

KENYA
WILDLIFE
SERVICE



Ruma National Park

Management Plan, 2012-2017



The dramatic valley of the roan antelope, oribi and so much more.....

Ruma National Park Management Plan, 2011-2016

Planning carried out

by

Ruma National Park
Managers and
KWS Biodiversity Planning and Environmental Compliance
Department

In accordance with the

KWS Planning Standard Oper- ating Procedures

Acknowledgements

This General Management Plan has been developed by a Planning Team comprising Park Wardens, Area Scientists and KWS Headquarters Resource Planners.

The Planning Team

Name	Designation	Station/Organisation
Apollo Kariuki	Senior Resource Planner	KWS Headquarters
John Wambua	Park Warden-Ruma NP	Ruma National Park
Fredrick Lala	SRS-WCA	Western Conservation Area
Shadrack Ngene	SRS-Elephant programme	KWS Headquarters
Timothy Ikime	ARS-Kisumu Impala	Kisumu Station
Israel Makau	RS-WCA	Western Conservation Area
Kanyi L. Rukaria	ARS-Ruma NP	Ruma National Park

The planning team would like to thank the following staff from Western Conservation Area who contributed to the development of this plan by providing relevant planning information: Stephen Chonga, George Tokro, George Anyona, and Maurice Koduk.

Approval Page

The management of the Kenya Wildlife Service has approved the implementation of this management plan for Ruma National Park



Mr Julius Kipng'etich
Director, KWS

Date: 31.3.12

Executive Summary

The Plan

This 5-year (2012-2017) management plan for Ruma National Park has been developed in accordance with the standard operating procedure (SOP) for developing management plans for protected areas. The plan is one of four management planning initiatives piloting the revised standard operating procedure, the others being Kisumu Impala, Ndere and Hell's gate National Parks. In line with this SOP, this plan aims to balance conservation and development in the target protected areas.

In order to fulfil the Plan's functions, the plan structure has been developed to be as simple as possible, and as such, easily understood by stakeholders and implemented by Ruma National Park management. The plan's main sections include: **Plan Foundations** which gives a general description of the planning area; the **Zonation Scheme** which sets out areas of the park where different types of resource use and tourism developments are permitted; the management programmes which form the bulk of the plan and is divided into four management programmes; **Ecological Management Programme, Tourism Development and Management Programme, Community Partnership and Education management Programme, Protected Area Operations and security management Programme**. The last section is the Ruma National Park **Balanced Scorecard** which provides the initiatives/activities that will be implemented to achieve management objectives outlined in this plan. The scorecard provides a plan monitoring framework to enable the assessment of the implementation of each management objective. The framework includes easily measurable and quantifiable indicators for assessing plan implementation.

Purpose Statement

The Purpose Statement summarises the significance of the Park and its ecosystem, clarifies the reasons for its existence, and provides the overall goal that managers are striving to achieve. The Purpose Statement is divided into a primary purpose followed by a series of supplementary purposes that expand on and complement the primary purpose.

The PA Purpose is:

To protect and conserve southern Kenya endemic species and particularly the Roan antelopes, and their habitats for posterity

Supplementary purposes are:

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

The development of the above Purpose Statement was based on the park's Exceptional Resource Values (ERVs). These ERVs are provided in the table below.

Exceptional Resource Values

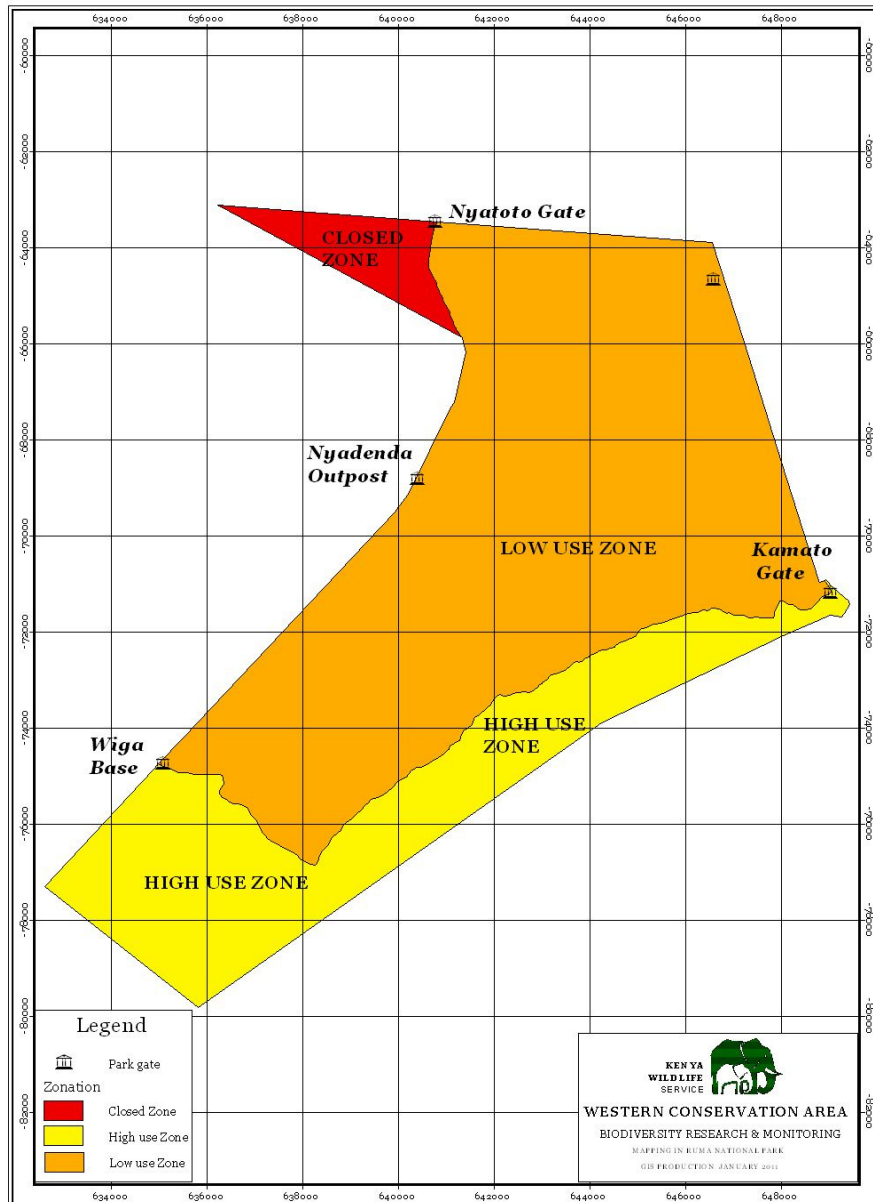
Exceptional Resource Values

Category	Exceptional Resource Value
Biodiversity	► Roan antelope (<i>Hippotragus equinus</i>)
	► Rothschild Giraffe (<i>Giraffa camelopardalis rothschildi</i>)
	► Blue Swallow (<i>Hirundo atrocaerulea</i>)
	► Kenya Topi antelope (<i>Damaliscus lunatus</i>)
	► Lelwel Hartebeest (<i>Alcelaphus buselaphus lelwel</i>)
	► Jacksons Hartebeest ((<i>Alcelaphus buselaphus Jacksonii</i>)
	► <i>Hyparrhenia rufa</i>
	► Important Bird Area (IBA)
Scenic	► Kanyamwa escarpment, Gwasi hills, Got Jope
	► The flood plains, Lambwe River and its riverine forest
Social	► fostered relationships with the surrounding community
	► Friends of Ruma N. P (FRUNAP), schools
	► Community projects like schools and water supply
Cultural	► Lambwe valley is believed to have been frequented by the legendary Gor Mahia
	► The culture of the Luo, Abasuba and Kisii communities.

Park Zoning

The Park is divided into four zones to facilitate tourism development and at the same time conserve critical habitats such as Roan antelope breeding areas. These zones include: the **closed zone**, which encompasses the breeding area for Roan antelopes; the **low use zone** which covers majority of the park and contains the Lambwe valley riverine system which is fragile and prone to flooding, hence allowing only low impact tourist activities; the **high Use Zone** covers most of the eastern part of the park. The zone has high wildlife viewing opportunities and is slightly raised making it ideal for development of tourist facilities. In addition, there is an **Influence zone** which covers community land within 5 Km from the Park boundary.

Ruma National Park- Zonation



Planned sites inside Ruma National Park

Apart from the KWS guest house, Ruma National Park has no other tourist accommodation facility. Four new tourist accommodation sites (3 ecolodges and one banda) have been approved for development in this plan. However, developments are not allowed in the **closed zone** as this is reserved for roan antelope breeding. An overview of the Ruma National Park zonal accommodation size prescriptions for all new developments is given below.

Overview of TCA zonal accommodation size prescriptions

Accommodation type	High Use Zone	Low Use Zone	Closed zone
Ecolodge	60 beds	30 beds	No facilities allowed
Permanent tented camp	60 beds	30 beds	
Starbeds ¹	--	10 beds	
Special campsites	12 beds	12 beds	
KWS self-help bandas	16 beds	12 beds	
Public campsite	60 beds	30 beds	

Overview of approved new accommodation facilities for Ruma NP zones

Facility type	High Use Zone	Low Use Zone
Ecolodge (30 beds)	2	1
Starbed (10 beds)	-	1
KWS Self help Bandas(12 beds)	-	1
Special campsite (12 beds)	1	1
Total new beds	72	64

Ecological management Programme

The purpose of the Ecological management Programme is: *to ensure that habitat and species diversity is maintained and improved, and functioning of ecological systems is understood.* In implementing this programme KWS will be guided by the following strategic principles: wildlife species are protected, restored and monitored; wildlife habitats are conserved; Tse tse flies are controlled; and ecosystem functioning is understood. The programme will focus on conserving and monitoring 8 conservation targets which are representative of biodiversity in Ruma. These conservation targets are: Black rhino, roan antelope, Rothschild's giraffe, hyena, riverine vegetation, hyparrhenia grasslands, savanna grasslands, and the Lambwe river system. In order to achieve the programme purpose KWS will aim to achieve the following management objectives: habitat management in Ruma National Park enhanced; animal population and diversity improved, ecological monitoring in Ruma National Park enhanced, and disease surveillance in Ruma National Park enhanced.

Tourism Development and Management Programme

The purpose of the Tourism Development and Management Programme is: *to develop low impact tourism based on the unique scenery, endemic wildlife and cultural values that offer diverse and promising tourism opportunities.* In implementing the Tourism development and Management Programme, Park management will be guided by the following principles: diverse low impact tourist activities and facilities are developed; tourism is developed to augment resource protection; and tourist products and services are promoted and marketed. The management objectives that will be implemented to achieve the programme purpose are: tourism infrastructure improved; product diversification enhanced; tourism administration and management improved; and tourism marketing and promotion enhanced.

¹ Linked to an ecolodge or permanent tented camp.

Community Partnership and Education management Programme

The purpose of the Community Partnership and Education Management Programme is: *to ensure that park-adjacent communities are supporting conservation efforts and community livelihoods are improving through sustainable use of natural resources.* In implementing this programme, Park management will be guided by the following strategic principles: community-protected area communications are improved; human-wildlife conflicts are minimised; communities and other stakeholders are aware of the values and importance of conservation; and communities are benefiting from natural resources. The management objectives that have been designed to realise the programme purpose are: human-wildlife conflicts minimized; community mobilization towards conservation and livelihood projects enhanced; and community conservation education and awareness improved.

Protected Area Operations and Security Management Programme

The purpose of the Protected Area Operations and Security Management Programme is to ensure that: *protected area infrastructure and management tools are sufficient and effectively supporting delivery of other management programmes, and the area is safe for wildlife and visitors.* In implementing the Protected Area Operations and Security Management Programme, the management will be guided by the following strategic principles: staff welfare and motivation is enhanced; park infrastructure and management tools are adequate; and security is enhanced in the Park and adjacent areas. The management objectives that will be implemented to achieve the programme purpose are: human resources strengthened; park administration and finances strengthened; park infrastructure improved; park communication improved; institutional collaboration established and maintained; revenue and assets security enhanced; and wildlife and visitor security enhanced.

Contents

Acknowledgements	ii
Approval Page.....	iii
Executive Summary.....	iv
Planned sites inside Ruma National Park.....	vi
Contents	ix
Acronyms	xi
Plan Foundations	1
The Plan.....	2
Plan structure.....	2
Area Description	3
Purpose Statement	6
Exceptional Resource Values	6
Management issues of concern.....	11
Ruma National Park Zonation Scheme	16
Park Zoning.....	17
Planned sites inside Ruma National Park.....	18
Ecological Management Programme.....	20
Programme Purpose and guiding principles	21
Targeting ecological management action.....	21
Conservation targets.....	21
Threats to conservation targets.....	23
Ecological management objectives and actions	25
Management Objectives.....	26
Objective 1: Habitat management in Ruma National Park enhanced.....	26
Objective 2: Animal population and diversity improved	27
Objective 3: Ecological Monitoring in Ruma National Park enhanced	28
Objective 4: Disease surveillance in Ruma National Park enhanced.....	29
Tourism Development and Management Programme	31
Programme Purpose and guiding principles	32
Management Objectives.....	32
Objective 1: Tourism infrastructure improved	32
Objective 2: Product diversification enhanced.....	34
Objective 3: Tourism administration and management improved.....	34
Objective 4: Tourism marketing and promotion enhanced.....	35
Community Partnership and Education Management Programme	36
Programme Purpose and guiding principles	37
Management Objectives.....	37
Objective 1: Human-wildlife conflicts minimised	38
Objective 2: Community mobilization towards conservation and livelihood projects enhanced	39
Objective 3: Community conservation education and awareness improved.....	40
Park Operations and Security Management Programme.....	42

Programme purpose and guiding principles	43
Management Objectives	43
Objective 1: Human resources strengthened	44
Objective 2: Park administration and finances strengthened.....	45
Objective 3: Park Infrastructure Improved	46
Objective 4: Park communication improved.....	49
Objective 5: Institutional collaboration established and maintained.....	50
Objective 6: Security in the park enhanced	50
ANNEXES	53
Annex 1: Ruma National Park Balance Score Card	54

Figures

<i>Figure 1: Ruma National Park-Regional Setting</i>	<i>3</i>
<i>Figure 2: Ruma National Park Ecosystem -Land cover</i>	<i>4</i>
<i>Figure 3: Trends in human-wildlife conflicts</i>	<i>11</i>
<i>Figure 4: Roan Antelope Population Trends-1974-2009</i>	<i>13</i>
<i>Figure 5: Snare hotspots</i>	<i>14</i>
<i>Figure 6: Fire incidences 2007 – 2010</i>	<i>14</i>
<i>Figure 7: Ruma National Park- Zonation</i>	<i>18</i>
<i>Figure 8: Ecological Management Programme objectives tree</i>	<i>26</i>
<i>Figure 9: Tourism Development and Management Programme objectives tree.....</i>	<i>32</i>
<i>Figure 10: Existing and proposed tourist facilities</i>	<i>33</i>
<i>Figure 11: Community Partnership and Education Management Programme objectives tree</i>	<i>37</i>
<i>Figure 12: Human Wildlife Conflict incidents (July 2009-June 2010)</i>	<i>38</i>
<i>Figure 13: Protected Area Operations and Security Management Programme objectives tree.....</i>	<i>43</i>
<i>Figure 14: Administrative infrastructure</i>	<i>48</i>

Tables

<i>Table 1: Exceptional Resource Values</i>	<i>6</i>
<i>Table 2. Overview of Ruma National Park zonal accommodation size prescriptions</i>	<i>19</i>
<i>Table 3: Overview of approved new accommodation facilities for Ruma National Park zones</i>	<i>19</i>
<i>Table 4: Threat ranking guidelines</i>	<i>23</i>
<i>Table 5: Threats to Ruma National Park’s Conservation Targets</i>	<i>24</i>
<i>Table 6: Frequency of wild fires in Ruma National Park (2008-2009)</i>	<i>26</i>
<i>Table 7: The number of roan antelopes in Ruma National Park (1976-2009).....</i>	<i>28</i>
<i>Table 8: A.I.E allocations for Ruma National Park</i>	<i>46</i>
<i>Table 9: Existing and proposed roads</i>	<i>47</i>
<i>Table 10: Animals poached from 2007 to 2010</i>	<i>51</i>
<i>Table 11: Arrests made in Ruma Ecosystem from 2004 to 2010</i>	<i>51</i>

Plates

<i>Plate 1: Female roan with a young</i>	7
<i>Plate 2: Rothschild Giraffe</i>	8
<i>Plate 3: Blue Swallow</i>	8
<i>Plate 4: Topi</i>	9
<i>Plate 5: Lelwel Hartebeest</i>	9
<i>Plate 6: Panoramic landscapes</i>	10
<i>Plate 7: Buffalo snared in Ruma National Park</i>	13

Acronyms

SOP	Standard Operating Procedure
NYS	National Youth Service
FRUNAP	Friends of Ruma National Park
IUCN	International Union for Conservation of Nature
CMS	Convention on Migratory Species
IBA	Important Bird Areas
PAPF	Protected Area Planning Framework
TNC	The Nature Conservancy
CAP	Conservation Action Planning
KEA	Key Ecological Attribute
NMK	National Museums of Kenya
WRMA	Water Resources Management Authority
KWS	Kenya Wildlife Service
GPS	Global Positioning System
MIST	Management Information System
GFI	Green Forest Initiative

Plan Foundations

The Plan

This 5-year (2012-2017) management plan for Ruma National Park has been developed in accordance with the standard operating procedure (SOP) for developing management plans for protected areas. The plan is one of four management planning initiatives piloting the revised standard operating procedure, the others being Kisumu Impala, Ndere and Hell's gate National Parks. In line with this SOP, this plan aims to balance conservation and development in the target protected areas.

Plan structure

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

- ▶ **Plan Foundations.** This chapter describes the plan's functions and structure and provides an introduction to the protected area, and its exceptional resource values. It sets out the Park's Purpose Statement, which explains why the Park has been established as a protected area, and the major functions and roles the Protected Area aims to fulfil.
- ▶ **Zonation Scheme.** This section sets out areas of the park where different types of resource use and tourism developments are permitted. The scheme contains prescriptions on the size and number of tourism developments allowed in different parts of the ecosystem, and specific prescriptions on the types of visitor activity allowed in each zone.
- ▶ **The four management programmes.** The main bulk of the plan is divided into four management programmes:
 - **Ecological Management Programme**
 - **Tourism Development and Management Programme**
 - **Community Partnership and Education Programme**
 - **Protected Area Operations and security Programme**

Each programme includes a programme purpose statement, which sets out the overall goal to which management under this programme is working towards, and a strategy describing the overall management approach pursued through the programme. Each programme also contains management objectives that management aims to achieve, and a set of specific management actions to achieve these goals.

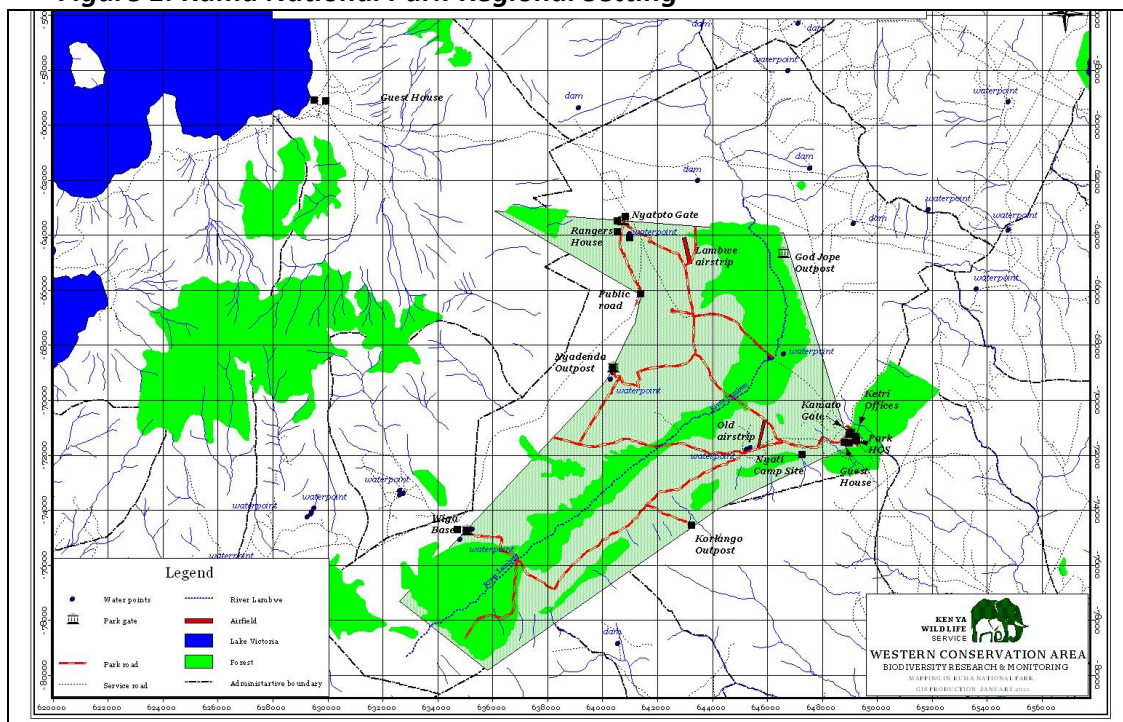
- ▶ The **Balanced Scorecard** provides the initiatives that will be implemented to achieve management objectives in this plan. The scorecard provides a **plan monitoring** framework to enable the assessment of the implementation of each management objective. The framework includes easily measurable and quantifiable indicators for assessing plan implementation.

Area Description

Location, legal status and access

Ruma N. Park is located in Lambwe Valley between the Kanyamwa Escarpment and the Gwasi Hills. It was initially gazetted as the Lambwe Valley Game Reserve in April, 1966. In June 1983, it was upgraded to a National Park mainly to protect the roan antelopes that are only found in this part of Kenya and the Lelwel hartebeest. It traverses Suba, Mbita and Ndhiwa districts covering an area of 120 Km². The park is located in Nyanza province and is 140 Km south east of Kisumu and 65 Km south west of Kisii. The main gate is 42 Km from Homa Bay while Nyatoto gate is 20 km from Mbita. There are several critical roads in and outside the park with either positive or negative impacts. The 2 Kilometers Nyatoto – NYS public road and the foot path on the Opuch hill through the park are a nuisance to wildlife and to date are a challenge to park management. Other roads connecting the park to communities enhance park operations and tourism.

Figure 1: Ruma National Park-Regional Setting



Climate

The park experiences bi-modal rainfall annually with peaks between March and May, and between October and December. Average annual rainfall is between 1200 – 1600mm.

Geology and soils

The Park has different geological characteristics arising from the initial formation of the Lambwe Valley. The Kanyamua Escarpments are characterised by Tertiary Volcanic rocks, while the grass lands and riverine woodlands are dominated by Nyanzaian (Precambrian complex) and Granites. Alkaline Black soils dominate most parts of the park.

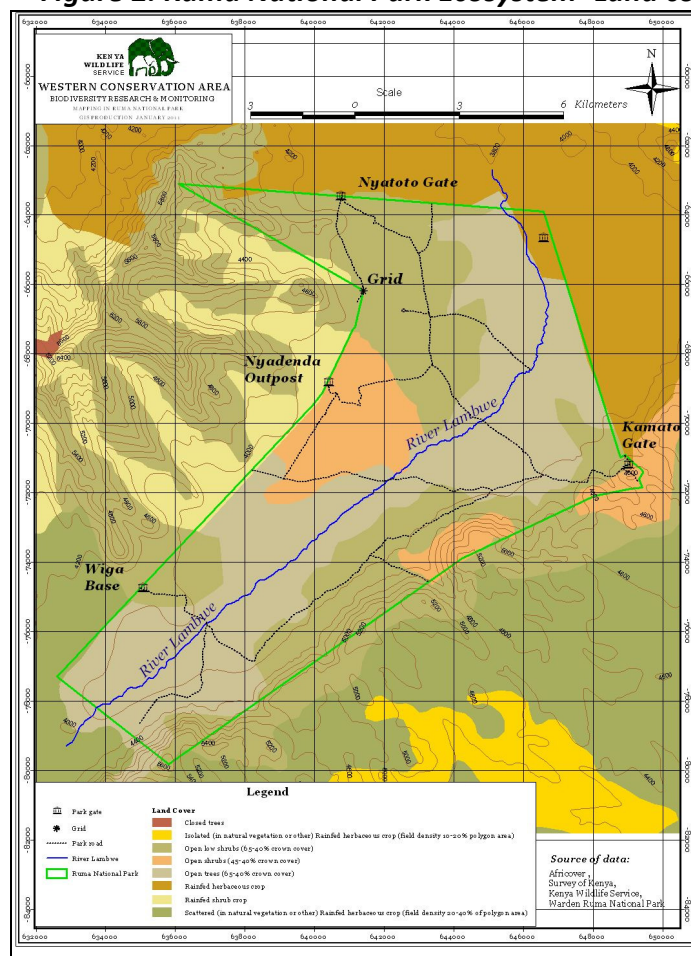
Hydrology

The high annual evapotranspiration (45.0" or 1350.0 mm) slightly exceeds the annual rainfall. This along with the loss of water through rapid runoffs on escarpment and the hills make the effective rainfall and overall surface water distribution scanty. The drainage system is comprised of intermittent streams, the outstanding ones being rivers Olambwe, Roo, Orlando, Minarot and Ogongo. All these rivers arise from the nearby hills. There are several streams in the area most of which dry up leading to water scarcity in major sections of the park during the dry seasons. Among the few streams which could be regarded as perennial include Ogongo, Goyo, Siwalo and Kamgwagi on the east. Nyalaiya and Ruri are on the west. Except for Goyo and Ogongo, all the streams disappear underground just below the escarpment or hills and do not join Olambwe on the surface.

Flora

Most of Ruma National park is dominated by grassland. However, eleven micro-habitat types have been distinguished and characterized in terms of the tree density, canopy cover and the dominant grass species. About 20% of the park is an evergreen thicket (forest) situated at the lowest point of the valley and forms a distinct vegetation type. The rest of the habitat falls under wooded grass land dominated by either *Balanites aegyptiaca* or *Acacia drepanolobium*, *Acacia seyal* woodland, and bush land. In the wooded grass land *Thermida triandra* or *setaria*, *Sphacelata Therneda triandra* are invariably the dominant grass species, while in the woodland *Hyparhenia filipendula* and *H. filipendula* Var. *pilosa* dominate.

Figure 2: Ruma National Park Ecosystem -Land cover



Fauna

The park is rich in wildlife species. The notable ones and which are easily seen include the bush buck (*Tragelaphus scriptus*), oribi (*Ourebia ourebi*), Boor reedbuck (*Redunca redunca* Wardi), Water buck (*Kobus defassa*), Topi (*Damaliscus korrigum*), Duiker (*Sylvicapra grimmia*), Roan antelope (*Hippotragus equinus*), Rothschild giraffe (*Giraffa camelopardalis* Rothschildi), Jackson's hartebeest (*Alcelaphus bucelaphus jacksonii*), Impala (*Aepyceros melampus*), Cape buffalo (*Syncerus caffer*), Spotted hyaena (*Crocutta crocutta*), Leopard (*Panthera pardus*) Bush pig (*Potamochoerus porcus*), Olive baboon (*Papio Anubis* Nennmani) and the Vervet monkey (*Cercopithecus aethiops* Johnstoni) and the the Lelwel hartebeest (*Alcelaphus bucelaphus* Lelwel) which was introduced in the area in 2008. There are also a variety of small mammals and a large number of avian species including many birds of prey. The park is one of the 61 IBA in Kenya and the only protected area in Kenya where the globally vulnerable and migratory Blue Swallow (*hirundo atrocaerulea*) is currently monitored. The crowned crane, helmeted guinea fowls, marabou storks, Ibis, secretary bird and quelea species are some of the common birds found in the park. Among the notable reptiles found in the park are python (*Python sebae*), African spitting cobra, forest cobra (*Naja melanoleuca*), eastern green mamba, black-mouthed mamba (*Dendroaspis polylepis*), and puff adder (*Bitis arietans*).

Such species as lions (*Panthera leo*), Cheetah (*Acynonyx jubatus*) and Black Rhino (*Diceros bicornis* Michaeli) were present in the valley as recently as 1936 but they have since gone locally extinct. However, the Black Rhino has recently been reintroduced in the park to boost species diversity. Elephants were also abundant in the area but they were driven away towards the Maasai land in 1931 and 1948.

Topography

The Ruma National Park is located along the Lambwe valley and has been separated by two main mountain zones; the Gwasi and Gembe hills to the west and Kanyamwa escarpment to the east. Gwasi hills rise to 2,273 M at Wiratha and separate the valley from shores of L. Victoria. Kanyamwa escarpment slopes gradually from 1,758 M at Gendo in the South, to 1,464 M at Kamgwagi (Ruma Park Headquarters) in the North. The valley floor lies about 75 M above the level of L. Victoria (1,200 M above sea level), but it is reported that after relatively recent stages of tectonic activities the valley is submerged below the waters of the lake. Deep porous lacustrine deposits have since been overlaid with dark clays, with widespread areas of poor drained black cotton soil extending over much of the valley floor including Ruma National Park. Elsewhere there are fertile volcanic soils predominant along hillsides, although characterised by rocks and deep slopes.

Land use in park-adjacent areas

The park borders the Lambwe forest reserve (2100 hectares) to the north east. The main uses in the forest reserve include livestock grazing and firewood collection. Timber and pole production were the main products prior to the ban of 2003 on timber wood harvesting from forest reserves. Elsewhere adjacent to the park are privately owned farm lands used for household settlements and mixed farming. These directly border the park posing major human-wildlife conflicts which call for integrated management approaches in addressing issues affecting the park and local communities. Towards this, conservation-related initiatives have been developed namely farm-based bee keeping and afforestation projects particularly in Kamato and Magunga areas.

Purpose Statement

The Purpose Statement summarises the significance of the Park and its ecosystem, clarifies the reasons for its existence, and provides the overall goal that managers are striving to achieve. The Purpose Statement is divided into a primary Purpose followed by a series of supplementary purposes that expand on and complement the primary purpose.

The PA Purpose is:

To protect and conserve southern Kenya endemic species and particularly the Roan antelopes, and their habitats for posterity

Supplementary purposes are:

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

The development of the above Purpose Statement was based on the park's Exceptional Resource Values (ERVs). These ERVs are discussed and elaborated in the following section.

Exceptional Resource Values

Table 1: Exceptional Resource Values

Category	Exceptional Resource Value
Biodiversity	▶ Roan antelope (<i>Hippotragus equinus</i>)
	▶ Rothschild Giraffe (<i>Giraffa camelopardalis rothschildi</i>)
	▶ Blue Swallow (<i>Hirundo atrocaerulea</i>)
	▶ Kenya Topi antelope (<i>Damaliscus lunatus</i>)
	▶ Lelwel Hartebeest (<i>Alcelaphus buselaphus lelwel</i>)
	▶ Jacksons Hartebeest (<i>Alcelaphus buselaphus Jacksonii</i>)
	▶ <i>Hyparrhenia rufa</i>
	▶ Important Bird Area (IBA)
Scenic	▶ Kanyamwa escarpment, Gwasi hills, Got Jope
	▶ The flood plains, Lambwe River and its riverine forest
Social	▶ fostered relationships with the surrounding community
	▶ Friends of Ruma N. P (FRUNAP), schools
	▶ Community projects like building schools and water supply
Cultural	▶ Lambwe valley is believed to have been frequented by the legendary Gor Mahia
	▶ The culture of the Luo, Abasuba and Kisii communities.

Biodiversity values

Roan antelope

The roan antelope (*Hippotragus equinus*) is a savanna antelope found in West, Central, East Africa and Southern Africa. Roan antelopes are found in woodland and grassland savanna mainly in the tropical and subtropical grasslands, savannas, and shrublands biome, which range in tree density from forest with a grassy understorey (i.e. Zambezian Miombo woodlands) to grasslands dotted with few trees (i.e. Ruma National Park), where they eat mid-length grass. Although the roan is neither listed as endangered nor critically threatened, populations are declining. Factors such as habitat loss and poaching contribute to this. In Kenya the roan antelopes are only found in Ruma National Park.

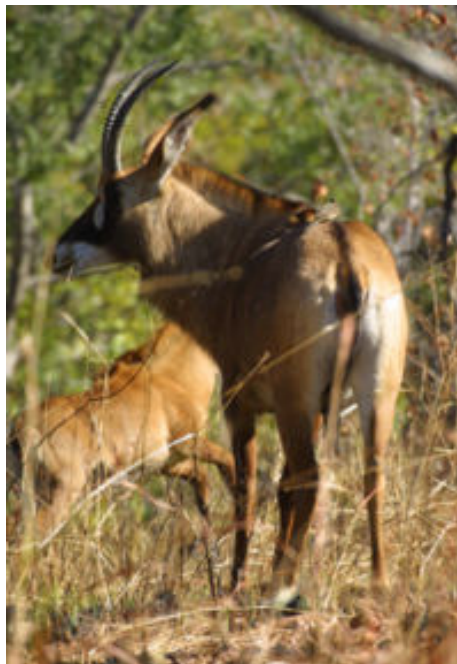


Plate 1: Female roan with a young

The Rothschild Giraffe (*Giraffa camelopardalis rothschildi*) is the second most endangered giraffe subspecies with only a few hundred members. It is named after the famous family of the Tring Museum's founder, Lord Walter Rothschild, and is also known as the Baringo Giraffe, after the Lake Baringo area of Kenya or as the Ugandan Giraffe. While giraffes in general are classified as Lower Risk: Conservation Dependent, the Rothschild Giraffe is at particular risk of hybridization, as the population is so limited in numbers. There are very few locations where the Rothschild Giraffe can be seen in the wild, with notable spots being Lake Nakuru National Park and Ruma National Park in Kenya, as well as the Murchison Falls National Park in Northern Uganda.



Plate 2: Rothschild Giraffe

The Blue Swallow (*Hirundo atrocaerulea*) is a small passerine bird in the swallow family. It is classified globally as vulnerable on the IUCN Red List 2007, although this classification is currently under review, and as Critically Endangered in South Africa. It is also listed on Appendices I and II of the Convention on Migratory Species (CMS or Bonn Convention). The Blue Swallow breeds in southern Africa, wintering further north in Uganda and Kenya. This bird breeds in montane grassland, preferring high rainfall, undulating areas. In winter it prefers open grassland, with bushes and trees. This species is classified as Vulnerable due to destruction of its habitat at both its breeding and wintering sites. The current population is estimated at 4,000 and decreasing.



Plate 3: Blue Swallow

Topi

The Kenya Topi antelope *Damaliscus lunatus*, is a grass-eater which favours open plains. Ruma National Park is a particularly good place to see the Topi. They are territorial and advertise their presence by standing bolt upright on termite mounds.



Plate 4: Topi

Lelwel Hartebeest

The Lelwel Hartebeest (*Alcelaphus buselaphus lelwel*) is an antelope native to the Central African Republic, Chad, Democratic Republic of the Congo, Ethiopia, Kenya, Sudan, Tanzania and Uganda. The hartebeest, like many antelopes, is primarily diurnal, grazing in the early morning and late afternoon, and resting in a shaded area during the hottest part of the day.



Plate 5: Lelwel Hartebeest

Hyparrhenia rufa

H. rufa is a common native pasture plant throughout East Africa and Latin America, used mainly for beef cattle production. It is used in Africa as a coarse thatching grass and as a general purpose straw, and produces a useful pulp for paper. It withstands a dry season of six months and it tolerates seasonal burning. Additionally, it has good disease resistance.

Important Bird Area (IBA)

An Important Bird Area (IBA) is an area recognized as a globally important habitat for the conservation of bird populations. There are currently 61 IBA sites in Kenya covering a wide array of habitats.

Ruma National Park is an IBA because it is an important habitat of the blue swallow (intra-migratory bird).

Scenic values

Scenic value is the economic, emotional, psychological, health and aesthetic reaction to a visual experience. Ruma National Park falls between features such as Kanyamwa escarpment, Gwasi hills, Got Jope etc which gives the scenery a panoramic view. The flood plains, Lambwe River and its riverine forest form a mosaic of scenic landscapes.



Plate 6: Panoramic landscapes

Social values

Social value is a larger concept which includes social capital as well as the subjective aspects of the citizens' well-being, such as their ability to participate in making decisions that affect them. The park has fostered relationships with the surrounding community, and plays an active role in its well being. Through collaborations with groups like Friends of Ruma National Park (FRUNAP), schools, among others, the park has participated in the establishment of community projects like building schools and water supply among others. This goes a long way in cementing the Community/ Park relationship which is crucial in conservation.

Cultural values

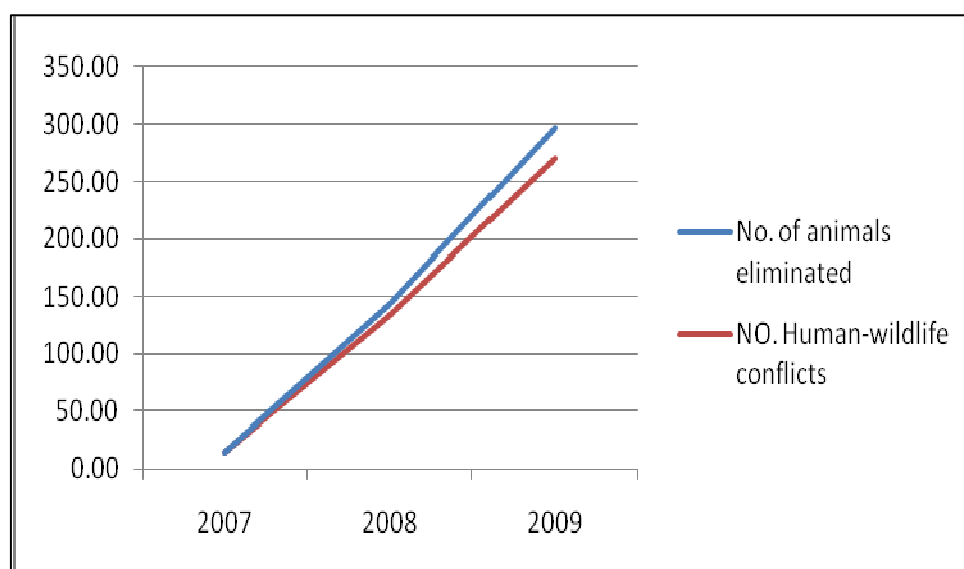
Cultural values are commonly held standards of what is acceptable or unacceptable, important or unimportant, right or wrong, workable or unworkable, etc., in a community or society. The Park is surrounded by the Luo, Abasuba and Kisii communities. These communities have been known to have a wealth of cultural attributes. They are majorly farmers and fishermen and are also known to be gifted with interesting cultural rites that are sometimes accompanied with song and dance, enhanced with traditional instruments. These cultural attributes can be a great tourist attraction, but it has not yet been tapped. The Lambwe valley is believed to have been frequented by the legendary Gor Mahia who named the area.

Management issues of concern

1. Hard edge boundaries

Ruma represents a valuable island of natural habitat in a sea of human settlement. The population density in Park-adjacent areas is high, and it is thought that people and their livestock avoided the Ruma area due to tsetse fly presence. Most of the park is bordered by a hard edge of subsistence agriculture and settlement. Consequently, human-wildlife conflicts in form of crop raiding, human injury or death, bush meat poaching are common negative impacts of park-community interactions. It is only to the North East of the park bordering Lambwe Forest Reserve where conflicts are minimal.

Figure 3: Trends in human-wildlife conflicts



2. Tse Tse flies

Ruma National Park and its surroundings are infested by tsetse flies (mainly *Glossina fallidipes* a vector of trypanosomiasis). This has made the park unattractive to visitors due to their fear of contracting the dreaded trypanosomiasis (sleeping sickness) disease transmitted by Tse tse flies. At the moment, the tse tse fly menace has been controlled in the park using tse tse traps thus reducing their population to insignificant levels. The Tse Tse control programme has been carried out by KWS in collaboration with the Ministry of Livestock and PATTEC. However, the area surrounding the park is still infested with tsetse flies and hence trypanosomiasis is a major cause of livestock mortalities outside the park and it is not known whether wildlife in the park is a reservoir of trypanosomes that cause the disease. There are few effective drugs for managing trypanosomiasis both in human and animal medicine. Further, there are few drugs that can effectively treat trypanosomiasis as newer drugs have not been developed in the last 40 years due to little commercial gain.

Targets and traps have proved effective in suppressing tsetse flies but their major disadvantages is their ineffectiveness at low fly densities and poor selectivity for certain *Glossina* spp. Trap maintenance has also been a problem due to neglect, vandalism, and poor quality material. In addition, there is apathy and lack of interest among certain communities due to lack of incentives linked to trap maintenance.

3. Seasonal flooding

The park is located in a valley whose slopes are steep and covered with loose black cotton soils. During the rainy season, these soils are washed by run-off and deposited in the park making the viewing roads difficult to manoeuvre. There is a road section of about 200m crossing Lambwe River that floods during the rainy season.

Floods displace most large wildlife, especially the hoofed ones, which move to the raised though spatially and shelterwise limited areas; hence exposing them to poaching and predation.

4. Decline in roan population

The roan antelope population has been declining over the last 50 years. Possible but unconfirmed factors precipitating this decline include poaching, drought and habitat loss. Originally roan occupied fairly large areas of southern Kenya (from L. Natron to L. Victoria). In the early 1960s the distribution had been greatly reduced, and the species was declining further in most of the scattered localities in which it persisted. In the last decade there have been no confirmed reports of roan in other parts of the country and the last known refuge of the species is the Lambwe Valley, in Ruma N. Park. Since 1989 the roan population has been below 50 individuals, which might be below the minimum viable population and thus unable to recover to healthy levels. In July 2010, only thirty one (31) individuals were counted in the park.

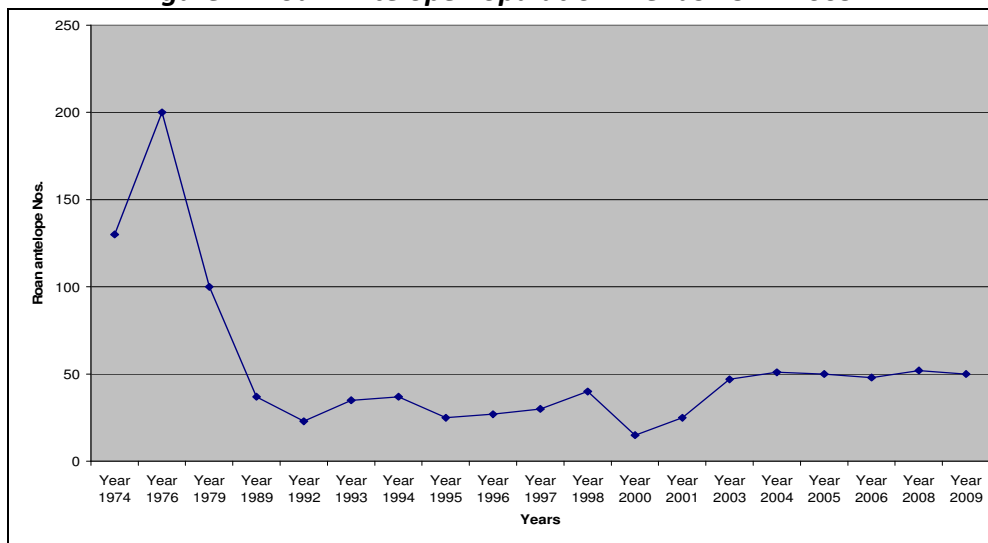
Some of the possible factors contributing to the continued decline of the roan antelope are:

Predation - Predation by spotted hyena and leopard, particularly on young roan antelopes may be limiting the population's natural recovery rate.

Drought – Dry season movements of roan in search of pasture, and especially water may expose them to higher risks of poaching.

Small population – the current small population is vulnerable to effects of inbreeding.

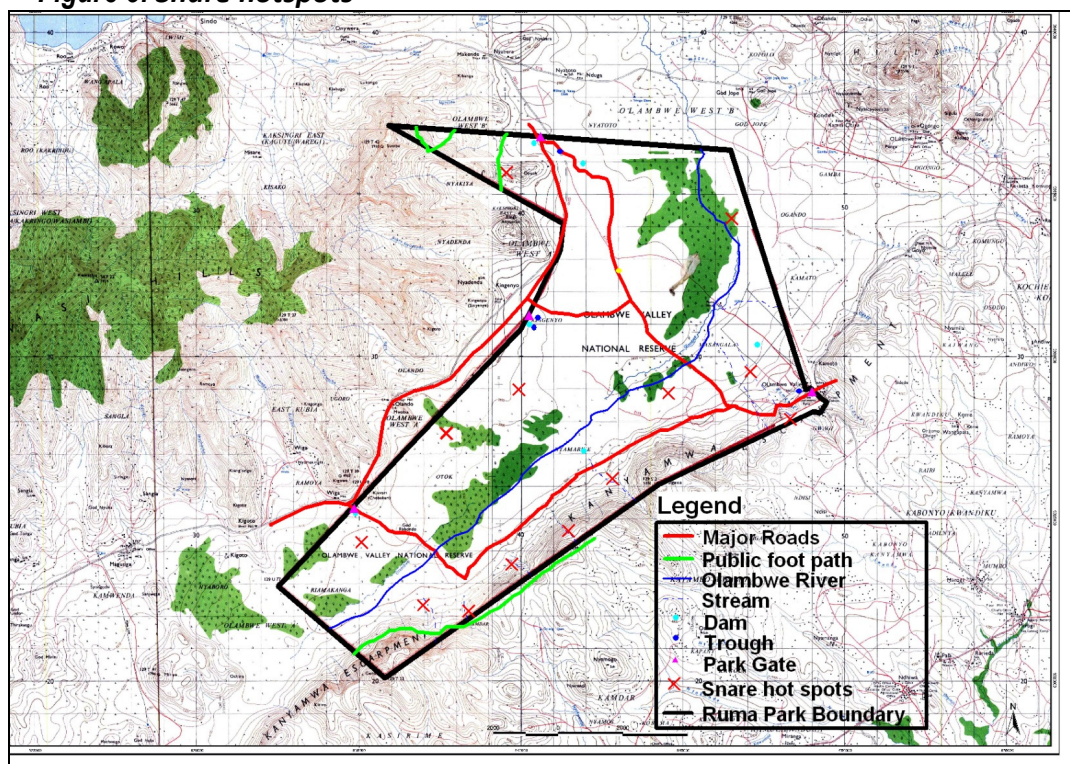
Figure 4: Roan Antelope Population Trends-1974-2009



Poaching – The major threat to the roan antelope is bush meat poaching through snaring. The high ground adjacent to the park allows poachers to monitor the movement of KWS personnel in the park and thereby avoid arrest.

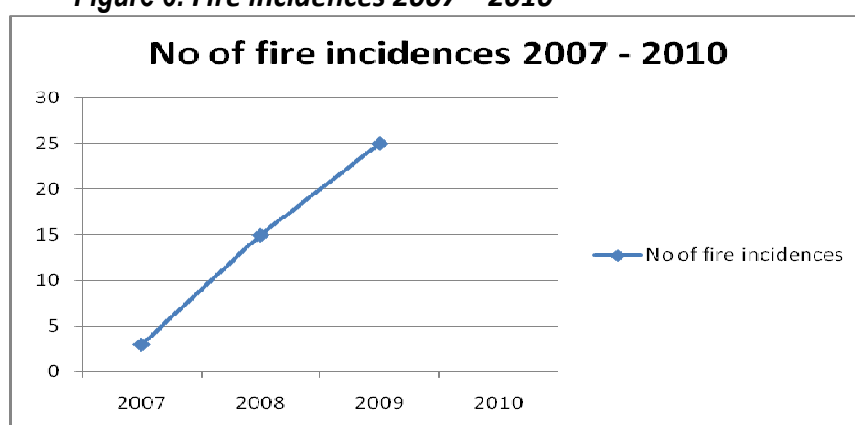


Plate 7: Buffalo snared in Ruma National Park

Figure 5: Snare hotspots

5. Habitat quality

Ecological dynamics of the park that are key to animal survival include; forage availability and quality, water availability and quality, in addition to cover and range conditions. Open or sparsely wooded grasslands cover about 68% of the park while forest, woodlands and thickets cover the rest 32%. The wooded grassland areas are often under about 1 meter high grass cover which though being suitable cover for herbivores, they offer poor grazing habitat for low grazers and increase the risk of fire.

Figure 6: Fire incidences 2007 – 2010

6. Narrow species range for larger herbivores

Mammal species range has been declining over time resulting to local extinction of some important species namely the black rhino and Burchells zebras. Bush buck is another species whose last sighting was in 2004.

The narrow species range is a factor which could lead to poor visitor experience. For this reason, there is need for species reintroductions and restocking. The park has a good potential of hosting both black and white rhinos and these species have recently been introduced. However, there is need to develop species conservation plans for the rhino to guide their management.

7. Low visitation

Ruma National Park is recognized in Kenya Vision 2030 as one the underutilized parks whose tourist facilities and other tourism-support infrastructure will be expanded and rehabilitated.

Currently, Ruma National Park receives very few visitors (see table 8 and table 9). This could be partly attributed to lack of adequate visitor facilities as these are limited to one guest house (oribi guest house), One public campsite (Fig tree) and one special campsite (Nyati special campsite). The nearest hotel/lodge accommodation facilities are in Homa Bay, 23km away and these are of poor standards. The road from Ruma National Park to Homa Bay is in bad condition and is impassable during the rainy season unless with a 4-wheel drive vehicle. The nearest town with standard tourist accommodation facilities is Kisumu City, 140km away. This distance is inhibitive to most tourists. Moreover, a section of about 33km (Kendu Bay to Ruma) is in bad condition, which further discourages visitors from coming to the park.

Ruma National Park Zonation Scheme

Park Zoning

Closed Zone

Ruma is the only habitat for the roan antelope and also an important sanctuary for the highly restricted Rothschild giraffe. The raised shrubland around Sumba is designated as a closed zone. This is regarded as the breeding area for the roan antelopes and the wet season preferred habitat by other ungulates and their associated predators. The Sumba hill is one of the few woodland areas free from flooding and thus an essential cover for animals such as roan antelopes, hartebeests, topi and predators. Research, birding and administrative activities are however permitted. Limited walking trails will be developed to facilitate low impact tourism and research.

Low use zone

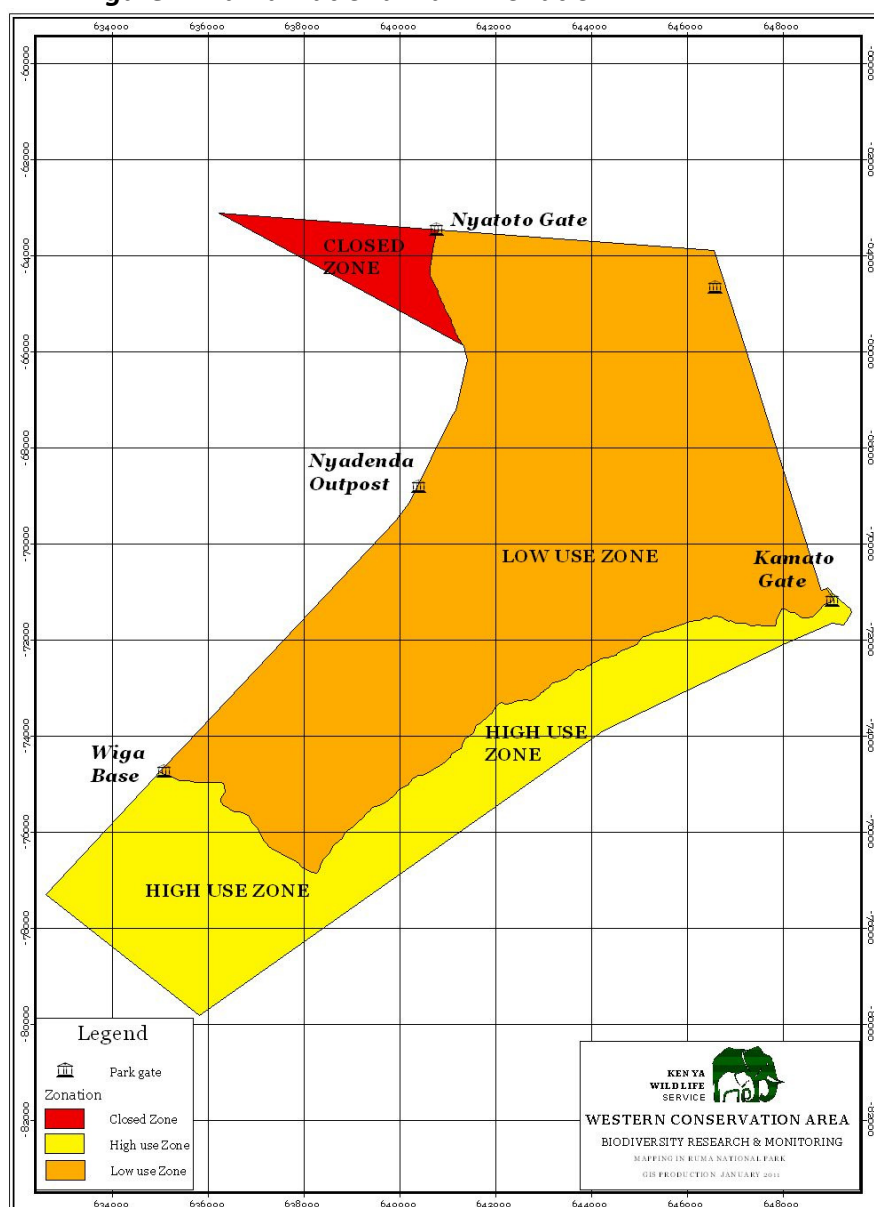
The floor of the Lambwe valley which is open and wooded grassland (making 68% of the park) is designated as low use. This has the highest preference by the larger mammals. Activities permitted here include game viewing, picnic sites and birding. However, the riverine area is expected to be the core habitat for black rhinos that have recently been reintroduced. Further, it is fragile and prone to flooding and therefore not suitable for high impact tourist activities. Therefore, only low impact activities, mainly research related, will be permitted in the riverine area of the low use zone.

High Use Zone

The high use zone is bounded by Kamato Wiga road and the park boundary with forest reserve and community partly. This zone is embraced by Kamgwagi hill, Sigama and kanyamwa escarpments. Permitted activities are wildlife viewing, nature walks, picnic sites, campsites and game viewing. Walking trails are allowed at the escarpment.

Influence zone

This zone covers community land within 5 Km from the Park boundary. The community in this area utilises the land resources for mixed farming and forestry. It is also impacted by human-wildlife conflicts wrought mainly by Vervet monkeys, olive baboons and snakes. The focus of the management in this zone is therefore educating the community on conservation, minimising human-wildlife conflicts and supporting community conservation enterprise initiatives. All tourist facilities and activities are permitted subject to positive environmental impact assessments.

Figure 7: Ruma National Park- Zonation

Planned sites inside Ruma National Park

Apart from the KWS guest house, Ruma National Park has no other tourist accommodation facilities. Four new tourist accommodation sites (3 ecolodges and one banda) have been approved for development in this plan. However, developments are not allowed in the **closed zone** as this is reserved as a roan antelope breeding area. Table 2 provides an overview of the Ruma National Park zonal accommodation size prescriptions for all new developments, while table 3 provides an overview of the prescribed new accommodation facilities.

Table 2. Overview of Ruma National Park zonal accommodation size prescriptions

<i>Accommodation type</i>	<i>High Use Zone</i>	<i>Low Use Zone</i>	<i>Closed zone</i>
Ecolodge	60 beds	30 beds	No facilities allowed
Permanent tented camp	60 beds	30 beds	
Starbeds ²	--	10 beds	
Special campsites	12 beds	12 beds	
KWS self-help bandas	16 beds	12 beds	
Public campsite	60 beds	30 beds	

Table 3: Overview of approved new accommodation facilities for Ruma National Park zones

<i>Facility type</i>	<i>High Use Zone</i>	<i>Low Use Zone</i>
Ecolodge (30 beds)	2	1
Starbed (10 beds)	-	1
KWS Self help Bandas(12 beds)	-	1
Special campsite (12 beds)	1	1
Total new beds	72	64

² Linked to an ecolodge or permanent tented camp.

Ecological Management Programme

Programme Purpose and guiding principles

The purpose of the Ecological Management Programme is:

To ensure that habitat and species diversity is maintained and improved, and functioning of ecological systems is understood.

The guiding principles underpinning the Ecological Management Programme and which will guide Park management to achieve the programme purpose are:

1. *Wildlife species are protected, restored and monitored;*
2. *Wildlife habitats are conserved;*
3. *Tse Tse flies are controlled; and*
4. *Ecosystem functioning is understood.*

Targeting ecological management action

The Ecological management Programme has been developed in accordance with The Protected Areas Planning Framework (PAPF) which adopts the **Nature Conservancy's (TNC) Conservation Action Planning (CAP)** process as a tool for designing the PA plan's Ecological Management Programme. This is because with limited human and financial resources a manager cannot monitor every parameter in a protected area. The CAP identifies and develops an accurate definition and understanding of the most important ecological features and their management needs, and the major threats to these features. This program therefore adopts the CAP methodology, in line with the PAPF.

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

Conservation targets

The first stage consists of two key steps. First, there is the identification of the area's conservation targets, that is, biodiversity, whose continued conservation reflects conservation success. Biodiversity in an area is represented by species, communities or ecological systems that are usually measured as an index of ecosystem functioning. A small suite of about 8 conservation targets at different levels of biodiversity hierarchy are sufficient indicators of ecosystem health, functioning and stability.

In the second step, Key Ecological Attributes (KEAs) for each conservation target are identified. These represent such parameters as biological composition, structure, interactions and processes, environmental regimes, and landscape configuration among others, that if missing or altered, would lead

to the loss of that target over time. In the case of Ruma National Park, the conservation targets and the rationale behind their selection are set out in Table 4.

Table 4: Conservation targets

Conservation target	Rationale for selection	Important subsidiary targets	Key ecological attributes
Black Rhino	<ul style="list-style-type: none"> Classified as critically endangered by IUCN. Global population declined drastically over last 30 years. The Ruma population has been re-introduced recently. 	<ul style="list-style-type: none"> Other species in sanctuary 	<ul style="list-style-type: none"> Population size, recruitment and structure Genetic diversity Habitat size and quality (water and forage)
Roan antelope	<ul style="list-style-type: none"> The only remaining population in the country and this population has been declining. 	<ul style="list-style-type: none"> Other grazers such as zebras, topis 	<ul style="list-style-type: none"> Population size, recruitment and structure Genetic diversity Habitat size and quality (water and forage)
Rothschild Giraffe	<ul style="list-style-type: none"> This is the highest single population of the subspecies in the whole world (IUCN, 2010) 	<ul style="list-style-type: none"> The vegetation community that provides the browse material 	<ul style="list-style-type: none"> Population size, recruitment and structure Genetic diversity Habitat size and quality (water and forage)
Hyena	<ul style="list-style-type: none"> One of the two predators in the park. Their presence is very important for population dynamics of other co-occurring prey species 	<ul style="list-style-type: none"> The leopards and the civets cats 	<ul style="list-style-type: none"> Population size Recruitment Genetic diversity
Riverine vegetation	<ul style="list-style-type: none"> Forms the buffer zone in the park. It is also the only firebreak that stops fire from burning the whole park from either side 	<ul style="list-style-type: none"> Fish eagle 	<ul style="list-style-type: none"> Size Floritic composition Vegetation structure
Hyparrhenia Grasslands	<ul style="list-style-type: none"> These are the habitats for the waterbucks and the buffaloes. They give Ruma a beautiful scenic view 	<ul style="list-style-type: none"> Buffaloes waterbucks 	<ul style="list-style-type: none"> Size Floritic composition Vegetation structure
Savanna grasslands	<ul style="list-style-type: none"> This provides all the biomass needed by the grazers It also provides the habitat that favors the Roan antelope 	<ul style="list-style-type: none"> Grazers such as impalas, topis, oribi 	<ul style="list-style-type: none"> Size Floritic composition Vegetation structure
Lambwe River system	<ul style="list-style-type: none"> This is the only natural source of water in the park 	<ul style="list-style-type: none"> Springs Riverine forest Other vegetation 	<ul style="list-style-type: none"> Water Quality Water Quantity

Threats to conservation targets

Once conservation targets are identified, threats to conservation are also identified and ranked on the basis of how much they stand to affect conservation targets. Threats are activities or processes that have caused, are causing or may cause destruction, degradation and/or impairment of biodiversity and natural processes. Identification of threats helps to identify the various factors that immediately affect conservation targets and then rank them so that conservation actions and resources are concentrated where they are most needed. Each threat is ranked according to **Severity**: the level of damage reasonably expected within 10 years under current circumstances (see table 5).

Table 4: Threat ranking guidelines

Threat level	Severity
Very high	Destroy or eliminate the target
High	Seriously degrade the target
Medium	Moderately degrade the target
Low	Slightly impair the target

Table 5 shows the priority threats impacting or likely to impact on conservation targets and their key ecological attributes.

Table 5: Threats to Ruma National Park's Conservation Targets

TARGETS	Black Rhino	Roan ante-lope	Rothschild giraffe	Hyena	Riverine vegetation	Hyparrhenia Grasslands	Savanna grasslands	Lambwe River system
THREATS								
Poaching	High	High	High	Low				
Inbreeding	Low	Medium	Medium	Low				
Diseases and pests	High	High	High	High				
Alien and invasive species	Medium	Medium	Medium		High	High	High	Low
Illegal grazing	Low	Low	Low	Low	High	High	High	
Wild Fire	Low	Low	Low	Low	High	High	High	High
Pollution	Medium	Medium	Medium	Medium	Low	Low	Low	High
Tse tse flies	High	High	High	Low				
Siltation or rivers	Low	Low	Low					High
Soil erosion					High	High	High	High
Climate change	High	High	High	High	High	High	High	High

Ecological management objectives and actions

The objectives developed for the Ecological Management Programme are:

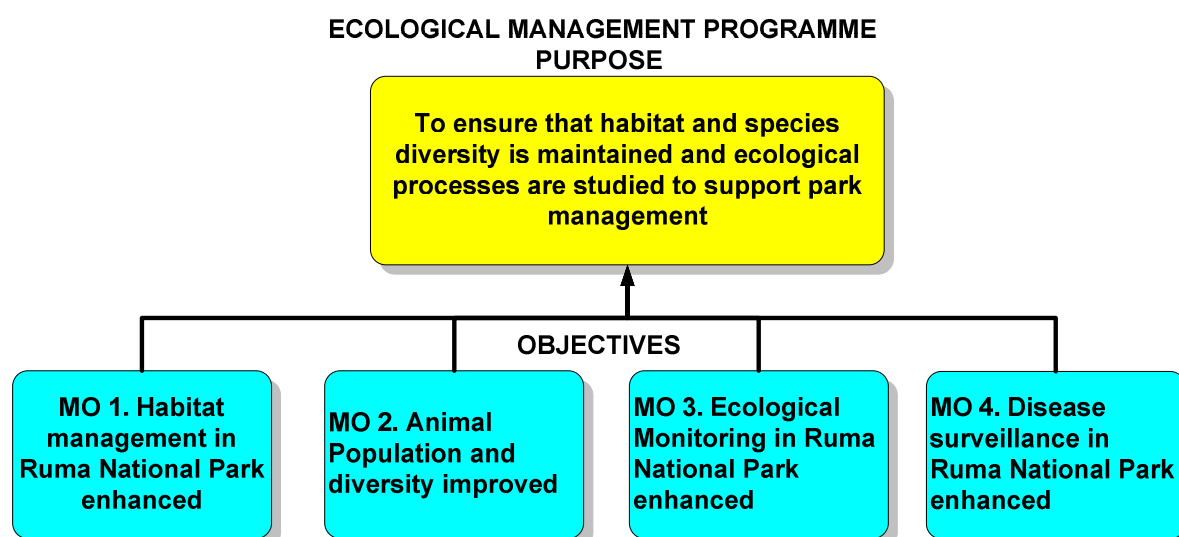
- MO 1. Habitat management in Ruma National Park enhanced**
- MO 2. Animal Population and diversity improved**
- MO 3. Ecological Monitoring in Ruma National Park enhanced**
- MO 4. Disease surveillance in Ruma National Park enhanced**

These management objectives and the actions developed to achieve them are described in detail in the sections below.

Management Objectives

Figure 8 below shows the overall objectives tree for the Ecological Management Programme. These objectives are discussed further in subsequent sections.

Figure 8: Ecological Management Programme objectives tree



Objective 1: Habitat management in Ruma National Park enhanced

Wild fires: Outbreak of wild fires in Ruma National Park has been common in the last two years (table 14). The fires are both intentional and accidental. Poachers start wildfires to stimulate green flush, especially after rains, which attract the grazers. Accidental fires occur before the planting season as farmers burn farm litter during farm preparation. The wild fires destroy vegetation and result to death of animals (e.g. reptiles, amphibians, insects, and small mammals). In the last one year, the frequency of fire outbreaks has reduced. As a result, bushland is encroaching onto the savannah grassland, which is important to grazers (e.g. the roan antelopes).

To control accidental wildfires, the management of Ruma National Park will carry out community awareness through meetings and workshops on the need for vigilance when preparing land for planting. Threats by intentional fires will be addressed in collaboration with the security department in Ruma National Park. Fire breaks will be established along the park boundary by grading along the fence line. In addition, a fire management plan will be developed. The plan will provide guidelines for controlled burning (e.g. number of fire burning blocks needed, and burning schedules) in the Park.

Table 6: Frequency of wild fires in Ruma National Park (2008-2009)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
2008	18	2	0	0	0	0	2	2	1	0	2	3	30
2009	12	6	25	0	0	1	7	4	2	0	0	0	57

Source: Ruma National Park database, 2009

Invasive species: The common invasive species in Ruma National Park are Mauritius thorn, *Datura stramonium*, *Eucalyptus falcifolia*, *Solanum incanum* and *Lantana camara*. These invasive species have colonised large areas of wildlife habitat, which threaten the Park's ecological integrity. In order to minimise the impact of invasive species, Park Management will identify and map all the invasive species in the park and its surroundings. In addition, a study to establish the best control methods will be carried out and an invasive species management plan will be developed to ensure that invasive plants are progressively eliminated from the Park.

Management of forest patches: Previously, several forest patches existed around Ruma National Park. Most of these forests have been completely destroyed with only a few remaining (e.g. Gwasi, Lambwe, and Magunga forest etc). These forests play a critical water catchment role for Ruma National Park and its ecosystem; hence the need to prioritize their protection and conservation. Since these forests are under the jurisdiction of the Kenya Forest Service (KFS), Ruma Management will increasingly collaborate with KFS to ensure that threats to these forest patches are minimised.

A summary of the management actions is provided in Box 1.

Box 1. Summary of Management Actions

1. Carry out community awareness on fire prevention techniques
2. Establish strategic firebreaks in the Park
3. Establish controlled burning blocks in the Park
4. Develop and implement a fire management plan
5. Identify and map distribution of invasive plant species
6. Carry out a study to establish the best invasive species control methods and develop a plan for management of invasive species in the park
7. Carry out habitat and wildlife surveys
8. Map security and human-wildlife conflict hot spots
9. Collaborate with KFS in protecting and conserving forests that are adjacent to the Park

Objective 2: Animal population and diversity improved

Currently, Ruma National Park harbours about eleven species of large mammals. Previously the Park was inhabited by black rhino, common zebra, elephants, and Maasai ostrich. However, the increase in settlements, cultivation and poaching in the 1970s and 1980s eliminated these species from the park and its ecosystem. This substantially decreased the diversity of large mammals in the park reducing visitor attractions. To increase the diversity of the large mammals, Park Management will re-introduce the black rhino, common zebra, and ostrich, and introduce white rhinos in the park. This will provide a diversity of large mammals in the park, improve visitor attractions and enhance visitor satisfaction.

The Roan antelope is endemic to Ruma National Park in Kenya. The Roan Antelope population decreased from about 200 animals in 1976 to about 50 animals in 2003 (table 15). Since 2003, the population has remained static at about 50 individuals (table 15). The roan antelopes have been breeding, but recruitment has been poor. The factors hampering recruitment have not yet been established but it is postulated that predation or inbreeding depression could be contributing to the poor recruitment and subsequent population stagnation. However, in order to gain empirical evidence on factors responsible for the poor recruitment, Park Management will carry out a study on the breeding behaviour of the Roan Antelope and its interactions with predators of Ruma National

Park. This study is expected to shed light on the causes of the population stagnation and based on this Park management will liaise with the *National Roan Antelope Task Force* in developing a roan antelope management strategy. Further, in order to increase the survival of Roan calves, an in-situ breeding programme will be established in the Park and at the Animal Orphanage in Nairobi National Park. Towards this, a suitable area within the Park will be identified and ring fenced for Roan protection. Patrols will also be intensified in this zone to deter poaching of the Roan antelope.

Some of the park operational activities for conservation of species of concern will include establishing Roan/Rhino/Rothschild giraffes monitoring unit, establishing an in-situ roan breeding programme, establishing a database for the endangered species, and conducting quarterly census.

Table 7: The number of roan antelopes in Ruma National Park (1976-2009)

Years	1976	1979	1989	1992	1994	1996	1998	2001	2003	2004	2005	2006	2008	2009
Numbers	200	100	37	23	37	27	40	25	47	51	50	48	52	50

Source: Ruma National Park database, 2009

Box 2 gives a summary of management actions designed to achieve this objective

Box 2. Summary of Management Actions / Activities

1. Carry out a study on the breeding behaviour of roan antelopes
2. Assess the impacts of predators and poaching on roan antelopes
3. Develop a Roan Antelope management strategy
4. Reintroduce black rhinos, ostriches and burchell's zebras in the park
5. Introduce white rhinos in the park
6. Establish Roan/Rhino/Rothschild giraffes monitoring unit
7. Establish a database for the endangered species
8. Conduct quarterly census
9. Use modern monitoring technology e.g. Microchip & Tagging to monitor rhinos.

Objective 3: Ecological Monitoring in Ruma National Park enhanced

Ruma National Park has paucity of information on Biodiversity composition and ecological functioning to support management decision making. This is because either literature on past inventories of plants and animals is not available in the park or the inventories have not been carried out. In view of this information gap, Park management will establish a computer-based biodiversity database to store existing biodiversity information and other information that will be collected in future. Towards this, Park management will carry out a rigorous information search in the internet and other research institutions where information on Ruma might be archived. This will be followed by literature review on identified literature to filter relevant biodiversity data that can be handled by a computer data base management system. To fill information gaps, inventories of plants and animals in the park will be carried out in collaboration with institutions that have expertise in biodiversity inventories such as the National Museums of Kenya (NMK).

Ruma National Park is a human-wildlife conflict hotspot in the Western Conservation Area and therefore mapping of conflict hotspots is important so that effective intervention measures can be designed. Therefore, Ruma management will carry out a GIS based mapping exercise of conflict hot-

spots in the area and produce the relevant maps to guide management in designing response measures.

The main source of water for wildlife in the park is Lambwe River. The river originates from the Magunga forest, located on the western side of the park. This river flows near farms and settlements, some of which extend to the banks of the river, before entering the Park. Use of farm chemicals and fertilizers is common in the river catchment area. In addition, waste management within the river catchment area is poor. The farm chemicals and human waste are washed into the river distorting the water chemistry. The change in the water chemistry is a threat to the fresh water aquatic organisms as they are sensitive to changes in pH and percentage of dissolved in-organic compounds (e.g. sodium, potassium, phosphates, and sulphates). The water pollutants are a threat to the wildlife and humans that depend on this water. Therefore, to mitigate the problems posed by water pollution, Park Management will carry out water quality and quantity monitoring in the Lambwe River to discern the impacts of farm chemicals. The results obtained from the water monitoring activity will be used to educate the communities on the need for good environmental sanitation, including discouraging farming up to the river banks. In addition, Park Management will collaborate with Water Resources Management Authority (WRMA) and respective water boards to conserve and manage the Lambwe River catchment.

A summary of the management actions is provided in Box 3.

Box 3. Summary of Management Actions

1. Establish a biodiversity information database comprising of inventories of fauna and flora
2. Carry out a study on water quality and quantity in Lambwe River and its catchment
3. Monitor water quality and quantity
4. Initiate collaborations with the Water Resources Management Authority and Water Services Boards
5. Carry out habitat and wildlife surveys
6. Map security and human-wildlife conflict hot spots

Objective 4: Disease surveillance in Ruma National Park enhanced

Ruma National Park and its surroundings are infested by tsetse flies. This has made the park unattractive to visitors due to their fear of contracting the dreaded trypanosomiasis disease that is transmitted by Tse Tse flies. At the moment, the tsetse fly menace has been controlled in the park using tse tse traps reducing the population of tse tse flies in the park to insignificant levels. The Tse Tse control programme has been carried out by KWS in collaboration with the Ministry of Livestock and PATTEC. However, the area surrounding the park is still infested with tsetse flies and hence, trypanosomiasis is a major cause of livestock mortalities outside the park and it is not known whether wildlife in the park is a reservoir of trypanosomes that cause trypanosomiasis. To discern the role of wildlife in the spread of trypanosomiasis a study will be carried out to establish the spread of trypanosomes in the herbivore populations. In addition, Park management and its partners will expand the tse tse control programme to cover tse tse infested areas adjacent to the Park.

On the other hand, Ruma National Park has a small population of wild pigs. The pigs act as carriers of the virus that causes swine flu, which can be transmitted from the pigs to humans resulting in death of infected humans. In order to prevent and mitigate transmission of the swine flu virus from the pigs

to humans, the park management will continue its collaboration with KWS Headquarters Veterinary Department in the swine flu surveillance programme.

A summary of actions is provided in Box 4.

Box 4. Summary of Management Actions/Activities

1. Control and eradicate tsetse flies inside the park and its environs
2. Carry out a study to establish whether the roan antelope and other wildlife are infected by trypanosomiasis
3. Support the swine flu surveillance

Tourism Development and Management Programme

Programme Purpose and guiding principles

The purpose of the Tourism Development and Management Programme is:

To develop low impact tourism based on the unique scenery, endemic wildlife and cultural values that offer diverse and promising tourism opportunities

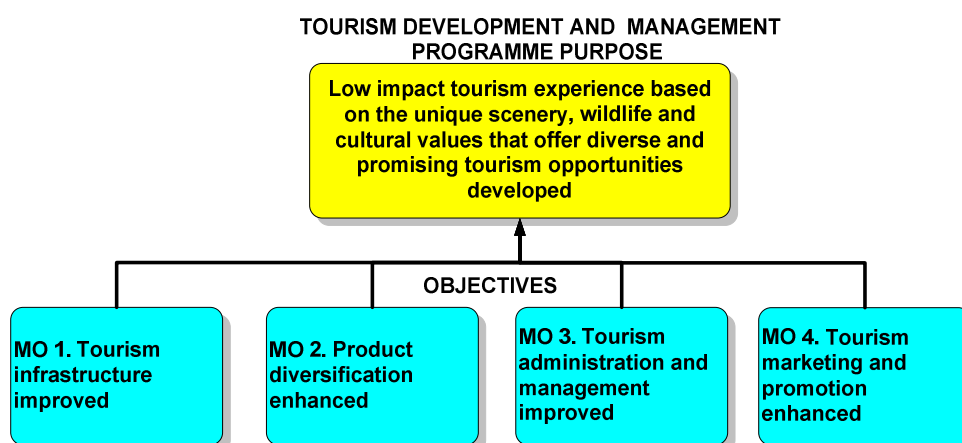
In implementing the Tourism development and Management Programme, Park management will be guided by the following principles:

1. *Diverse low impact tourist activities and facilities are developed;*
2. *Tourism is developed to augment resource protection; and*
3. *Tourist products and services are promoted and marketed.*

Management Objectives

Figure 9 below shows the overall objectives tree for the Tourism Development and Management Programme. These objectives are elaborated in subsequent sections.

Figure 9: Tourism Development and Management Programme objectives tree



Objective 1: Tourism infrastructure improved

Currently, Ruma National Park receives very few visitors. This could be partly attributed to lack of adequate visitor facilities as these are limited to one guest house -oribi guest house, One public campsite -Fig tree, and one special campsite-Nyati special campsite (see Figure 10). The nearest

hotel/lodge accommodation facilities are in Homa Bay, 23km away and these are of poor quality. The road from Ruma National Park to Homa Bay is in bad condition and is impassable during the rainy season unless with a 4-wheel drive vehicle. The nearest town with standard tourist accommodation facilities is Kisumu City, 140km away. This distance is inhibitive to most tourists. Furthermore, a section of about 33km (Kendu Bay to Ruma) is in bad condition, which further discourages visitors from coming to the park. Tarmacking of this road is ongoing though at early stages. In order to mitigate the infrastructural challenges, two lodges will be constructed in the Park within the high use zone at Kamgwagi hills and Kitiro escarpment. The lodges will be leased to tourism investors who will be identified through a competitive bidding and bid award process in line with the Public Procurement Act. Further, to ensure that visitors have adequate accommodation facilities, Park management will establish an additional special campsite and research bandas. Ecotoilets will also be provided at tourist facilities such as public campsites and gates.

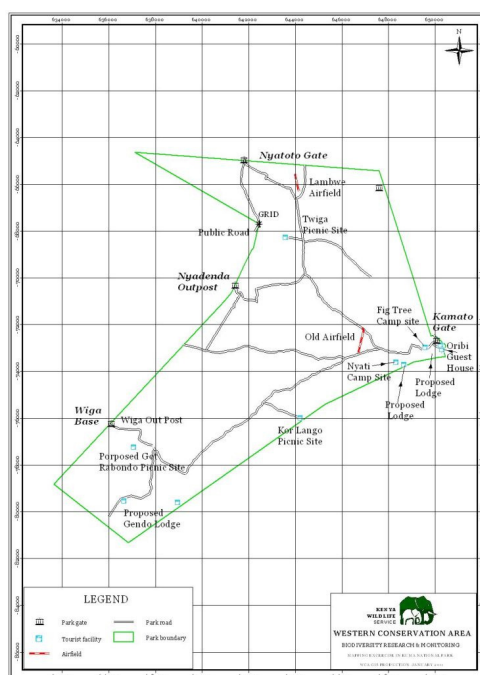
To enhance visitor satisfaction, reintroduction of rhinos, Ostrich and Burchells zebra; rehabilitation of degraded roads; opening up more tourist circuits; creation of walking trails and construction of an information center are proposed.

A summary of management actions is provided in Box 5.

Box 5 Summary of Management Actions/Activities

1. Establish two lodges
2. Establish an additional special campsite
3. Construct eco-toilets at the gates and the public campsites
4. Rehabilitate degraded roads
5. Construct new tourist circuits
6. Construct and furnish research bandas
7. Construct and furnish information centers
8. Establish new walking trails in the high use zone

Figure 10: Existing and proposed tourist facilities



Objective 2: Product diversification enhanced

In the western Kenya tourist circuit, it is only in Ruma National Park where black rhinos were present until they were wiped out by poaching. Some tourists visit Ruma National park to see the roan antelopes but they have to travel to other destinations like Lake Nakuru National Park or Maasai Mara National Reserve, which are over 100km from Ruma, to see rhinos. This distance discourages the tourist from visiting Ruma N. Park denying the country revenue. In order to diversify visitor attraction and ensure visitor satisfaction, park management will liaise with KWS Headquarters to re-introduce black Rhinos and introduce white rhinos in Ruma National Park. In addition, the management will reintroduce burchells zebras and ostriches into the park.

Some visitors may be interested in the scenic beauty of the park and its surroundings including Lake Victoria. The Kanyamwa escarpment provides a panorama of the park and Lake Victoria. To ensure that visitors appreciate the scenic beauty of the park and its surroundings, a nature trail along Kanyamwa escarpment will be established during the plan implementation period.

A summary of management actions is presented in Box 6.

Box 6. Summary of Management Actions / Activities

1. Re-introduce black rhinos, ostriches and zebra
2. Introduce white rhinos
3. Establish a walking nature trail along Kanyamwa escarpment

Objective 3: Tourism administration and management improved

If objectives 1 and 2 above are implemented, this will provide a better opportunity to market the park and increase visitation. To strengthen the marketing strategy and ensure visitor satisfaction, professional services at the gates by customer care staff is inevitable. Therefore, the park management will liaise with KWS HQs to replace security rangers currently serving the tourists at the gates with trained customer care staff. One of the immediate tasks of the tourism and customer care offices in Ruma NP will be to carry out visitor needs assessment and a survey to identify repeat customers.

A summary of management actions is presented in Box 7.

Box 7. Summary of Management Actions / Activities

1. Liaise with KWS HQ to deploy customer care staff to Ruma
2. Establish operational customer care office offering quality services
3. Carry out a visitor needs assessment
4. Carry out Survey to identify repeat customers

Objective 4: Tourism marketing and promotion enhanced

The goal of tourism marketing in Ruma National Park is to increase the number of visitors to the park as currently the park receives few visitors (table 8). Ruma National Park receives minimal national and international publicity. The common publicity is focused on negative attributes such as the trypanosomiasis disease, which is transmitted by tsetse flies. Very few people are aware that the tsetse flies problem in the park has been resolved. In addition, very few people, both local and international, are aware that in Kenya, it is only in Ruma National park where the rare roan antelopes can be found. Therefore, the park management will carry out an intensive publicity campaign at the local and international level to bring out the positive attributes of the park to the public. In relation to this, park management will generate relevant scientific and social-cultural information which will be used to develop park marketing materials such as brochures.

A summary of the management actions is presented in Box 8.

Box 8: Summary of Management Actions / Activities

1. Carry out intensive park publicity
2. Generate park information relevant to production of marketing materials

Community Partnership and Education Management Programme

Programme Purpose and guiding principles

The purpose of the Community Partnership and Education Management Programme is:

To ensure that park-adjacent communities are supporting conservation efforts and community livelihoods are improving through sustainable use of natural resources

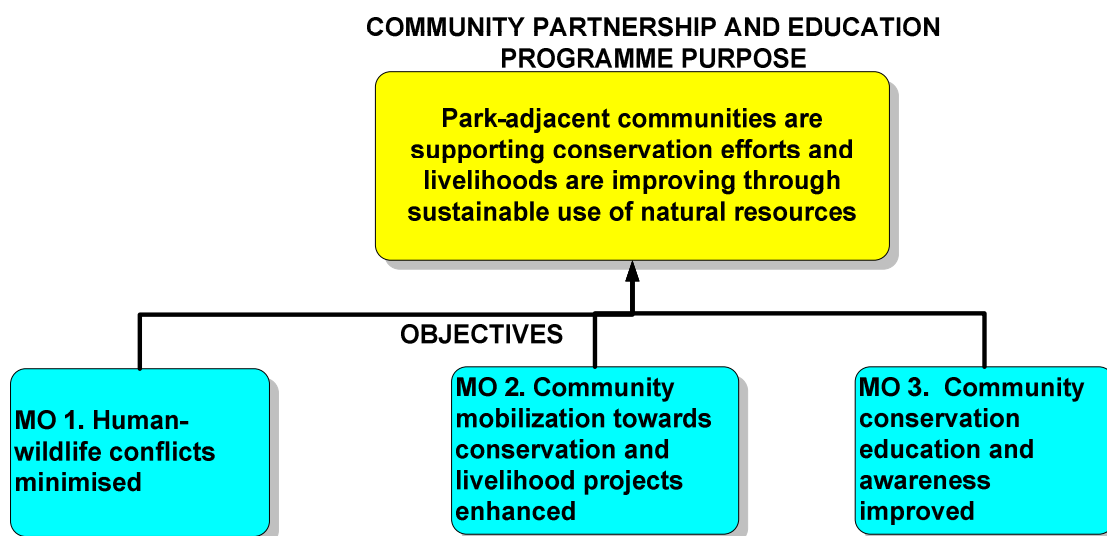
In implementing the Community Partnership and Education programme, Park management will be guided by the following strategic principles:

1. *Community-protected area communications are improved;*
2. *Human-Wildlife conflicts are minimised;*
3. *Communities and other stakeholders are aware of the values and importance of conservation; and*
4. *Communities are benefiting from natural resources.*

Management Objectives

Figure 11 below shows the overall objectives tree for the Community Partnership and Education Management Programme. These objectives are expanded upon in subsequent sections.

Figure 11: Community Partnership and Education Management Programme objectives tree

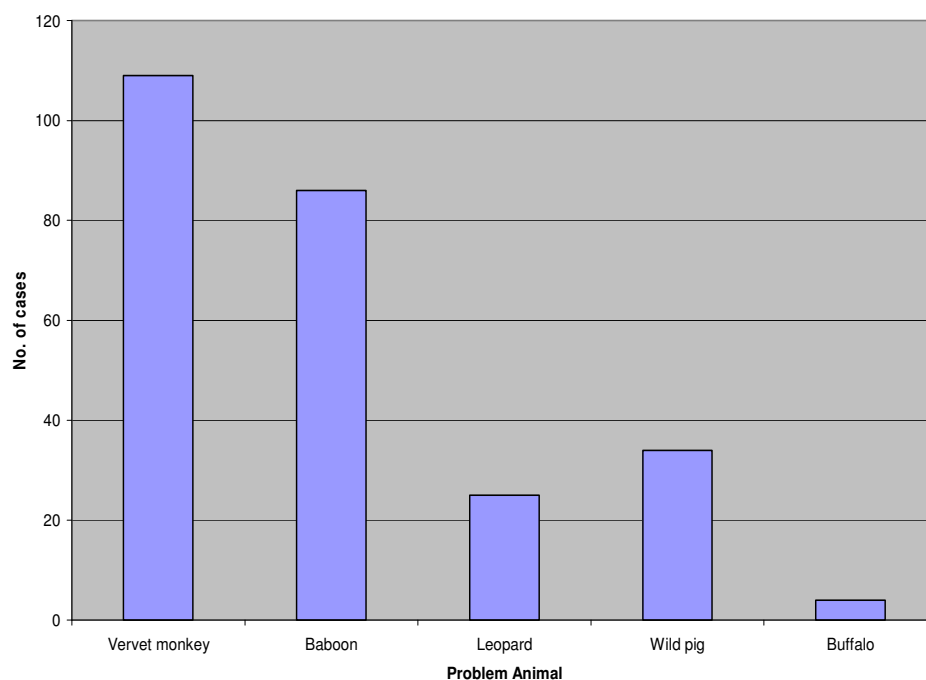


Objective 1: Human-wildlife conflicts minimised

The goal of minimising human-wildlife conflicts in Ruma National Park is to improve both park-community relations and community livelihoods. Considerable measures to reduce human-wildlife conflicts, manifested mainly through crop raiding and livestock predation, have in the past been implemented with varying success. In 1976 and later in 1984, chain-link fences were installed to contain wildlife in the Park. However, this chain-link fence has not been effective as problem animals such as baboons, vervet monkeys and wild pigs still find their way to Park-adjacent farms (see figure 5). Crop raiding is common in February to March, and June to August each year. This period coincides with ripening of maize and wheat, the commonly raided crops. To address the crop raiding problem, park management will upgrade the chain-link fence to an electric baboon proof fence. In addition, proactive Problem Animal Control (PAC) patrols will also be carried out to minimise crop raiding.

Predation of livestock is mainly caused by leopards which are found both inside the park and the surrounding forested hills outside the park. Majority of the residents surrounding the park keep cattle, goats and sheep which are easy prey for leopards. To minimise the livestock predation problem, park management will trap leopards and translocate them to far off parks that have adequate wildlife prey and are expansive enough to support additional predators. Currently, the park has only one trap, which is not adequate to handle the predator trapping requirements of the area. Therefore, to minimise livestock predation by leopards and other predators, park management will procure adequate predator traps.

Figure 12: Human Wildlife Conflict incidents (July 2009-June 2010)



Ruma National Park and its surroundings are rich in diverse species of snakes (e.g. African spitting cobra, forest cobra, eastern green mamba, black-mouthed mamba, and puff adder). This presents an opportunity for the overlap of human habitations and the habitats for snakes. Areas around the community homestead and foot paths are bushy, which makes them suitable habitats for the snakes; hence snake bite incidents are reported occasionally. The community lack the knowledge to effec-

tively identify different types of snakes in the area for effective administration of anti-venom. Therefore, in view of this knowledge gap, park management will create awareness amongst the community on the common snakes of Ruma. This awareness campaign will be carried out by the Park Research Scientist and the Community Warden through Barazas and other opportunistic events. In addition, the park management will lobby for stocking of relevant anti-venom drugs in health facilities around the park.

A summary of the management actions is presented in Box 9.

Box 9: Summary of Management Actions / Activities

1. Upgrade the chain-link fence to electric baboon proof fence
2. Carry out proactive PAC patrols
3. Procure adequate predator traps
4. Carry out awareness creation campaigns on the different types of snakes in the park and its environs
5. Lobby for stocking of anti-venom in health facilities around the park
6. Respond to reported cases within 6 hrs.
7. Carry out an education and create conservation awareness campaign on human-wildlife conflict management e.g. in Baraza's, workshops, local radio stations etc.

Objective 2: Community mobilization towards conservation and livelihood projects enhanced

Community mobilizing is the process of moving a group of people from a state of ineffective action toward effective action, on issues that affect them and their surroundings. This action is based on the expectation and belief that the community has the knowledge and ability to get the job done. Mobilizing is accomplished through a sequential process that involves linking awareness to action in order to bring about change. Wildlife can be used as an alternative source of income by communities living next to protected areas. It is therefore important to mobilize the communities to ensure that they can sustainably utilize the wildlife resources around them. It is expected that once communities benefit from wildlife, they will support wildlife conservation. Therefore, the goal of community mobilization is to bring together as many conservation stakeholders as possible to initiate wildlife-based enterprise projects to enhance wildlife conservation.

Currently, there are over 30 conservation related groups around Ruma National Park. About 28 of these have been involved in bee keeping activities supported by the Giraffe Centre in Nairobi. Other groups are engaged in tree planting activities in the forest patches adjacent to the park.

To effectively mobilize the communities for wildlife conservation, adequate, skilled and dedicated community mobilizers are critical. In Ruma, the warden-in-charge of the park plays a dual role of managing the park and mobilizing the community. These two tasks are time demanding and very involving necessitating an additional officer to handle community issues while the warden focuses on Park management. In light of this, park management will liaise with the Area Assistant Director and KWS Headquarters to have a community warden deployed in the park.

Community mobilization approaches include holding meetings, workshops, and seminars and taking communities for educational tours. This aims to foster interaction between target groups with other groups and learn from them. In Ruma National park, community mobilization is undertaken by hold-

ing meetings with target groups. There is therefore need to diversify activities to include seminars, workshops and education tours to strengthen the community mobilization strategy.

A summary of the management actions is presented in Box 10.

Box 10: Summary of Management Actions / Activities

1. Liaise with KWS HQs to deploy a community warden in Ruma National Park
2. Organize community meetings, workshops, seminars and educational tours
3. Support community social projects
4. Initiate community enterprise projects

Objective 3: Community conservation education and awareness improved

The goal of community conservation education and awareness is to have an informed society to enable them make informed environmental management and conservation decisions. Conservation education includes all those activities and experiences that result in learning about human dependency upon, and use or abuse of natural resources for all of our necessities, needs, and wants. Conservation awareness is the state or ability to perceive, to feel, or to be conscious of the environment and its biotic, abiotic, and human interactions. Education and awareness towards environmental protection and conservation require knowledge, understanding, and the change of attitude by each individual.

The main human activities around Ruma National Park include crop farming, livestock keeping, charcoal burning, fire-wood collection, hunting for game meat, fishing, and grass harvesting. These activities are negatively impacting Ruma ecosystem through soil erosion, destruction of forest and grasslands and reduction of wildlife numbers and their habitats. In addition, frequent occurrence of wild fires is a threat to the biodiversity in the ecosystem.

The communities living next to the park have a negative attitude towards the park and its wildlife. For example, in early 1990s, there were attempts to degazette the park and convert it into agricultural farms. Majority of community members are not aware that the rare roan antelope is only found in Ruma National Park in Kenya. Therefore, the park management will educate the community on the importance of the existence of Ruma National Park and its wildlife to gain community support for conservation. Since it is not possible to reach all target groups through meetings, seminars, workshops and educational tours, the park management will use the mass media to reach a wider audience. The key mass media to be used include FM radios, newspapers, television, and magazines. In addition, conservation awareness activities will be carried out during national events such as ASK shows, public service week and other international environmental events that are marked in the country. In addition, community outreach activities will be enhanced through procurement of audio-visual equipment.

Most of the local politicians in the Ruma region have not appreciated the existence of Ruma National Park in their area of jurisdiction. The park is seen as a liability and not an asset for the region. This is attested to by the persistent calls for the degazettement of the park and converting it to settlements. To mitigate the lack of political goodwill, an education programme targeting the political class will be initiated and implemented. Efforts will be made to engage politicians in Park activities and events to gain political support for the park's conservation.

A summary of the management actions is presented in Box 11.

Box 11: Summary of Management Actions / Activities

1. Initiate conservation education programmes in the mass media
2. Procure equipment for outreach programmes
3. Organise conservation public meetings (*barazas*) workshops, seminars and education tours for park-adjacent communities
4. Sensitize politicians on the importance of conserving the park

Park Operations and Security Management Programme

Programme purpose and guiding principles

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

Protected area infrastructure and management tools are sufficient and effectively supporting delivery of other management programmes, and the area is safe for wildlife and visitors

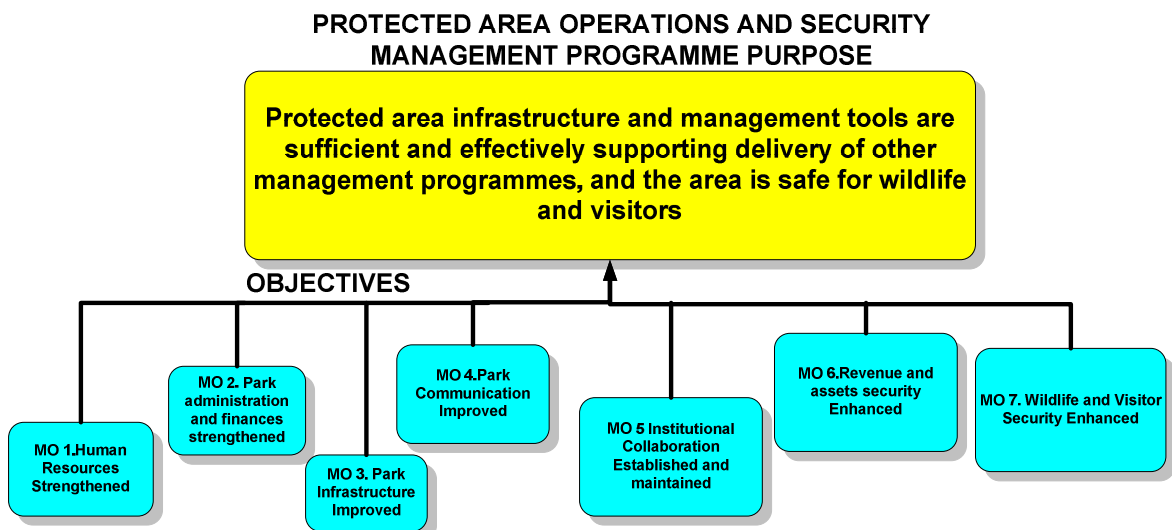
In implementing the Protected Area Operations and Security Programme, management will be guided by the following strategic principles:

1. *Staff welfare and motivation is enhanced;*
2. *Park infrastructure and management tools are adequate; and*
3. *Security is enhanced in the Park and adjacent areas.*

Management Objectives

Figure 13 below shows the overall objectives tree for the Protected Area Operations and Security Management Programme. These objectives are elaborated in subsequent sections.

Figure 13: Protected Area Operations and Security Management Programme objectives tree



Objective 1: Human resources strengthened

The goal of strengthening human resource is to improve output from each staff and achieve the set performance targets. One of the KWS corporate thrust specified in the corporate strategic plan (2008-2012) focuses on *people* and their welfare to enhance delivery of services. KWS aims to invest on staff welfare and training to develop a dedicated and motivated work force.

Ruma National Park has a shortage of staff in key cadres such as security, procurement, accounts, human capital and drivers. This compromises delivery of services as management has to rely on temporary employees to perform some critical tasks. The current junior staff recreational canteen is in poor condition and requires refurbishment to improve aesthetics. A senior staff canteen is lacking denying this cadre a much needed facility. Similarly, the operation base at Wiga does not have a staff canteen and associated facilities such as DSTV. To address these staff issues, park management will liaise with KWS Headquarters for deployment of staff in line with the optimum staffing levels. Staff transport to and from Homabay has been a challenge but currently a staff mini-bus has been procured through KWS Headquarters to provide transport to staff when they need to replenish their provisions. In addition, the park management will improve the junior staff canteen, construct a senior staff canteen at the Park headquarters, and construct a junior staff canteen at the Wiga operation base. All the staff canteens will be appropriately furnished and equipped with in-door games facilities such as pool tables and darts. DSTV will also be provided.

The prevalence of HIV amongst communities in Ruma Ecosystem is high. Health facilities within the ecosystem are not in good condition and they are far from the Park such that staff requiring HIV counselling and treatment are inconvenienced. As such, park management will liaise with KWS headquarters and the Ministry of Health to establish a VCT centre at the Park. The VCT centre, which will be operated by KWS and the Ministry of Health, will be stocked with anti-retroviral drugs and HIV prevention devices. Further, park management in liaison with KWS Headquarters will carry out HIV awareness campaigns amongst staff and the local communities surrounding the park to reduce HIV prevalence in the area.

To enhance staff performance, park management will undertake technical multi-skilling projects through mentoring and coaching staff, encouraging personal development, initiating training and refresher courses, acquiring automatic weapons, maintaining staff tea and encouraging sporting activities.

A summary of the management actions is presented in Box 12.

Box 12: Summary of Management Actions/Activities

1. Liaise with KWS HQ for deployment of staff in line with the park optimum staffing levels
2. Improve and equip the staff canteen
3. Construct and equip senior staff canteen
4. Construct and equip staff canteen at Wiga base
5. Liaise with KWS Headquarters and Ministry of Health to Establish a VCT centre
6. Maintain staff tea
7. Encourage sporting activities
8. Encourage information sharing [both vertically & horizontally]
9. Initiate trainings and refresher courses.
10. Encourage staff personal development
11. Mentor and coach staff
12. Hold sectional heads, Security and staff meetings.
13. Initiate training and refresher courses
14. Acquire 3 vehicles

15. Acquire automatic weapons
16. Appreciate good performance
17. Acknowledge and support all new ideas

Objective 2: Park administration and finances strengthened

The goal of strengthening park administration and finances is to ensure smooth operations of Ruma National Park for effective conservation and management of wildlife in the park. The park management endeavours to attain financial stability by adhering to approved budgets and maintaining financial discipline (see table 10 for budget allocations). To this end, specific actions to be implemented are concerned with establishment of vote book control mechanisms, adherence to ISO procedures and initiation of relevant staff training and refresher courses.

Establishment of a local roan antelope working group with a mandate to financially and technically support conservation of the roan antelope will boost the financial base of the park. Currently, a national roan antelope task force is in place, but a local roan antelope working group has not been established. Establishment of the local working group will assist the park management resolve some of the management issues affecting the park.

The park has potential for improved financial flows through diversification of tourism products. Opportunities identified are; the establishment of walking safaris, running bus hire on weekends /holiday bus shuttles, introduction of night game drives, acquiring tents for hire and renting out idle houses. There will be fund raising initiatives geared to improved resource mobilization such as 'walk, cycle and run' to conserve the Roan Antelope.

Cost effective operations contribute to financial strength; interventions expected to reduce operational costs include sharing resources within departments, recycle/ re-use of stationeries, encourage use of E-mail, radio communication and purchase of stocks in bulk.

Park management aims to fence the entire Park with an electric fence to enhance security of animals and also reduce human-wildlife conflicts. Most of the Park boundary is fenced apart from a 23 km section which is yet to be fenced. However, around Kitiro area, a section of about 13km is not fenced due to a boundary dispute between the Park and the community. In this area, communities have encroached the park and settled claiming that this area is not part of the Park. The encroached area is a key hotspot for illegal activities e.g. poaching, wild fires, and grazing inside the park. Efforts by KWS surveyors to settle the matter with the local district lands board and the community have so far not been fruitful. Therefore, to resolve this boundary dispute, park management will liaise with KWS HQs and the Ministry of Lands to ensure that this issue is resolved and park boundaries are respected. Once the dispute is resolved, the remaining 13 Km boundary section will be fenced to minimise park-community conflicts.

Table 8: A.I.E allocations for Ruma National Park

	AIE Allocations Per Activity	2007-2008	2008-2009	2009-2010
1	Administration & Management	4,056,050.00	3,089,380.00	4,037,480.00
2	Tourism	889,860.00	499,000.00	686,420.00
3	Partnership	718,680.00	1,054,920.00	1,515,620.00
4	Biodiversity	210,000.00	405,000.00	543,260.00
5	Security	-	208,000.00	262,440.00
6	Technical Services	400,000.00	1,820,000.00	3,296,400.00
	Total	6,274,590.00	7,076,300.00	10,341,620.00

A summary of the management actions is presented in Box 13.

Box 13: Summary of Management Actions / Activities

1. Liaise with Ministry of Lands and the community to resolve the dispute
2. Adhere to budget allocations
3. Establish walking safaris.
4. Maintain bus hire and weekend /holiday bus shuttles.
5. Introduce night game drives.
6. Rent out idle houses.
7. Purchase tents for hire
8. Share resources within departments.
9. Recycle/ Re-use stationeries.
10. Encourage use of E-mail, radio communication.
11. Purchase in Bulk.
12. Walk, Cycle and run to conserve the Roan Antelope.
13. Establish vote book control mechanisms.
14. Adhere to ISO procedures.
15. Initiate relevant staff trainings/refresher courses.
16. Adhere to ISO procedures.

Objective 3: Park Infrastructure Improved

Efficient and effective Park infrastructure is critical to the development of a robust tourism product and for sound conservation and management of wildlife resources in the area. Therefore, park management aims to ensure that the park infrastructure will be maintained in good condition throughout out the year through implementation of scheduled maintenance activities.

Staff housing: Ruma National Park has a shortage of staff houses prompting some of the staff members to rent houses at Ndhiwa and Mirogi centres, which are about 16km and 10km from the park headquarters respectively. These employees have to be transported to the Park in the morning and back to their rental houses after work. This arrangement is costly and drains funds which are limited. On the other hand, some of the security personnel are housed in uniports or single iron sheet rooms which are decent. To minimise the administrative costs and inconveniences to staff, additional staff houses will be constructed at the park to accommodate all staff within the park.

Office equipment: Currently, the park has 11 section heads. Each of these section heads requires a computer. At the moment, the park has five computers which have been distributed to the warden-in-charge's office, secretary, accounts, and civil works office. There are no computers in the following offices: procurement/stores, human capital, workshop, security, research, telecommunications, and tourism sections. Lack of computers results to undue delays in reporting as documents take long to prepare. Information management is also poor as most of it has not been digitised. As such, park management will endeavour to ensure that each administrative section has a computer.

Water supply: Water is important to the park staff, visitors, and wildlife. There are 4 boreholes and 4 earth dams in Ruma National Park. The boreholes are located at Kamato gate, Wiga outpost, Nyadenda outpost, and Nyatoto gate. Whereas the former three boreholes are functional, the borehole at Nyatoto gate is not. The earth dams are located at Nyatoto, Nyadenda, Kamato, and Korlango areas. These dams have been silted and therefore they hold little water. To ensure adequate water supply in the park, Park Management will liaise with KWS Headquarters and other development partners to rehabilitate Nyatoto borehole and maintain the other functional boreholes. Further, to increase the water holding capacity of the dams, park management will desilt the earth dams.

In addition, once the electric fence is complete, 3 additional outposts will be established to facilitate fence maintenance. These outposts will require water supply. Therefore, to ensure that the outposts have adequate water for domestic use, Park management will use two water supply approaches i.e. roof catchment and borehole. Buildings at new outposts will be roofed with roofing materials that can support harvesting of rain water that is safe for domestic use. Additional boreholes will also be drilled to augment water supply.

Airstrips: Ruma National park is served by two airstrips (an old one and a recently built one). The old airstrip is short and is located in a bushy area between two roads making it dangerous for pilots to land and take off. This airstrip has been permanently closed for air safety reasons. The new airstrip is about 1.5 Km and is being constructed in the grassland plains. In order to make the new airstrip all weather, it will be tarmacked.

Road network: Presently, the park has two key roads. The main road is about 13 km and is from Kamato gate to Nyatoto gate. This road cuts across the grassland, making it easier for visitors to view wildlife. However, as the grassland is expansive, it is not possible for visitors to see animals that are far away from the road. The other road is from Kamato-Nyatoto junction to Wiga outpost. This road passes through bushland with little wildlife. Visitors cannot exit through Wiga outpost as this is an administrative post. Therefore there is need to link the roads to develop a complete tourist circuit. Additional new roads are also needed to facilitate both security and tourism. As a result, a new unclassified road network of about 25km will be constructed.

Due to its location within a valley, the park has steep slopes with loose black cotton soils. These soils are washed by run-off and deposited on the roads. This makes the roads slippery and sticky thus difficult to manoeuvre during the wet season. In addition, a road section of about 200m crossing Lambwe River floods during the rainy season. Due to the above, the gravel roads require maintenance after the rains, which is costly. To enhance road maintenance, park management will use environmental friendly technology to harden the roads ensuring that they are motorable throughout the year. This will also reduce the annual road maintenance costs. Table 11 gives the envisaged road construction and maintenance needs at Ruma National Park.

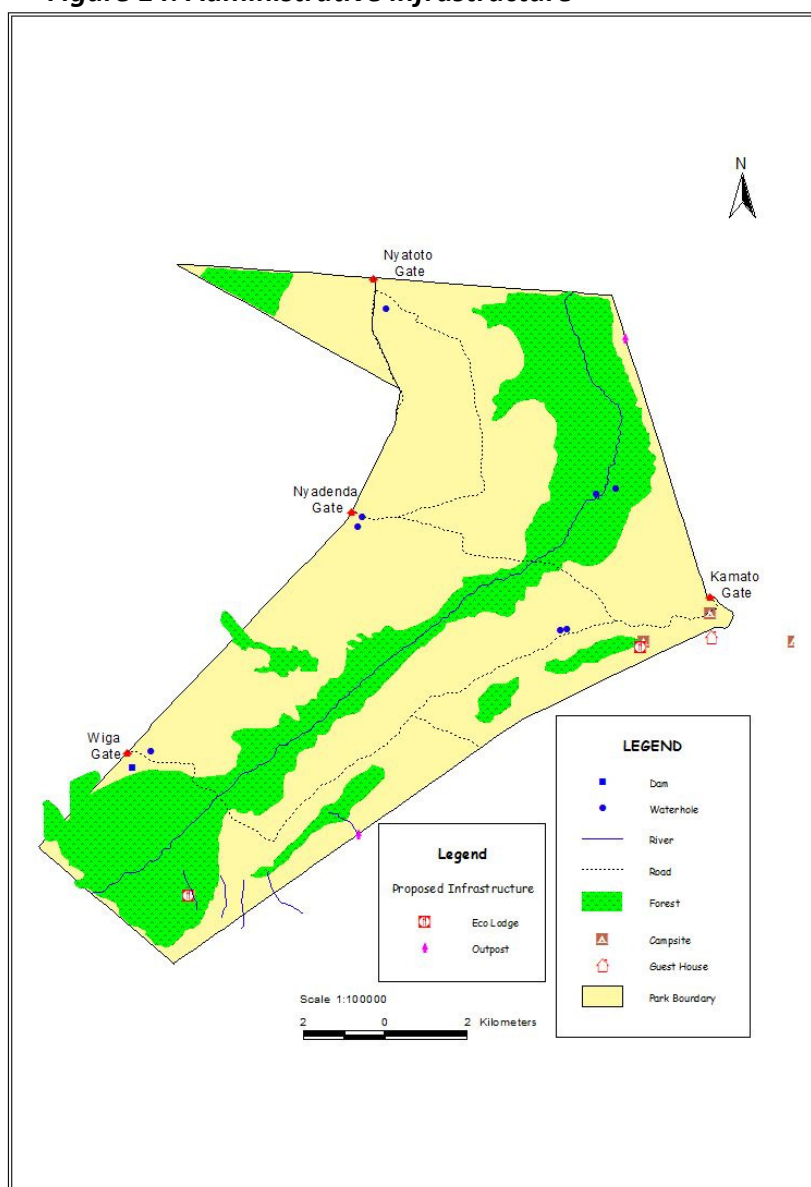
Table 9: Existing and proposed roads

Road	Location	Distance	Category	Remarks
D-213	Mirogi- Kadio	20.7 km	Classified	Gravel but

Road	Location	Distance	Category	Remarks
				requires 4WD during rains
D-210	Nyabera-Nyatoto-Magunga	25 km	Classified	"
E-115	Kamoto-Nyatoto, Old air strip-Wiga	30.4 km	Classified	Gravel road but need to stabilize the soils
New tourist circuit	Nyadenda junction-Dr Kock, Wiga-Nyadenda, Nyadenda-New airstrip	35 km	Unclassified	Should use soil stabilizers

Fire prevention and preparedness: The park management is keen to reduce fire risks through establishment of missing firebreaks and regularly maintaining existing ones. To prepare staff for fire prevention and fire fighting, relevant personnel will be sensitized and / or trained in fire management while protective gears and fire fighting equipment will be procured.

Figure 14: Administrative infrastructure



A summary of the management actions is presented in Box 14.

Box 14: Summary of Management Actions / Activities

1. Desilt dams
2. Provide adequate water to wildlife and staff
3. Harden roads and new airstrip
4. Liaise with ministry of roads and other relevant authorities to upgrade classified roads
5. Develop new tourist circuits
6. Construct and maintain an electric fence
7. Establish and regularly maintain fire breaks
8. Purchase fire fighting equipment
9. Purchase protective gears
10. Maintain and equip offices

Objective 4: Park communication improved

Efficient and effective transmission of information is vital during communication. Communication ensures that management decisions are relayed to the target audience. Effective communication is a two-way process, achieved through sending the right message, which is also correctly received and understood by the other person(s). For communication to be effective, tools to relay the message are critical.

Before any communication, it is a prerequisite for a sender to have the information to relay to the receiver. Information that is often relayed by park management includes; visitor statistics, staff deployment, human-wildlife conflict reports, biodiversity inventories, census reports, wildlife distribution, ranger patrol coverage, and staff welfare issues among others. Some of the information (e.g. wildlife distribution and ranger patrols coverage) is captured using Global Positioning System (GPS) technology and specialized software (e.g. Management Information System (MIST)). The information is relayed through specific channels, for example in KWS, the information is relayed through radios, telephone, emails, and mass media. Communication in Ruma National Park is done through the available 6 VHF radios, 1 HF radio, 9 handheld radios, 2 mobile phones, 1 telecom wireless phone, and email. However, this communication equipment is not adequate and staff lack requisite skills to effectively use some of the equipment and software. Therefore, park management will establish and equip a database unit, train staff on use of GPS and MIST program, and liaise with KWS Headquarters to procure additional radios for Ruma National Park.

A summary of the management actions is presented in Box 15.

Box 15: Summary of Management Actions/Activities

1. Establish and equip a database unit
2. Equip staff with knowledge on use of modern technology (GPS, MIST program)
3. Liaise with KWS HQS to procure additional communication radios

Objective 5: Institutional collaboration established and maintained

The desired future state of Ruma National Park ecosystem is where conservation stakeholders are collaborating in the management of the Park. This requires that stakeholders have a mechanism for collaboration which facilitates active participation in conservation affairs. Furthermore, the Park needs to be integrated in the regional government administrative structures to ensure that socio-ecological ecosystem threats that require multi-sectoral approach are raised with relevant government agencies for action. In addition, it is necessary to build institutional collaborations that will strengthen park management in terms of fund raising to augment allocated funding resources.

In order to realize this objective, Park management will enhance its participation in relevant provincial, district, divisional, and locational committees to ensure that the conservation agenda remains a key pillar in the local development programmes. The park is in collaboration with various institutions depending on the nature of work. These include the Provincial Administration, Kenya Police, Friends of Ruma National Park (FRUNAP), the Judiciary, PATTEC, KFS, Ministry of Energy, OSIENALA (Friends of Lake Victoria), and the Green Forest Initiative (GFI). Collaborations with these organisations and institutions will be strengthened and maintained to ensure that positive conservation gains are reaped. Whenever funding is available relevant Corporate Social Responsibility (CSR) Projects will be established within the ecosystem.

A summary of the management actions is presented in Box 16.

Box 16: Summary of Management Actions / Activities

1. Initiate and maintain collaboration with other institutions
2. Liaise with, and participate in relevant district and provincial committees
3. Engage communities e.g. baraza's, schools, Judiciary, sports and local leaders
4. Initiate relevant corporate social responsibility (CSR) projects

Objective 6: Security in the park enhanced

Wildlife and visitor security is and will remain a very important management issue in Ruma National Park ecosystem. Unless wildlife and visitor security is guaranteed over the entire ecosystem, tourism development will be impossible. If security incidences occur, visitation to the park will decline. And with the anticipated increase in visitor numbers, visitor facilities, reintroduction of black rhino and introduction of white rhino, new security challenges will emerge requiring a robust security strategy.

Bush meat poaching: The main security issues in Ruma National Park include poaching for bush meat, livestock incursions, grass harvesting, tree poaching, and illegal fishing. Poaching for game meat has been a major challenge to Ruma ecosystem (table 10 and table 11). Communities around the park kill wildlife for game meat and sell it in the local markets. The park is located in a valley, which is surrounded by hills. Poachers use these raised grounds as observation points to monitor the movement of security personnel. This makes it difficult for security personnel to arrest the poachers. Therefore, most arrests have commonly been made through use of intelligence information rather than during patrols. As such, Park management will boost its intelligence network to ensure that poaching is mitigated in the area.

Livestock incursions: Livestock incursions have been rampant in areas where the park is not fenced (i.e. Kitiro and Sumba hills). This problem increases during the dry season when forage is in short supply outside the park. The result of these incursions is overgrazing and subsequent habitat degradation. Therefore, park management will intensify patrols in the park during the dry season to deter livestock incursion into the Park.

Illegal fishing: Illegal fishing is also common along Lambwe River. The common fish in the park is the mudfish, a common source of food to communities around the park. The problem of fishing in the park occurs throughout the year, but illegal fishing incidents increase during the dry season when rivers and ponds in community areas dry up. To mitigate illegal fishing in the park, park management will intensify security surveillance along River Lambwe, arrest those found fishing in the park, and create awareness on the disadvantages of fishing in the park.

Revenue security: Ruma National Park has two visitor entry gates (i.e. Nyatoto and Kamato gates). At the moment, the park does not use safari card but instead uses paper tickets to charge visitors entering the park. This implies that the gate rangers collect revenue in cash form. It is therefore possible for fake currency to be presented at the gates as it is not possible for the gate ranger to verify currencies presented to them since there are no currency verification machines. Therefore, the park management will liaise with KWS Headquarters to have the currency verification machines procured and issued to the two gates.

Cross cutting interventions to mitigate the above threats include opening up new outposts/ observation points, collaborating with friendly forces and the Judiciary, creating community conservation awareness and embracing new technologies e.g. Binoculars, Telescope, and GPS.

Table 10: Animals poached from 2007 to 2010

Year	Buf-falo	Waterbuck	Impala	Top i	Roan Antelope	Roths-child giraffe	Wild pig	Lelwel Harte-beest	To-tal
2007/08	2	5	2	6	2	1	0	0	18
2008/09	4	2	0	1	0	3	1	1	12
2009/10	1	0	0	3	1	0	0	0	5

Source: Ruma National Park Occurrence books

Table 11: Arrests made in Ruma Ecosystem from 2004 to 2010

Year	Arrest	Offence committed
2004	25	8 bush meat cases, 8 cases of destruction of vegetation, 3 in possession of hunting gears, 2 hunting in the Park. 4 grazing livestock
2005	10	1 fence vandalism, 2 charcoal burning, 1 firewood collection, 5 burning vegetation.
2006	12	8 poaching, 1 bushmeat, 2 burning vegetation, 1 cutting grass.
2007	28	6 poaching, 4 bushmeat, 6 destruction of vegetation, 3 fishing, 1 vandalism of fence, 1 introduction of species (bhang), 2 charcoal burning, 1 burning of vegetation.
2008	30	1 burning vegetation, 12 destruction of vegetation, 5 bushmeat, 4 livestock

Year	Arrest	Offence committed
		grazing,4 poaching,1 introduction of species, 2 asset vandalism, 1 charcoal burning.
2009	20	4 livestock grazing, 2 burning vegetation,1 bushmeat,2 fishing,4 charcoal burning,7 destruction of vegetation.
2010	9	5bushmeat, 4destruction of vegetation.

Source: Ruma National Park Occurrence book

Box 17 gives a summary of the management actions.

Box 17: Summary of Management Actions/Activities

1. Liaise with KWS HQs to procure currency verification machines
2. Intensify foot patrols.
3. Intensify proactive intelligence gathering
4. deploy security rangers strategically
5. Open up new outposts/ observation points
6. Collaborate with friendly forces and Judiciary
7. Create Community conservation awareness.
8. Embrace new technologies e.g. Binoculars, Telescope, GPS etc.

ANNEXES

Annex 1: Ruma National Park Balance Score Card

Perspective	Strategic Objectives	Performance measures / indicators	Targets	Initiatives / Activities	Owner
Customer/ Stakeholder	Increase Customer Satisfaction (<i>See objective 1 on the tourism infrastructure improved and Objective 2 on Product diversification enhanced of the tourism development and management Programme</i>)	% decrease in complaints.	80%	<ul style="list-style-type: none"> Establish two lodges Establish 1 more special campsite Construct eco-toilets at the gates and the public campsites Reintroduce rhinos, Ostrich and Burchells zebra Rehabilitate degraded roads Open up more tourist circuits. Construct and furnish research bandas, Construct and furnish information centers Create walking trails in the high use zone 	Warden, Community, Stakeholders
	Improve Customer Retention (<i>see objective 3 of the tourism administration and management improved and Objective 4 on Tourism marketing and promotion</i>)	No. Of repeat customers.	20% Annually.	<ul style="list-style-type: none"> Liaise with KWS HQ to deploy customer care staff to Ruma Establish operational customer care office offering quality services Re - introduce Rhinos, Ostriches and B. Zebras. Carry out visitor need 	Tourism Warden.

Perspective	Strategic Objectives	Performance measures / indicators	Targets	Initiatives / Activities	Owner
	<i>enhanced in the tourism development and management Programme)</i>			assessment <ul style="list-style-type: none"> • Carry out Survey to identify repeat customers. • Carry out intensive park publicity • Generate park information relevant to production of marketing materials 	
	Reduce Human/Wildlife Conflict (<i>see objective 1 of the human wildlife conflicts minimized in the community partnership and education management programme and park infrastructure improved of the PA operations and security programme</i>)	% decrease in conflict cases.	50 %	<ul style="list-style-type: none"> • Upgrade the chain-link fence to electric baboon proof fence • Carry out proactive PAC patrols • Procure adequate predator traps • Carry out awareness creation campaigns on the different types of snakes in the park and its environs • Lobby for stocking of anti-venom in health facilities around the park • Respond to reported cases within 6 hrs. • Educate and create conservation awareness on human wildlife conflict management e.g. in Baraza's, workshops, local radio stations etc. 	Community Warden. CWS

Perspective	Strategic Objectives	Performance measures / indicators	Targets	Initiatives / Activities	Owner
	Enhance Partnership with communities & Provincial Administration(see objective 5 on institutional collaboration established and enhanced of the park operations and security management programme; Objective 2 on Community mobilization and projects enhanced and Objective 3 on Community conservation education and awareness improved in Community partnerships and education programme)	No. Of meetings.	24 Annually.	<ul style="list-style-type: none"> • Liaise with KWS HQs to deploy a community warden in Ruma National Park • Organize community meetings, workshops, seminars and educational tours • Support community social projects • Initiate community enterprise projects • Initiate and maintain collaboration with other institutions • Liaise with, and participate in relevant district and provincial committees • Engage communities e.g. baraza's, schools, Judiciary, sports and local leaders. • Initiate relevant corporate social responsibility (CSR) projects.projects. • Construct and maintain an electric fence. • Fabricate animal traps. • Initiate conservation education programmes in the mass media • Procure equipment for 	Community Warden.

Perspective	Strategic Objectives	Performance measures / indicators	Targets	Initiatives / Activities	Owner
				outreach programmes	
	Improve Wild-life/Visitors Security (See Objective 6 on Security in the park enhanced of the Park Operations and security Programme)	% Decrease in wildlife/visitors crimes	80%	<ul style="list-style-type: none"> • Intensify foot patrols. • Intensify proactive intelligence. • Deploy security rangers strategically. • Open up new outposts/ observation points. • Collaborate with friendly forces and Judiciary. • Create Community conservation awareness. • Embrace new technologies e.g. Binoculars, Telescope, GPS etc. • Liaise with KWS HQs to procure currency verification machines • Embrace new technologies e.g. Binoculars, Telescope, GPS etc. 	Security Officer. Intelligence Officer. Park Warden. Park Warden Park Warden Community Warden.
	Enhance threatened and rare Species Management (see objective 2 of the animal population and diversity improved in the ecological management Programme)	No. of roans No of R. giraffes .	40 Roans. 200 roans.	<ul style="list-style-type: none"> • Carry out a study on the breeding behaviour of the Roan • Assess the impacts of predators and poaching on roan antelopes • Develop a Roan Antelope management strategy • Reintroduce black rhinos, ostriches and b. zebras in the park • Introduce white rhinos in 	Park Warden. Research Assistant.

Perspective	Strategic Objectives	Performance measures / indicators	Targets	Initiatives / Activities	Owner
				the park <ul style="list-style-type: none"> Establish Roan/Rhino/Rothschild giraffes monitoring unit. Establish a database for the endangered species. Conduct quarterly census. Use modern technology e.g. microchip & Tagging. 	
	Reduce Operational Costs .(see objective 2 on Park administration and finances strengthened of the park operations and security management programme)	% saving.	1%	<ul style="list-style-type: none"> Share resources within departments. Recycle/ Re-use stationeries. Encourage use of E-mail, radio communication. Purchase in Bulk. 	Departmental heads. All staff. Park Warden. Procurement officer.
	Improve Resource Mobilization. .(see objective 1 on human resources strengthened and Objective 2 on Park administration and finances strengthened of the park operations and security management programme)	No. Of fundraising events.	1 annually.	<ul style="list-style-type: none"> Walk, Cycle and run to conserve the Roan Antelope. Liaise with ministry of lands to resolve the dispute 	Park Warden.
	Enhance Compliance with the set Budget .(see	% compliance.	100%	<ul style="list-style-type: none"> Establish vote book control mechanisms. Adhere to ISO proce- 	Park Warden & Park accountant.

Perspective	Strategic Objectives	Performance measures / indicators	Targets	Initiatives / Activities	Owner
	<i>objective 1 on human resources strengthened and Objective 2 on Park administration and finances strengthened of the park operations and security management programme)</i>			<ul style="list-style-type: none"> Initiate relevant staff trainings/refresher courses Adhere to budget allocations 	
Financial	Increase Park Revenue Streams (see objective 2 on park administration and finances strengthened and Objective 3 on park infrastructure improved of the park operations and security management programme)	% increase in revenue.	10% increase annually.	<ul style="list-style-type: none"> Establish walking safaris. Maintain bus hire and weekend /holiday bus shuttles. Introduce night game drives. Rent out idle houses. Purchase tents for hire Desilt dams Provide adequate water to wildlife and staff Harden roads and new airstrip Liaise with ministry of roads and other relevant authorities to upgrade classified roads Develop new tourist circuits 	Tourism Warden. Park accountant. Research Assistant.
Internal processes	Enhance science driven decisions (See Objective 1 on Habitat manage-			<ul style="list-style-type: none"> Carry out community awareness on fire prevention techniques Establish strategic fire- 	

Perspective	Strategic Objectives	Performance measures / indicators	Targets	Initiatives / Activities	Owner
	<i>ment in Ruma NP enhanced, Objective 3 on Ecological monitoring in Ruma NP enhanced and Objective 4 on Disease surveillance in Ruma NP enhanced of Ecological management programme)</i>			<p>breaks in the Park</p> <ul style="list-style-type: none"> • Establish controlled burning blocks in the Park • Develop and implement a fire management plan • Identify and map distribution of invasive plant species • Carry out a study to establish the best invasive species control methods and develop a plan for management of invasive species in the park • Carry out habitat and wildlife surveys. • Map security and human-wildlife conflict hot spots. • Establish a biodiversity information database of plant species composition, large mammals, reptiles, birds, amphibian, and insects • Carry out a study on water quality and quantity in Lambwe River and its catchment • Initiate collaborations with the Water Resources Management Authority and Water Services Boards 	

Perspective	Strategic Objectives	Performance measures / indicators	Targets	Initiatives / Activities	Owner
				<ul style="list-style-type: none"> Control and eradicate tsetse flies inside the park and its environs Carry out a study to establish whether the roan antelope and other wildlife are infected by trypanosomiasis Support the swine flu surveillance 	
	Reduce Cycle Time (See Objective 1 on Human resources strengthened, Objective 2 on Park administration and finances enhanced and Objective 3 on Park communication improved of the Park Operations and Security programme)	% reduction in time taken to serve customers.	80%	<ul style="list-style-type: none"> Adhere to ISO procedures. Initiate staff trainings/refresher courses. <ul style="list-style-type: none"> 1. Establish and equip a database unit 2. Equip staff with knowledge on use of modern technology (GPS, MIST program) 3. Liaise with KWS HQS to procure additional communication radios 	Park Warden & Human Capital Assistant.
	Reduce Risks (See Objective 3 on Park infrastructure improved of Park Operations and Security Programme)	% reduction.	60%	<ul style="list-style-type: none"> Establish and regularly maintain fire breaks. Purchase fire fighting equipments. Purchase protective gears. 	CWS & RA Procurement Officer.
	Enhance Multi-	No. Of tasks indi-	1 extra skill	<ul style="list-style-type: none"> Mentor and coach staff. 	All sectional

Perspective	Strategic Objectives	Performance measures / indicators	Targets	Initiatives / Activities	Owner
	skilling.(see objective1 on human resources strengthened of the park operations and security management programme)	individual staff can undertake.	per 3 staff annually.	<ul style="list-style-type: none"> • Encourage personal development. • Hold sectional heads, Security and staff meetings. • Initiate trainings and refresher courses. • Acquire 3 vehicles • Acquire automatic weapons • Maintain staff tea. • Encourage sporting activities • Encourage information sharing [both vertically & horizontally. • Appreciate good performance. • Acknowledge and support all new ideas. 	heads. Park Warden & Human Capital Assistant.
Learning and Growth	Enhance Team-work. (See Objective 1 on Human resources strengthened of Park Operations and security programme)	No. Of inter-departmental meetings.	4 monthly.	Hold sectional heads, Security and staff meetings.	Park Warden & Human Capital.
	Improve Staff Skills (see objective 1 on human resources strengthened and Objective 2 on Park	No. Of staff trained.	20 annually.	<ul style="list-style-type: none"> • Initiate trainings and refresher courses. • Encourage staff personal development. 	Park Warden & Human Capital Assistant.

Perspective	Strategic Objectives	Performance measures / indicators	Targets	Initiatives / Activities	Owner
	<i>administration and finances strengthened of the park operations and security management programme)</i>				
	Improve Work Environment (see objective 1 on human resources strengthened of the park operations and security management programme)	No. Offices maintained.	12 annually.	<ul style="list-style-type: none"> Maintain and equip offices. 	CWS
	Enhance Capacity (see objective 1 on human resources strengthened and Objective 2 on Park administration and finances strengthened of the park operations and security management programme)	No. Staff deployed No. Of vehicles acquired No. Of automatic weapons acquired	3 21	<ul style="list-style-type: none"> Initiate optimum staffing levels. Acquire 3 vehicles Acquire automatic weapons 	Park Warden
	Enhance Staff Morale (See Objective 1 on Human resources strengthened in Park operations and security)	Availability of staff tea No. Of games played No. Of meetings held.	Daily Twice a week monthly	<ul style="list-style-type: none"> Liaise with KWS HQ for deployment of staff in line with the park optimum staffing levels Improve and equip the staff canteen Construct and equip 	Park Warden & Human Capital Assistant

Perspective	Strategic Objectives	Performance measures / indicators	Targets	Initiatives / Activities	Owner
	<i>management programme)</i>	No. Of recommendations.	2 annually	<ul style="list-style-type: none"> senior staff canteen Construct and equip staff canteen at Wiga base Liaise with KWS Headquarters and Ministry of Health to Establish a VCT centre Maintain staff tea Encourage sporting activities Encourage information sharing [both vertically & horizontally] 	
	Enhance Creativity & Innovation	No. Of new ideas generated.	1 per year.	Acknowledge and support all new ideas.	Park Warden & Innovation committee.