in the KBDCA	FiD													
6.3.6.2 Seek support from collaborators for sustainable power supply	"													
6.2.6.3 Install power to the viable storage facilities	"													
6.2.7 Expand the ice facilities to improve storage capacity and marketing														
6.2.7.1 Take an inventory of the existing fish storage facilities and their capacity	FiD													
6.2.7.2 Determine the fish catch landing for the area served by the storage facility	"													
6.2.7.3 Match the fish catch landing against the fish storage capacity to determine the extent of expansion	"													
6.2.7.4 Seek support from collaborators	"													
6.2.7.5 Implement the expansion in line with the identified needs	"													
Action 6.3: Develop a good market structure for fish and fish products to enhance community economic empowerment														
6.3.1 Enhance value addition through modern fish processing technologies (smoking and sun drying) especially in remote areas of Mangai where cold preservation is not available														
6.3.1.1 Create awareness amongst the community on the importance of value addition	FiD													
6.3.1.2 Train the community on various fish processing technologies	"													

Management Action and Activities	Persons Responsible	Timeframe												Milestones
		FY 2013-14				FY 2014-15				FY 2015-16				
		1	2	3	4	1	2	3	4	1	2	3	4	
6.3.1.3 Seek support from collaborators for the requisition of equipment necessary for value addition	"													
6.3.2 Empower the fishers to explore new fish markets beyond the local ones (Malindi & Mombasa) through the on-going certification process														
6.3.2.1 Identify the existing market system in collaboration with the community	FiD													
6.3.2.2 Hold participatory meetings with the community to develop the most viable market system	"													
6.3.2.3 Train the community on effective market systems targeting the global fishing market	"													
6.3.2.4 Strengthen the existing fisher cooperative and BMUs through training	"													
6.3.3 Improve fish quality through fish quality assurance initiatives														
6.3.3.1 Hold meetings with the BMUs to create awareness on the importance of fish quality	FiD													
6.3.3.2 Train the BMUs on fish quality assurance	"													
6.3.3.3 Seek support from collaborators for the committees to have equipment, which can be used to enhance fish quality assurance e.g. deep freezers e.t.c.	"													
Action 6.4: Develop a culture of credit and saving for economic growth														
6.4.1 Carry out an assessment of the terms and availability of credit to fishers														
6.4.1.1 Hold meetings to create awareness on the importance of credit facility	FiD													
6.4.1.2 Assess BMUs' credit terms for fishers	"													
6.4.2 Educate the fishers to change their views of fishing from subsistence activity to an economic occupation														"
6.4.2.1 Hold meetings to sensitize and create awareness to ensure attitude change among fishers	FiD													
6.4.2.2 Train the BMUs on economic value of fish	"													

Management Action and Activities	Persons Responsible	Timeframe												Milestones
		FY 2013-14				FY 2014-15				FY 2015-16				
		1	2	3	4	1	2	3	4	1	2	3	4	
6.4.3 Encourage fishers to increase savings through co-operatives and BMUs														
6.4.3.1 Take an inventory of the status of the existing fisher cooperatives	FiD													
6.4.3.2 Create awareness on the importance of saving through fisher cooperatives and BMUs.	"													
6.4.4 Strengthen the BMUs and fishers co-operatives through training in financial management														
6.4.4.1 Identify the financial training needs for each cooperative/BMU	FiD													
6.4.4.2 Train BMUs according to the needs identified in 6.4.4.1	"													
6.4.4.3 Equip the fisher cooperatives with financial management tools/materials	"													

Protected Areas Operations and Security Management Programme Activity Plan

Management Action and Activities	Persons Responsible	Timeframe												Milestones
		FY 2013-14				FY 2014-15				FY 2015-16				
		1	2	3	4	1	2	3	4	1	2	3	4	
Objective 1: Effective management systems and collaboration mechanisms established and operational														
Action 1.1: Draw MoU agreements between KWS, Garissa and Lamu Counties for the implementation of the KBDCA management plan														Two County Governments (Lamu and Garissa)-KWS consultative meetings held by December 2013 and MoUs drawn and signed by June 2014
1.1.1 Hold tripartite meetings twice annually	SW-KBDCA, Garissa and Lamu County Governments	█		█		█		█		█		█		
1.1.2 Hold consultative meetings as need arises	"	█	█	█	█	█	█	█	█	█	█	█	█	
1.1.3 Organise a workshop to sensitize the County Governments on the MOU and the management plan	"	█												
Action 1.2: Establish a KBDCA Management Advisory Committee (MAC)														A MAC constituted and operational by June 2014
1.1.2.1 Identify stakeholders interested in conservation of resources at the KBDCA	SW-KBDCA	█	█	█										
1.1.2.2 Hold consultations with relevant stakeholders on modalities of forming the MAC	"	█	█	█										
1.1.2.3 Launch the Management Advisory Committee	"				█									
1.1.2.4 Hold quarterly MAC meetings	"				█	█	█	█	█	█	█	█	█	
Action 1.3: Liaise with, and participate in relevant County and District level committees														All relevant committee meetings attended
1.3.1 Participate in District and provincial committee meetings	SW-KBDCA	█	█	█	█	█	█	█	█	█	█	█	█	
Action 1.4: Collaborate with District Security Committees (DSCs) to control illegal encroachment on the KBDCA protected areas														
1.4.1 Hold meetings with the DSC to discuss illegal encroachment	SW-KBDCA	█	█	█	█	█	█	█	█	█	█	█	█	

Management Action and Activities	Persons Responsible	Timeframe												Milestones
		FY 2013-14				FY 2014-15				FY 2015-16				
		1	2	3	4	1	2	3	4	1	2	3	4	
1.4.2 Hold consultative meetings with communities encroaching on the protected areas	"	X	X	X	X	X	X	X	X	X	X	X	X	
Action 1.5: Liaise with the National Land Commission (NLC) to resolve the land tenure conflict regarding Kiunga Marine National Reserve (KMNR) islands														A NLC fact finding mission organised by June 2014
1.5.1 Organize a land tenure meeting to bring together NLC, Kiwayu community, Kiwayu investors and KWS to discuss land tenure issues at Kiwayu Island	SW-KBDCA	X												
Action 1.6: Develop participatory natural resource management guidelines for KBDCA														Mangrove and fishing guidelines developed by June 2015
1.6.1 Organise meetings to develop mangrove and fishing guidelines	SW-KBDCA, FiD, SRS-CCA	X	X	X	X	X	X	X	X					
1.6.2 Develop detailed management plans for mangroves and fisheries	"	X	X	X	X	X	X	X	X	X	X	X	X	
Action 1.7: Develop a detailed participatory management plan for Boni National Reserve														Resource assessments carried out by June 2016
1.7.1 Carry out natural resource assessments for Boni National Reserve	Warden-BNR, H-PEC	X	X	X	X	X	X	X	X	X	X	X	X	
Action 1.8: Liaise with other stakeholders in the establishment of a KBDCA information management system														An information management system developed by December 2015
1.8.1 Procure computer and hardware 1.8.2 Collect relevant management information 1.8.3 Adopt an appropriate database management system to input information	SW-KBDCA, HPEC	X	X	X	X	X	X	X	X	X	X	X	X	
Action 1.9: Explore ways of initiating a cross-border cooperation programme to support the management of Boni National Reserve in Kenya and Laga Badana-Bushbush National Park in Somalia														Proposal prepared by June 2016
1.9.1 Prepare a funding proposal for a peace-park initiative between KBDCA and Laga Badana-Bush Bush National Park in Somalia	SW-KBDCA, HPEC											X		

Management Action and Activities	Persons Responsible	Timeframe FY 2013-14				FY 2014-15				FY 2015-16				Milestones
		1	2	3	4	1	2	3	4	1	2	3	4	
Action 1.10: Ensure that Kiunga Biosphere Reserve (KBR) Joins the World Network of Island and Coastal Biosphere Reserves														Request to join the World Network of Island and Coastal Biosphere Reserves made by December 2013
1.10.1 Liaise with the KWS Conventions Department and the National Man and Biosphere Committee to have KBR join the World Network of Island and Coastal Biosphere Reserves	SW-KBDCA		■											
Objective 2: Performance and motivation of KBDCA staff improved														
Action 2.1: Implement the sector management organisational structure														
2.1.1 Implement a new organisational structure for KBDCA with an overall Area Warden to oversee KBDCA management	H-HC, DDWC	■	■	■	■	■	■	■	■	■	■	■	■	A sector management structure implemented by June 2016
Action 2.2: Provide and maintain adequate staff welfare facilities														Install solar power to staff houses by June 2016
2.2.1 Install solar power	SW-KBDCA	■	■	■	■	■	■	■	■	■	■	■	■	
2.2.2 Purchase back-up power generators	"	■	■	■	■	■	■	■	■	■	■	■	■	
2.2.3 Install DSTV	"	■	■	■	■	■	■	■	■	■	■	■	■	
2.2.4 Establish sporting facilities	"	■	■	■	■	■	■	■	■	■	■	■	■	
Action 2.3: Lobby the Ministry of Health to enhance the management of health clinics in the area														Meetings with Health officials held by June 2014
2.3.1 Hold consultative meetings with Ministry of Health officials to identify areas of collaboration	SW-KBDCA	■	■	■	■	■	■	■	■	■	■	■	■	
Action 2.4: Provide necessary working tools and gear to staff														Appropriate tools and equipment available as needed by June 2016
2.4.1 Provide life jackets, flippers, water goggles, swimming suits, and diving gear.	SW-KBDCA	■	■	■	■	■	■	■	■	■	■	■	■	
2.4.2 Provide GPS, digital cameras, binoculars, night vision goggles	"	■	■	■	■	■	■	■	■	■	■	■	■	
2.4.3 Provide computers and accessories, and office furniture	"	■	■	■	■	■	■	■	■	■	■	■	■	
Action 2.5: Liaise with KWS Training Section in carrying out a staff training needs assessment and train staff in relevant skills														Training needs assessment carried out by December 2013
2.5.1 Carry out a preliminary staff training needs survey for staff in the KBDCA	SW-KBDCA		■											

Management Action and Activities	Persons Responsible	Timeframe												Milestones
		FY 2013-14				FY 2014-15				FY 2015-16				
		1	2	3	4	1	2	3	4	1	2	3	4	
2.5.2 Train staff in relevant skills through in-house training programmes	SW-KBDCA, TM	█	█	█	█	█	█	█	█	█	█	█	█	
Objective 3: Infrastructure, transport and communications to support PA management and tourism development improved														
Action 3.1: Prepare a road network plan and construct roads in the KBDCA														Road design plan prepared by June 2014
3.1.1 Map all existing and potential tourist sites	SW-KBDCA, H-Roads	█	█	█										
3.1.2 Collaborate with KWS Headquarters Roads Department in the preparation of a road development plan	"	█	█	█	█									And at least 100 Km of road constructed by June 2016
3.1.3 Construct roads based on the road development plan	"	█	█	█	█	█	█	█	█	█	█	█	█	
Action 3.2: Construct residential and non-residential buildings														Staff houses constructed at Mkokoni by June 2015
3.2.1 Construct staff houses at Mkokoni and Mangai	SW-KBDCA	█	█	█	█	█	█	█	█					
3.2.2 Construct office blocks at Mkokoni and Mangai	"	█	█	█	█	█	█	█	█					
Action 3.3: Provide water to all the three sector headquarters (Mkokoni, Mangai, and Sangailu)														Water survey carried out by June 2016
3.3.1 Carry out a water survey to determine economical water sources	SW-KBDCA	█	█	█	█	█	█	█	█	█	█	█	█	
3.3.2 Provide water based on recommendations of 3.3.1 above	"	█	█	█	█	█	█	█	█	█	█	█	█	
Action 3.4: Maintain airstrips in the KBDCA														An airstrip status report prepared and submitted to the KWS Roads and fleet Department by December 2013
3.4.1 Assess airstrip maintenance and rehabilitation needs	SW-KBDCA		█											
3.4.2 Collaborate with KWS Headquarters in maintenance and rehabilitation of airstrips	"		█	█	█	█	█	█	█	█	█	█	█	
Action 3.5: Construct tourist Jetties at Kiwayu, Mkokoni and Mvundeni														Jetties constructed at Mkokoni and Kiwayu island by December 2015
3.5.1 Identify sites for construction of jetties	Warden-KMNR	█	█	█	█	█	█	█						

Management Action and Activities	Persons Responsible	Timeframe												Milestones
		FY 2013-14				FY 2014-15				FY 2015-16				
		1	2	3	4	1	2	3	4	1	2	3	4	
3.5.2 Liaise with KWS Headquarters Buildings Section in the construction of jetties	"	█	█	█	█	█	█	█	█	█	█	█	█	
Action 3.6: Provide additional vehicles in KBDCA														
3.6.1 Liaise with KWS fleet manager to meet the vehicle requirements	SW-KBDCA	█	█	█	█	█	█	█	█	█	█	█	█	
Action 3.7: Replace the old boat and procure a new 200HP engine one														
3.7.1 Liaise with fleet manager to procure a new 200HP engine	Warden-KMNR	█	█	█	█	█	█	█	█	█	█	█	█	
Action 3.8: Establish a mechanical workshop														
3.8.1 Identify site for construction of a mechanical workshop at Mokowe station	SW-KBDCA	█	█	█	█	█	█	█	█	█	█	█	█	
3.8.2 Liaise with KWS Headquarters Buildings Department in the construction of a mechanical workshop	"	█	█	█	█	█	█	█	█	█	█	█	█	
Action 3.9: Provide electricity to residential and non-residential buildings at the sector headquarters														
3.9.1 Procure and install solar power at sector headquarters	SW-KBDCA											█	█	
Action 3.10: Identify appropriate sites for construction of entry gates														
3.10.1 Identify suitable entry gate sites in collaboration with KWS technical team (potential sites Mangai, Sangailu, Kiangwe and Mkokoni)	SW-KBDCA	█	█	█	█	█	█	█	█	█	█	█	█	
3.10.2 Liaise with KWS Headquarters Buildings Department in the construction of the gates	"	█	█	█	█	█	█	█	█	█	█	█	█	
Action 3.11: Improve signage throughout the KBDCA														Information signage installed as appropriate by June 2016
3.11.1 Install signage along PA roads	SW-KBDCA, Wardens-KMNR, DNR, BNR	█	█	█	█	█	█	█	█	█	█	█	█	
Action 3.12: Demarcate PA boundaries														PA boundaries marked by June 2016
3.12.1 Survey PA boundaries	SW-KBDCA, HL									█	█	█	█	
3.12.2 Clear (where appropriate) and mark PA boundaries	"									█	█	█	█	

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Management Action and Activities	Persons Responsible	Timeframe												Milestones
		FY 2013-14				FY 2014-15				FY 2015-16				
		1	2	3	4	1	2	3	4	1	2	3	4	
Action 3.13 Improve KBDCA fire preparedness capacity														Fire fighting equipment procured by December 2015
3.13.1 Conduct regular fire drills		█	█	█	█	█	█	█	█	█	█	█	█	
3.13.2 Procure and maintain fire fighting equipment		█	█	█	█	█	█	█	█	█	█	█	█	
Action 3.14: Install a repeater station, HF Radio and base transceiver for Mkokoni Station														
3.14.1 Liaise with the KWS Headquarters telecommunications section in identifying a suitable site for installation of a repeater station	Wardens-KMNR, DNR, BNR	█	█	█	█	█	█	█	█	█	█	█	█	
3.14.2 Install a HF Radio and base transceiver station at Mkokoni	SW-KBDCA	█	█	█	█	█	█	█	█	█	█	█	█	
3.14.3 Establish a common channel to be used by KWS and other partners	"	█	█	█	█	█	█	█	█	█	█	█	█	
Action 3.15: Liaise with KWS HQs for installation of internet services at Mkokoni														
3.15.1 Install VSAT internet at Mkokoni	SW-KBDCA									█	█	█	█	
Action 3.16 Lobby for KBDCA to be branded														
3.16.1 Liaise with KWS Headquarters to initiate a branding pro-ject for KBDCA	SW-KBDCA					█								KBDCA branded by December 2015
Objective 4: Wildlife, visitor, and KWS asset security enhanced														
Action 4.1: Establish a communication mechanism between the KBDCA security section and tourist accommodation facilities														Radio communication between KWS and tourism stakeholders possible June 2015
4.1.1 Collaborate with tourism facility operators in the KBDCA to ensure all facilities have communication radios	SW-KBDCA	█	█	█	█	█	█	█	█	█	█	█	█	
4.1.2 Establish a 24-hour telephone hotline and inform the community and tourism stakeholders about it	"	█												
Action 4.2: Liaise with the local police to enhance security at tourist accommodation facilities														
4.2.1 Liaise with local police chiefs to have policemen deployed at key tourist facilities	WS	█	█	█	█	█	█	█	█	█	█	█	█	
4.2.2 Liaise with the police to establish a Tourist Police Unit in KBDCA	"	█	█	█	█	█	█	█	█	█	█	█	█	

Management Action and Activities	Persons Responsible	Timeframe												Milestones
		FY 2013-14				FY 2014-15				FY 2015-16				
		1	2	3	4	1	2	3	4	1	2	3	4	
4.2.3 Raise tourist security issues at the District Security Committee meetings	"	X	X	X	X	X	X	X	X	X	X	X	X	
Action 4.3: Establish a KBDCA security database and identify security hotspots														Database established by June 2015
4.3.1 Design a computer database to store and analyse security related information	WS	X	X	X	X	X	X	X	X	X	X	X	X	
4.3.2 Input and update data into security database	"	X	X	X	X	X	X	X	X	X	X	X	X	
4.3.3 Identify security hotspots through analysis of security data	"	X	X	X	X	X	X	X	X	X	X	X	X	
Action 4.4: Review security operations and identify new outpost locations														New outposts established by June 2016
4.4.1 Identify new outpost locations considering distribution of security hotspots	WS			X	X	X	X							
Action 4.5: Carry out intense ground, marine and aerial patrols														
4.5.1 Carry out daily geo-referenced foot and vehicle patrols	WS	X	X	X	X	X	X	X	X	X	X	X	X	
4.5.2 Establish observation posts at strategic points	"	X	X	X	X	X	X	X	X	X	X	X	X	
4.5.3 Mount ambush patrols at known poachers' routes	"	X	X	X	X	X	X	X	X	X	X	X	X	
Action 4.6: Provide adequate security to staff both at the work stations and during field work														
4.6.1 Provide ranger escort to researchers and other staff while on field work	Wardens-KMNR, DNR, BNR	X	X	X	X	X	X	X	X	X	X	X	X	
Action 4.7: Establish contacts with key informants to increase community involvement in gathering intelligence information														
4.7.1 Recruit additional informants	WS	X	X	X	X	X	X	X	X	X	X	X	X	
4.7.2 Increase the number of intelligence cells	"	X	X	X	X	X	X	X	X	X	X	X	X	
4.7.3 Establish continuous contact with key informants	"	X	X	X	X	X	X	X	X	X	X	X	X	

Abbreviations used in the activity plans

DDWC – Deputy Director Wildlife Conservation

EPC – Elephant Programme Coordinator

HCED – Head Conservation Education

HEL – Head Ecosystems and Landscapes

H-HC – Head Human Capital

HL – Head Lands

H-MBD – Marketing and Business Development

HPEC – Head Planning and Environmental Compliance

FiD – Fisheries Department

SRS – Senior Research Scientist

SRS-CCA – Seninor Research Scientist Coast Conservation Area

SW-KBDCA – Senior Warden Kiunga-Boni-Dodori Conservation Area

TM – Training Manager

W-BNR – Warden Boni National Reserve
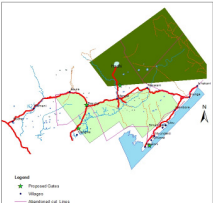
W-DNR –Warden Dodori National Reserve

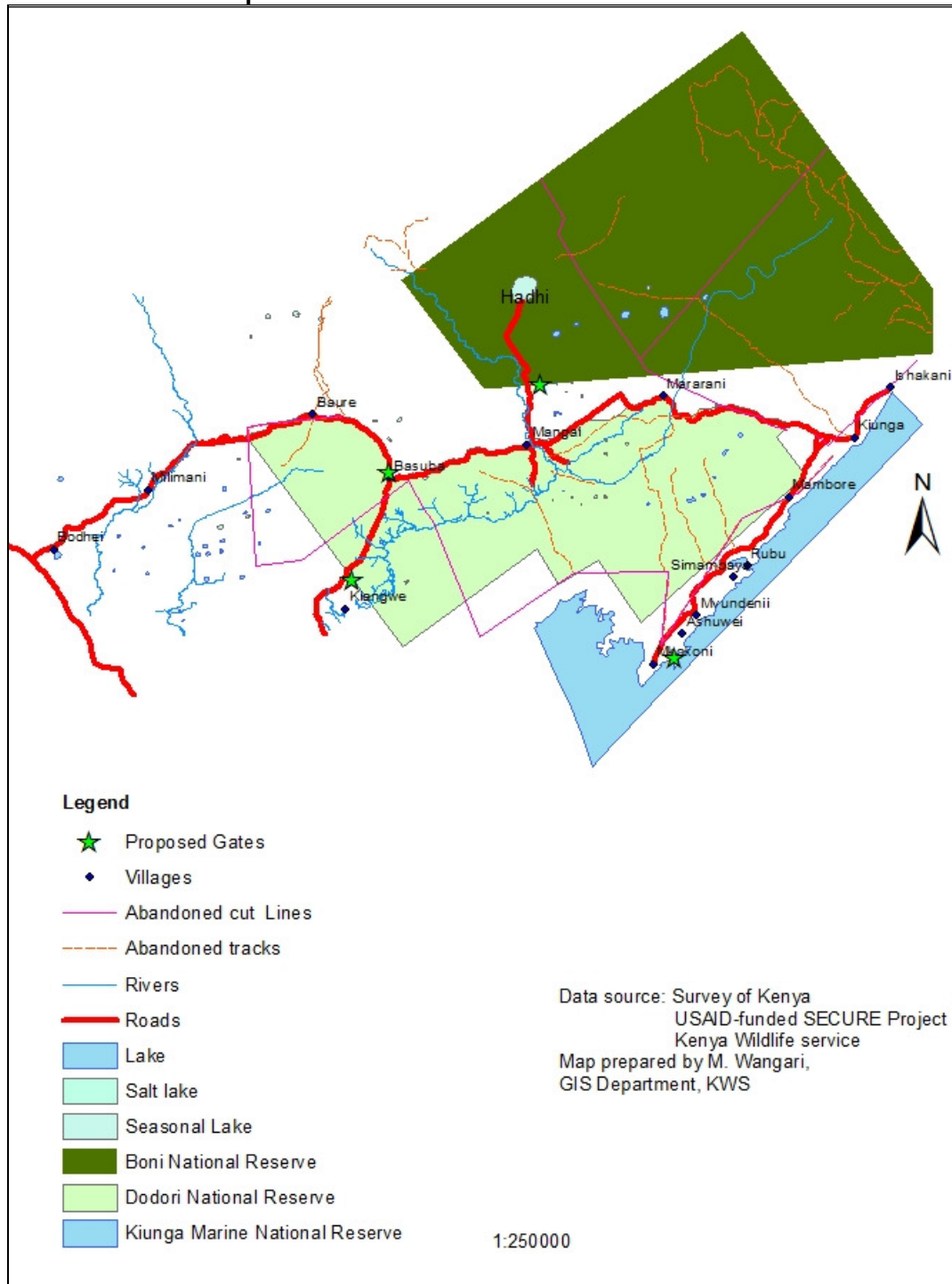W-KMNR- Warden Kiunga Marine National Reserve

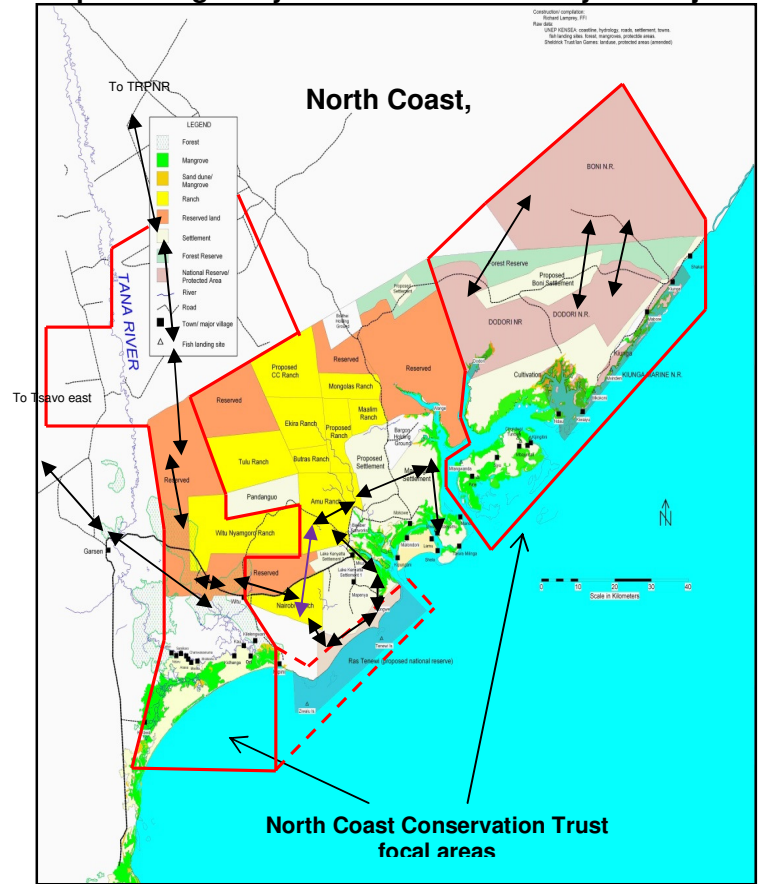WS – Warden Security

Annex 2: KBDCA Conservation targets

Coral Reef	**Mangrove forest**	**Coastal forest**
Inland fresh water wetlands	**Grassland Habitat**	**Elephant**
Sea turtles (Green Turtle)	**Marine mammals (Dugong)**	**Migratory birds (Roseate tern)**

Annex 3: Maps

Map 1: KBDCA infrastructure and water bodies

Legend

★ Proposed Gates
◆ Villages
— Abandoned cut Lines
-- Abandoned tracks
— Rivers
━ Roads
▪ Lake
▪ Salt lake
▪ Seasonal Lake
▪ Boni National Reserve
▪ Dodori National Reserve
▪ Kiunga Marine National Reserve

Data source: Survey of Kenya
　　　　　　　USAID-funded SECURE Project
　　　　　　　Kenya Wildlife service
Map prepared by M. Wangari,
GIS Department, KWS

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Map 2: Elephant migratory routes in Lamu County and adjacent areas

Data source: Moses Litoroh, North Coast Conservation Trust

Cover page photo source: Green Turtle *(Chelonia mydas)* Photo by Ursula Keuper-Bennett/Peter Bennett.