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Government of Malawi
Ministry of Tourism
Department of National Parks and Wildlife

Effective Management of Nkhotakota Wildlife Reserve Project

GEF Implementing Agency: Wildlife and Environmental Society of Malawi
GEF Project Number: P110112

Environmental and Social Management Framework

FINAL

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Abbreviations

CBO	Community Based Organization
DNPW	Department of National Parks and Wildlife
EAD	Environmental Affairs Department
EIA	Environmental Impact Assessment
EMA	Environment Management Act
EMNWR	Effective Management of the Nkhotakota Wildlife Reserve
EPB	Environmental Project Brief
ESMF	Environmental and Social Management Framework
GEF	Global Environment Fund
GOM	Government of Malawi
GPS	Global Positioning System
IBA	Important Bird Area
MACC	Management for Adaptation of Rural Communities to Climate Change
MCC	Millennium Challenge Corporation
MOMS	Management Oriented Monitoring System
NEP	National Environmental Policy
NGO	Non Governmental Organization
NP	National Park
NWR	Nkhotakota Wildlife Reserve
PA	Protected Area
PAC	Project Advisory Committee
PF	Process Framework
TLC	Total Land Care
WB	World Bank
WESM	Wildlife and Environmental Society of Malawi
WIA	Wildlife Impact Assessment

Executive Summary

Introduction

The Nkhotakota Wildlife Reserve (NWR) is the oldest and largest wildlife reserve of Malawi. It encompasses important watersheds, including the lower portions of the Bua River, one of the largest rivers to enter Lake Malawi from the Malawian side, and one of the few rivers where Lake Salmon spawn. Nkhotakota is one of four Malawian areas of global biodiversity significance and classified as an Important Bird Area (IBA). NWR is managed by the Department of National Parks and Wildlife (DNPW).

The Effective Management of the Nkhotakota Wildlife Reserve Project (EMNWR) was proposed to the GEF by the Ministry of Tourism, Wildlife and Culture in 2007 and approved by GEF in September 2010. The project is designed in line with Government of Malawi policies to promote biodiversity, ecotourism and community participation in resource management.

Project Objective

The project objective is to ensure effective management of the Nkhotakota Wildlife Reserve through a sustainable management model focusing on its Bua watershed area. The global environmental (biodiversity-related) benefits expected from the project will be improved protection status of the reserve with an expected natural increase in animal populations together with improved habitat quality. The project aims to develop and apply a new management approach with the involvement of border communities, public sector, private sector and civil society that focuses on strengthening national PA management capacity. The project will be implemented by the Wildlife and Environmental Society of Malawi (WESM) in partnership with DNPW.

Project Design

The EMNWR project is comprised of three components: 1) Reserve management leading to improved management effectiveness in NWR, specifically in the Bua watershed area; 2) Revenues for improved reserve support leading to increased revenue generating activities from NWR strengthening reserve maintenance; 3) Project management leading to satisfactory project delivery to achieve project results.

World Bank Safeguard Policies

The project activities may generate adverse environmental and social impacts. As such, the project triggers the following World Bank Safeguard Policies: OP 4.01 Environmental Assessment; OP 4.04 Natural Habitats; 4.09 Pest Management, 4.11 Physical Cultural Resources, 4.12 Involuntary Resettlement and 4.36 Forests. It has been assigned the environmental category B since all the envisaged environmental impacts will be site specific, minimal, short term and readily mitigated.

The policy considerations related to this project will be addressed through an Environmental and Social Management Framework (ESMF) and Process Framework (PF) prepared by the Government of Malawi and WESM.

Institutional Arrangements

Under the direction of DNPW, WESM is the grant implementing agency and is responsible for applying the project safeguard instruments throughout implementation to ensure compliance with national laws and Bank safeguard policies related to the project.

Potential Project Related Environmental and Social Impacts

The proposed construction works to be financed by the project will cover a small area of the reserve. One small construction project is planned for a new area (1 scout camp) covering less than 4 ha (0.008% of the entire reserve which is 180,200 ha). A second construction project involves rehabilitation of an existing scout camp. Minor site specific environmental impacts may be generated by these investments. Game viewing and management roads will be rehabilitated on existing tracks. No new roads will be financed by the project.

The proposed baseline data collection, management plan and implementation and improved law enforcement activities to be financed by the project will lead to better protection of the reserve, thus to the increased preservation of habitats, water retention and biodiversity. Better reserve protection and improved law enforcement may also result in increased animal populations. Fish stocks including Lake Salmon in the Bua River system will also be conserved in the long term thus contributing to the survival of this important part of the Malawian economy.

Funding for reserve management as well as community based natural resources management is expected to increase to some extent as a result of improved tourism and concession revenues as well as through the existing DNPW PA related retention system in NWR.

With regard to the *socio-economic impacts,* a positive overall balance can be expected from the proposed project. It is expected that the positive impacts will outweigh the negative ones. Although some individuals might lose their previous (illegal) access to the reserve's resources, this will be replaced by legally regulated access to reserve resources for a larger portion of the community through village user zones.

In order to mitigate the adverse impacts that may be generated by the project, WESM will use the ESMF and PF to guide implementation of appropriate mitigation measures. However, it is expected that the combined ecological and socio-economic impacts of the project will be positive.

Environmental and Social Management Framework

This ESMF responds to the principle considerations of OP 4.01 Environmental Assessment; OP 4.04 Natural Habitats; 4.09 Pest Management; 4.11 Physical Cultural Resources; 4.12 Involuntary Resettlement and 4.36 Forests. It provides guidelines for screening and assessment of potential environmental and social impacts of the project interventions as well as identifies appropriate mitigation measures to minimize such impacts.

The ESMF presents the implementation and monitoring arrangements for use of the project's safeguard tools, the capacity building efforts to be financed by the project and the notional budget earmarked from project funds to finance all safeguards related work of the project. A Process

Framework to comply with OP 4.12 has also been developed and will be applied in tandem with the ESMF.

Both frameworks are focused on the activities implemented by DNPW and WESM with GEF and DNPW funding. The project implementing agency, WESM, will be responsible for applying the ESMF and PF and liaising with the relevant authorities to ensure compliance with Bank safeguard policies and national laws as they pertain to the project.

Project Safeguards Budget

The budget allocated to finance the application and supervision of the project safeguard frameworks, i.e., the ESMF and PF, is 10% of the overall project cost. The costs for this work are embedded in Component 3 of the project.

Introduction

The Nkhotakota Wildlife Reserve

The Nkhotakota Wildlife Reserve (NWR) is the oldest (1938) and largest (1,802 km^2) Wildlife Reserve in Malawi. It is located at the centre of Malawi, near Lake Malawi (see figure 1). Located on the western slope of the Rift Valley, NWR covers a broad extent of escarpment wilderness, from the uplifted border of the Central African Plateau on the western side, down a series of slopes and ridges toward the Lake Malawi shore plain at 500 – 600 m.

Physical Environment Features

Geomorphology

Nkhotakota Wildlife Reserve lies on the Central African rift valley escarpment. The terrain is hilly and deeply dissected by drainage lines and slopes from west to east down the escarpment. A significant fault line running north-south cuts the reserve, separating the plateau from the lakeshore plain.

Mountains/Hills

- Chipata Mountain is located in the south-west and Njongombe and Mbengwa Hills in the central part. Chipata is the highest point in the reserve at 1,638 metres above sea level; the lowest point is 520 metres where the Bua River flows out of the reserve in the east.
- Njongombe Hills/Mbengwa Hills lie north of Bua River
- Nkhufi Hills are found in the southern part of the reserve to the east of Chipata Mountain. The word Nkhufi is a Chewa name referring to the ticks which are numerous in this part of the reserve. This part has a considerable number of mammals. There are perennial streams around Nkhufi Hills.

Hydrology

The reserve is rich in drainage lines, which join three major rivers that cross from outside to inside of the reserve and into Lake Malawi: the Dwangwa on the northern boundary, the Bua at the centre of the reserve and the Kaombe crossing its southern portion. These rivers form scenic waterfalls at escarpment edges.

Bua River is the major river flowing through the centre of the Reserve and its tributaries on the southern side originate within the Reserve. It has several rapids and falls and is a habitat to many species of fish including the Lake Salmon, *Opsaridium microlepis*. Muta Falls is found along Bua River, northern part of Tongole camp. It is about 5 km from the camp. Kam'nyanga Falls is found along Kaombe River, east of Mbobo camp.

The Bua River is the largest river to enter Lake Malawi from the Malawi side. The lower Bua is protected in the NWR where fishing is prohibited. This is important since the river supports large breeding runs of the migrating Lake Salmon (*Opsaridium microlepis* and *O. Microcephalum*; endemic to Lake Malawi and one of the major commercial species in its northern and central regions). Protection of the Bua River is considered essential for the survival of the fishery. The Lake Salmon ascends the Bua River from Lake Malawi to spawn during March to July. It requires clean gravel surfaces for spawning and the Bua's suitable spawning grounds all lie within the reserve (Clarke

1983). Various species of yellow fish also use the same spawning grounds. The Bua watershed is 10,654 square kilometres. The Bua River is 250 kilometres long. Tsetse flies are common in the area and reportedly carry tripanozomiasis which causes sleeping sickness in humans.

Vegetation

Three major vegetation communities occur in Nkhotakota Wildlife Reserve: Montane evergreen forest, Open canopy woodland of hills and scarps (*Brachystegia* spp) and Woodland (*Terminalia serecea*).

Miombo woodlands dominate most of the reserve. A small portion of the reserve (1%) contains montane evergreen forests which have a high biodiversity value (Clarke 1983). They are found on the slopes of Chipata Mountain. Tall grass is found in wet areas and *Terminalia* woodland covers the drier parts of the more fertile western areas. Raffia palms are also present along watercourses in the southeast portion.

The uplands are dominated by *Brachystegia* (Miombo) woodland of medium canopy, open under story, and short to medium grass. The headwaters of many streams have spongy dambos with groves of *Syzigium*. More fertile areas bear open canopy woodlands of *Pericopsis* and *Combretum* on ridges, and *Terminalia* and *Combretum* in the valleys. There is a tall Hyparrhenia grass in both cases. Some closed groves of pericopsis suggest that the open canopy is as a result of recent cultivation. The evergreen forest of Chipata Mountain is distinct from the remainder of the upland unit. 75 percent of the trees are lowland species, or ones which occur at variable elevations in riparian habitats. The remainder is sub montane, occurring here at their lowest elevation limits. The forest lies mostly between 1500 and 1550 m. Canopy height is about 25 to 30 m.

Fauna

The Reserve has maintained the integrity of its habitats, being considered one of the most important and pristine wildlife areas in the country, and one out of four Malawian areas of global biodiversity significance. The reserve is an Important Bird Area (IBA), where approximately 300 bird species have been identified (of 648 species recorded in Malawi), including the Taita Falcon, Black Stork, Palm nut Vulture and Pel's Fishing Owl.

Large mammals still roam the area, though at low density, escaping from the highly populated and degraded adjacent areas. Species include: African elephant, African buffalo, kudu, reedbuck, roan antelope, sable antelope, waterbuck, bushbuck, warthog and zebra as well as lions and leopards. Baboons are common in the woodlands. The highest concentrations of these animals are found along the Bua watershed, the most biodiverse area of the reserve, particularly during the dry season. Crocodiles are also common in the reserve watersheds. A 2006 assessment of NWR biodiversity status prepared by WESM indicated that at least 31 species of mammals and over 280 bird species were recorded in the reserve. At least 35 fish species were recorded in the three main rivers crossing the reserve, 18 of which belong to the Cyprinidae family, such as Lake Salmon.

The table below presents the main results of the aerial survey done by JICA in 1995.

Table 1: Mammal Population Estimates by Species

Species	Overall	Southern Block[1]
Buffalo	601	468
Bushbuck	285	167
Bush Pig	71	71
Common Duiker	1770	1047
Eland	23	8
Elephant	1037	63
Grysbok	32	32
Kudu	87	87
Reedbuck	351	278
Roan	424	262
Sable	181	167
Warthog	771	476
Waterbuck	244	111
Zebra	246	246
Baboon	3555	1166
Leopard	8	8
Lion	16	16

Source: Final Report of the Master Plan Study on Sustainable Multiple-Use Resource Management of Nkhotakota Wildlife Reserve

Birds: Over 280 bird species have been recorded in the Reserve. The Reserve is an Important Bird Area (IBA) of Africa No. MW 009. The well preserved nature of the reserve makes Nkhotakota an excellent bird habitat. One of the key species found in the Reserve and of global conservation concern is the Taita Falcon (*Falco Fascinucha).*

Fish: Thiry five species of nine families of fish in the Bua, Dwangwa and Kaombe Rivers have been recorded in NWR. The most dominant family recorded was Cyprinidae and 18 species were identified. Lake Salmon spawns in gravels but do not run up the Kaombe River. Communities near the Dwangwa and Bua Rivers depend on fish as an important source of protein. Although the Bua is an important river for breeding of the salmon, villagers have complained that fish catches have been declining since the 1960's. Possible causes of this decline include over fishing, population increase in the surrounding areas, destructive fishing methods and droughts.

Reptiles and Amphibians: There have not been studies on these classes of fauna in the reserve. However, Malawi supports a significant diversity of amphibians and reptiles. There are 228 species which have been recorded in Malawi consisting of 83 amphibians and 145 reptiles. The amphibians known in Malawi belong to 11 families and 24 genera. There are six endemic species with two species occurring exclusively on Mulanje Mountain. The reptiles recorded in Malawi belong to 19 families and 72 genera. The fauna is particularly rich in snakes and lizards. There are eight endemic species with six species restricted to Mulanje Mountain. Since most of the amphibians and reptiles are wide spread

[1] *The area of the reserve to the south of the Bua River*

except for a few which are restricted in their distribution, it is expected that a number of species occur in the reserve.

Invertebrates: The information on status of this class of animals in unknown as no formal studies have been conducted on invertebrates in the reserve except for some rudimentary studies on tsetse flies.

Physical Cultural Resources

With respect to physical cultural resources, the NWR area has a long history of human settlement, dating back to Stone Age occupation as witnessed by rock paintings in the south of the reserve. The soils around the fault scarp below the edge of the plateau are significantly more fertile than those of the surrounding region, which probably led to more intense human use through time. Remains of pottery also bear witness to the earlier occupation of the evergreen forest on the slopes of Chipata Mountain. A trade route traversing the reserve, running between the plateau and Nkhotakota on the Lake shore was intensively used in the nineteenth century to dispatch slaves and ivory to the coast. After the reserve was created, first as a forest reserve in 1935 and later as a wildlife reserve with new boundaries defined in 1954 and 1970, local people were resettled. Today, the reserve is surrounded by rural communities, which are still dependent on small scale agriculture and natural resources.

Land Systems and Related Facilities

The land systems and related facilities in the Reserve include:

Power: There are no power lines servicing any of the camps and lodges in the reserve.

Telecommunications: There are no telephone lines in the reserve area and mobile phone networks are not yet operational inside NWR.

Roads: There are various points of access to the reserve for tourists. The road network from Lilongwe, the main M10 road between Ntchisi and Nkhotakota towns, passes right across the southern part of the reserve. The S18 road from Kasungu in the west joins the M10 near Mbobo Camp on the western edge of the reserve. Another point of access for tourists is an untarred track leading off the M5 lakeshore road 12 kilometres north of Nkhotakota Boma where it enters the reserve after 8 kilometres and leads to Bua Camp. This track is maintained by DNPW and is generally passable by 4x4 vehicles throughout the year. The third access road leads off the S18 3 kilometres before the junction with the M 10, leading to Chipata Camp. This road is maintained by DNPW and is accessible to 4x4 vehicles throughout the year. In the southeast, a track leaves the M10 10 kilometres west of Nkhotakota Boma entering the reserve after 8km and leading to Wozi Camp.

Socio-Economic Profile

With a population of just over 13 million, Malawi has the highest population density in southeastern Africa and a high incidence of poverty. The Nkhotakota District alone, of which the reserve and the Dwambazi Forest Reserve comprise 42%, is home to 303,659 people, with a population growth rate of 2.9%. The combination of poverty and high population density has lead to significant human pressure on natural resources and protected areas in the NWR area.

The growing population expands land area under cultivation, exploits forests and woodlands for firewood and timber needs and often illegally harvest natural resources in the PA system, which together with recurrent bush fires have reduced the extent and quality of natural habitats available to wildlife. The NWR is no exception, facing several anthropogenic threats, including: poaching, encroachment and illegal harvesting of timber and non-timber products, illegal fishing and fires. Remarkably, this reserve has retained its physical integrity, in part due to the difficult terrain in a large portion of the reserve.

Under this scenario, the challenge for the Malawian government and its national PA network has been to develop protected area management models[2] that combine improvement in food security and household income with cost-effective conservation measures.

Four districts form boundaries with NWR: Nkhotakota, Ntchisi, Kasungu and Mzimba, but the reserve itself is entirely within the Nkhotakota District. The Nkhotakota District is located on the west coast of Lake Malawi 200 km northwest of the national capital Lilongwe. There are 10 Traditional Authorities around the reserve (figure 3) with a population density of approximately 71 persons per square kilometre. The Chewa Tribe is the main ethnic group in the district (70% of the population), with Tonga and Tumbuka people in the northern portion of the district.

Of the four districts, Mzimba has the lowest literacy rate (40%), while Ntchisi has the highest rate (59.5%). Most communities use water from unprotected wells, which results in a high prevalence of water borne diseases. However, Nkhotakota was found to have better access to potable water relative to the other three districts, due to the existence of numerous boreholes. Food security is a major issue in the region.

Communities bordering the reserve depend primarily on agricultural crops and forest products such as firewood, thatching grass, mushrooms, medicinal plants and timber. WESM's 2006 assessment of the populations living around NWR indicated that approximately 63% of the households do not possess woodlots from which to collect forest products, relying on reserve resources to complement livelihoods or even as sole source of income from the commercialization of firewood, charcoal and bricks. As customary lands around the reserve degrade rapidly, pressure on the reserve tends to increase unless initiatives to improve and diversify agricultural production, and alternative opportunities for income and energy generation are developed.

[2] There are currently 3 management models ongoing or under development in Malawian PA's: (1) Nyika Transfrontier Conservation Area implemented by DNPW, ZFD and ZAWA; (2) Majete Wildlife Reserve under a 25 year full management concession with African Parks and (3) Liwonde NP where DNPW established a partnership with a private tourism company, Central African Wilderness Safari, whereby the partner manages Mvuu Camp for tourism activities in the park.

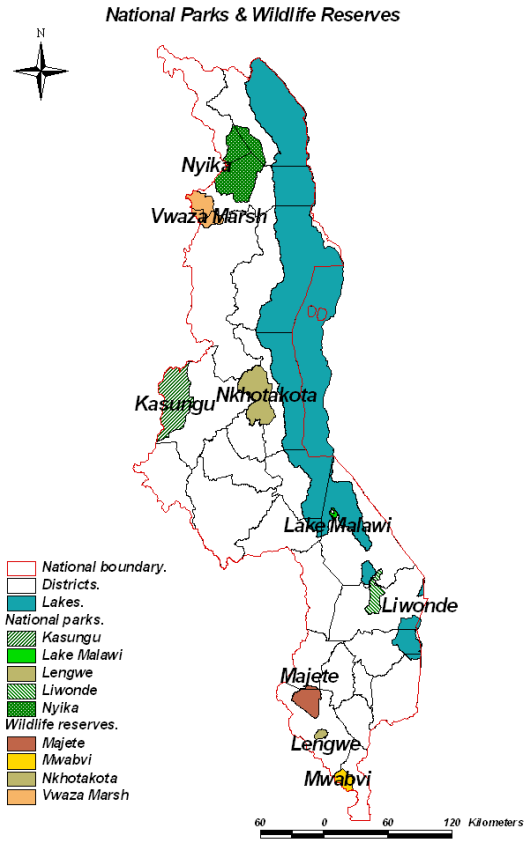

Figure 1: Location of Nkhotakota Wildlife Reserve

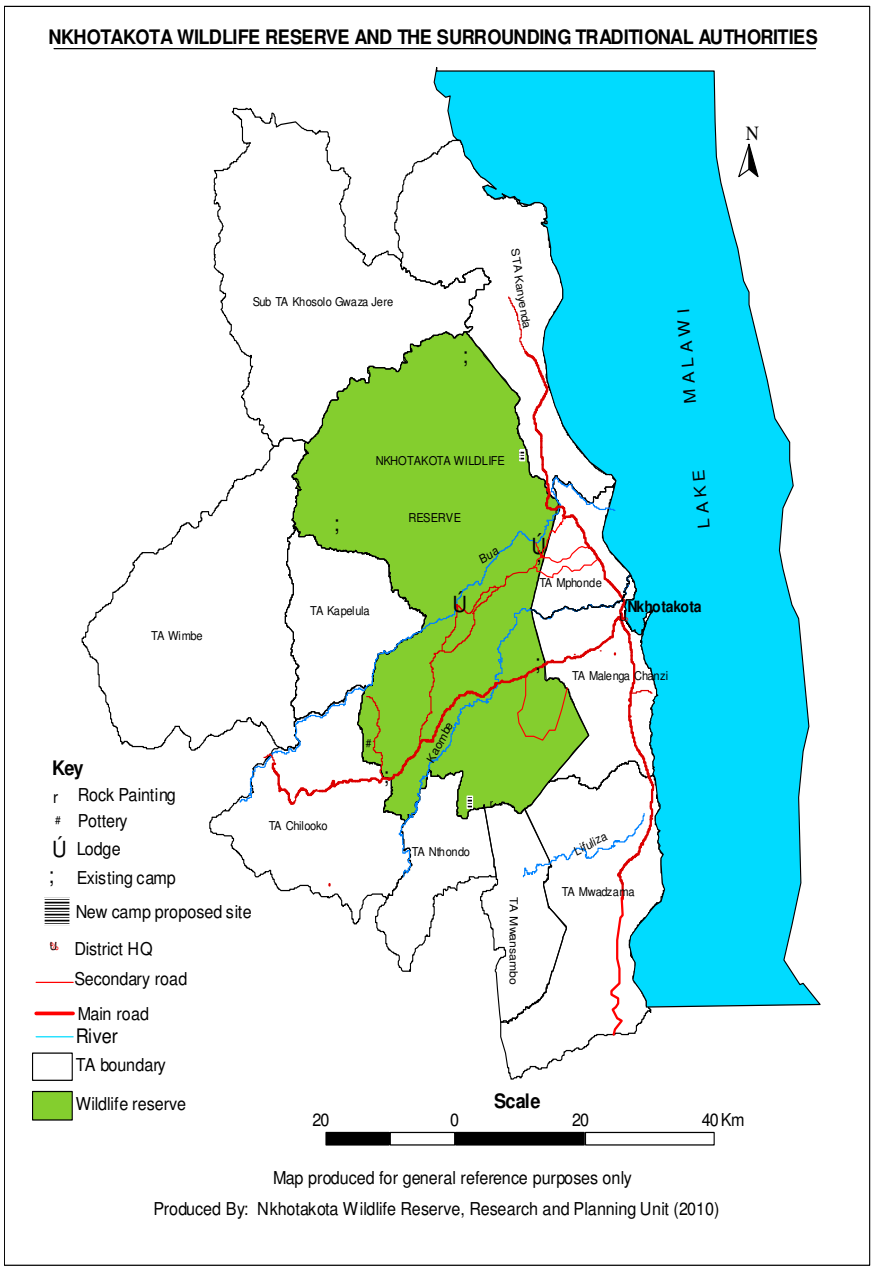

Figure 2: Traditional Authorities surrounding NWR

Project Description

Objective

The **project development objective** is to ensure effective management of the NWR through a sustainable management model focusing on its Bua watershed area.

The Nkhotakota Wildlife Reserve management model piloted by this project will introduce a different approach, where DNPW in partnership with a national NGO (Wildlife and Environmental Society of Malawi – WESM) will strengthen DNPW PA management capacity. The project is an opportunity to develop and apply a PA management model with involvement of the public sector, private sector and civil society that focuses on strengthening national PA management capacity. Specifically, the project aims to provide a sustainable foundation for improved and effective management of the Nkhotakota Wildlife Reserve as part of a broader PA network collaboration between government and the private sector.

This project was approved in September 2010 for a Global Environmental Facility (GEF) grant of $845,000 for three years of project implementation.

Scope

The **project's design** elements include: (i) developing a new partnership model whereby government works with an NGO on improving reserve management and administering a project; (ii) building on existing initiatives around the reserve focused on natural resource management; (iii) focusing management and commercial development on a biodiversity rich area of high tourism value to strengthen conservation and tourism operations to generate DNPW concession-related revenues; and (iv) increasing the sustainability of Malawi's PA network through a systematic approach.

The project will focus on the Bua River area of the Nkhotakota Wildlife Reserve, which covers about one third of the reserve (64,000 hectares, see fig. 2). Two roads provide easy access to the reserve in this area, where two tourism concessions are located. This watershed is also where concentrations of wildlife occur, particularly during the dry season. Updated biodiversity information for this section of the reserve will be collected with a comprehensive biological inventory to be financed by the project.

While routine reserve management activities such as foot patrols, anti-poaching and fire control vigilance will continue to be strengthened, the project will identify and implement priority monitoring, management and capacity building activities in the Bua watershed area, such as intensified law enforcement to allow natural regeneration of biological resources, tsetse control in scout camps, and monitoring of key species. These priority activities will be presented in the 5-year operational management plan and in the reserve's tourism plan; both to be developed under the project.

Components

The project is organized in three components: Reserve management; Revenues for improved reserve support; and Project management. All components will be financed by GEF/DNPW; WESM will be the implementing agency and DNPW the executing agency.

Component 1: Reserve Management. Under this component, NWR management will be improved through enhanced planning and implementation capacity.

Subcomponent 1.1: Planning
This subcomponent will finance development of the planning instruments for improved reserve management. The project will conduct a baseline biological resource inventory for the Bua watershed area in year 1 to inform the 5-year operational management plan for the entire reserve.

The NWR management plan will provide an overview of all relevant baseline data. It will define rules and limits for biological resource use within the reserve; and priority monitoring and management activities, particularly for the Bua watershed area, along with an implementation plan. A training plan for NWR staff will be part of the priority activities. The reserve management plan will be discussed with stakeholders such as district authorities and the private sector, and submitted to DNPW for approval.

The GEF project will support: (a) preparation of a biological inventory of the Bua watershed area; and (b) development of the 5-year management plan.

Subcomponent 1.2: Management plan implementation
This subcomponent will support implementation of priority activities of the management plan identified for the Bua watershed area including activities related to reserve infrastructure, wildlife and biological resource monitoring, fire monitoring and control, law enforcement, transportation and overall reserve management. DNPW's development investments in the reserve include the construction and rehabilitation of scout camps, roads, gates and bridges, water supply for scout camps, and transportation. The project aims to increase staff numbers and capacity for reserve monitoring and management, including training reserve staff and prosecutors and magistrates to enhance the efficacy of law enforcement.

GEF funds will support: (a) implementation and monitoring of priority activities for the Bua watershed by DNPW and WESM; (b) construction of 1 scout camp in the Bua watershed for six families; (c) purchase of 1 4x4 vehicle and 2 motorcycles for law enforcement in the reserve; (d) training for reserve field staff, management staff, prosecutors and magistrates; and (e) field equipment for reserve scouts such as GPS units, radios and backpacks.

DNPW support for this component will include: 1 new entrance gate, rehabilitation of 2 old scout camps, renovation of 200 km of roads, renovation of bridges, purchase of 2 vehicles, 2 motorcycles, drilling of 5 boreholes and the scout camp tsetse fly control program.

Component 2: Revenues for improved reserve support. Under this component the project will support strengthening business opportunities to improve reserve support through tourism operations and revenue retention. The reserve is seen as having excellent potential to contribute to regional development through tourism operations. There are currently two tourism concessions in NWR along the Bua River that can benefit from the development and implementation of the NWR tourism and

management plans. A comprehensive tourism assessment and tourism plan will be produced based on the findings and recommendations of the reserve management plan and national guidelines for ecotourism in protected areas.

Specifically, GEF funds under this component will support: (a) development of the tourism assessment and management plan; (b) ecotourism training of reserve scouts; and (c) initial development of additional ecotourism activities in partnership with the concessionaires such as sign posts, tourist walking trails and information boards.

Private tourism operators under concession agreements with DNPW have been investing in the construction of two lodges and campsites at sites along the Bua River. The construction of Bua River Lodge is completed and the lodge started operating in mid 2010. Tongole Lodge is currently under construction. Both Tongole and Bua River Lodges are situated at former scout camp areas. The owners signed a concession agreement with DNPW thereby agreeing to adhere to an environmentally friendly business operation.

Component 3: Project management. As the project Implementing Agency, WESM will provide general administration of the project, working closely with DNPW field staff, including the NWR Manager to deliver project results. WESM will be responsible for procurement and financial management coordination, annual audits and annual stakeholder consultations. WESM will organize World Bank supervision missions and biannual Project Advisory Committee (PAC) meetings and prepare annual work plans, budgets and reports in close collaboration with DNPW.

The GEF will fund: (a) a contribution to WESM operating expenditures related to project administration such as utilities, office supplies, IT equipment; (b) annual audits; (c) procurement processing fees; (d) annual stakeholder consultations; and (e) PAC meetings.

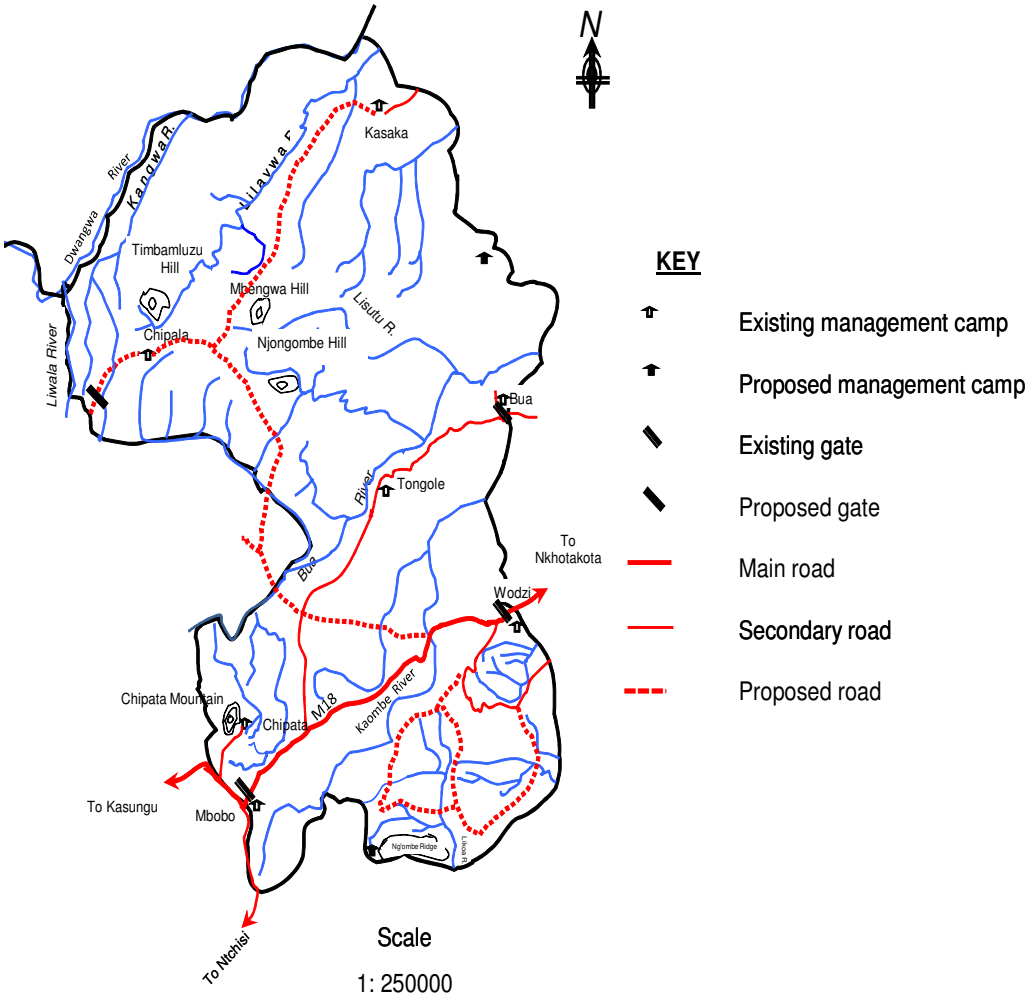

Figure 3: Location of existing and proposed infrastructure in the NWR

National Legal and Regulatory Framework Applicable to the Project

The ESMF will be applied within the context of existing national environmental and social policies and laws. The Environmental Management Policy and the Environment Management Act are the key instruments that cover environmental management in all sectors of development. The Environmental Impact Assessment Guidelines describe the process, procedures and practices for conducting an EIA and preparing EIA reports. In addition, sector specific policies and legislation set out guidelines for managing the environment.

Malawi Growth and Development Strategy and Vision 2020 The Malawi Growth and Development Strategy emphasizes the role of wildlife based non-consumptive tourism as a key growth sector. It seeks to establish Malawi as a regional eco-tourism and cultural heritage destination. The vision 2020 supports the rejuvenation of a wildlife based economy through increased provision for wildlife protection and management. It further supports the growth of eco-tourism and increased community involvement in the wildlife sector through awareness and enterprise development.

National Environment Policy (1996; 2004) The goal of the National Environment Policy is promotion of sustainable social and economic development through the sound management of the environment in Malawi. It empowers the private sector, CBOs, NGOs and the communities to participate in sustainable environmental management and planning.

Environment Management Act (1996) The EMA outlines the EIA process and requires project developers in both the public and private sectors to comply with the process. It also sets out the functions of the Director of Environmental Affairs and the Environmental Affairs Department in implementing the EIA process. More details for project developers are publicized in the EIA Guidelines 1997.

Decentralization Policy (1998) The Decentralization Policy promotes community participation by devolving administration and political authority to the district level. It assigns more responsibilities to District Councils. One of the key responsibilities is to assist the government in environmental management and conservation of natural resources.

Local Government Act (1998) The Local Government Act empowers local authorities and communities to formulate, plan and implement development and environmental programs through District Councils. Environmental planning is coordinated by a District Environmental Subcommittee.

National Parks and Wildlife Policy (2000) The goal of this policy is to ensure proper conservation and management of wildlife resources in order to provide for sustainable utilization and equitable access to the resources; and the sharing of benefits. One of the objectives is to ensure adequate protection of ecosystems and their biological diversity through sustainable land management practices.

National Parks and Wildlife Act (1992, amended in 2004) The Act deals with the protection and sustainable management of wildlife. Part IV deals with a Wildlife Impact Assessment (WIA), required when constructing small infrastructure in protected areas. However, regulations for implementing a WIA are not formulated. The Act was amended in 2004 to incorporate collaborative management and benefit sharing with communities.

Forestry Policy (1996) The Forestry Policy was revised in 1996 to align with the EMA. It aims to integrate forestry management with environmental conservation and to promote community-based conservation and sustainable use of forest resources as a means to poverty reduction.

Forestry Act (1997) The Forestry Act (1997) deals with the management of indigenous forests on customary and private land; forest reserves and protected forest areas; woodlots and plantation forests. It also deals with crosscutting issues including law enforcement and fire management.

Water Resource Management Policy (1994, revised 2006) The Water Resource Management Policy aims to reduce degradation of water resources and pollution by promoting an ecosystem-based approach for water resource management and by promoting EIA's in all major water developments including irrigation schemes and dams.

National Fisheries and Aquaculture Policy (2001) The National Fisheries and Aquaculture Policy aims to improve fisheries management and aquaculture. It promotes co-management and protection of endangered species and sustainable use of fish resources.

Fisheries Conservation and Management Act (1997) The Fisheries Conservation and Management Act covers amongst others: degradation of spawning grounds by siltation and changing flow regimes; retention of the unique biodiversity of Lake Malawi and identification of pollution and monitoring sources.

World Bank Safeguard Policies Applicable to the Project

The project has been classified as a Category B project since the adverse environmental and social impacts of the project are expected to be site specific, minor, of short duration and readily mitigated. The project triggers the following World Bank Safeguard Policies: OP 4.01 Environmental Assessment; OP 4.04 Natural Habitats; OP 4.09 Pest Management, OP 4.11 Physical Cultural Resources, OP 4.12 Involuntary Resettlement and OP 4.36 Forests.

The Borrower has prepared an ESMF and PF to address the specific considerations of each of the policies as they pertain to the project.

Environmental Assessment (OP/BP 4.01) is triggered since the project involves small and medium scale civil works (reserve entrance gates and scout camps), rehabilitation and maintenance of reserve roads, reserve gates and scout housing. All adverse impacts associated with these works are expected to be site specific, time bound (i.e., during construction phase only), small in scale and readily mitigated through implementation of appropriate measures. The ESMF is designed to address the specific considerations of OP 4.01 as they pertain to this project.
Natural Habitats (OP/BP 4.04) is triggered since the NWR is a recognized critical natural habitat. The project aims to enhance its conservation status but there is a possibility that some of the proposed project activities may result in temporary ecosystem disturbance. The ESMF presents the appropriate screening, assessment and mitigation measures to address such impacts.
Forests (OP/BP 4.36) is triggered since the project will be active in an area with standing primary forest and bordering two forest reserves. The overall environmental assessment is that all impacts on forests are expected to be positive, but careful consideration through the ESMF is given to identify and mitigate potential adverse impacts on forests that may be generated either directly or indirectly by the project.
Pest Management (OP 4.09) is triggered since the project will procure, distribute, apply and dispose of known pesticides on a limited scale as part of the NWR scout camp tsetse control program. The ESMF is designed to address the specific considerations associated with this program to ensure it reflects international best practice and WHO guidelines.
Physical Cultural Resources (OP/BP 4.11) is triggered since the project's area contains known physical cultural resources. The project's ESMF addresses the specific considerations for PCRs by ensuring that none of the project interventions will be implemented near or affect in any way known PCRs. The ESMF also includes chance finds procedures for those PCRs that may be identified during project implementation.
Indigenous Peoples (OP/BP 4.10) is not triggered.
Involuntary Resettlement (OP/BP 4.12) is triggered, because although the project will not involve any resettlement, there is a small chance that bordering communities may lose their former illegal access to resources in the reserve. This will be mitigated by the expansion of community user zones in the reserve financed by the project. The PF sets out guidance to address the considerations of this OP as they pertain to this project.
Safety of Dams (OP/BP 4.37) is not triggered.
Projects on International Waterways (OP/BP 7.50) is not triggered.
Projects in Disputed Areas (OP/BP 7.60) is not triggered.

Project Alternatives

The project alternative considered was not to implement the proposed project with GEF funding and leave the situation as it currently is. Under the baseline scenario, in the absence of the GEF funding, DNPW will continue investments to improve basic reserve infrastructure and staff resources, in particular construction and rehabilitation of small feeder roads and scout camps. The baseline scenario will include staff and operational costs for the existing 45 staff.

This would result in NWR having no operational management plan in place. The earlier master plan study developed in 1997 with Japanese funding did not include specific recommendations for the Bua watershed, which is the most sensitive and biodiversity-rich area within the reserve. It also did not include training priorities for reserve staff. Under the alternative scenario, no new management plan and tourism plan would be developed. No working relationships with WESM would be established and no new management model would be piloted by DNPW.

Under the GEF project as proposed, long term effective management of the NWR is possible. GEF resources will allow investments in enhanced reserve management, with preparation and initial implementation of a 5-year operational management plan following best practice and a tourism plan to enhance financial returns to the reserve.

Environmental Assessment and Management Principles and Guidelines

Potential Environmental and Social Impacts

The EMNWR Project is expected to result in overall positive environmental and social impacts, however, some interventions may lead to small-scale, time-bound and site specific adverse impacts that would need to be assessed and mitigated appropriately in line with national laws and World Bank safeguard policies.

Project activities with a potential **adverse impact** on the natural and/or social environment are:

- Upgrading of 200 kms of existing gravel roads
- Rehabilitation and maintenance of 300 km of bush tracks
- Construction of 2 new scout camps
- Rehabilitation of 2 old scout camps
- Construction of 1 new reserve gate
- Scout camp tsetse fly control program
- Reduced (former illegal) access to resources in the reserve

Project activities with a potential **positive impact** on the natural and/or social environment are:

- Intensified law-enforcement activities
- Intensified fire-management
- Capacity building of DNPW staff in environmental law enforcement and monitoring procedures in the Reserve
- Participatory planning, management and monitoring of natural resources
- Expansion of and legal access to community resources user zones in reserve

Positive impacts

Environmental

The global environmental (biodiversity-related) benefits expected from the project will be an improved protection status of the reserve with improved habitat quality in the Bua Watershed Area.

Improved law enforcement in the reserve is anticipated to lead to reduced extraction of trees for firewood, timber or charcoal production, less environmentally damaging fires and reduced poaching activities. As a result, there will be less habitat destruction and increased carrying capacity for wild animals. Ecological values will increase or at least be maintained at the present status. Reserve management will become more efficient in the long term as a result of structured data collection feeding into a tourism management plan.

An increase in tourism activities is anticipated to contribute to further protection of the reserve as concessionaires have a stake in maintaining a pristine natural environment and thriving wildlife populations. The current concession holders have committed themselves to assist DNPW with reserve management including early burning which will assist to reduce the incidence of damaging late fires.

Enhanced preservation of vital breeding habitat and control of illegal fishing in the Bua watershed are expected to increase the population of endemic Lake Salmon and other fish species. The widespread

use of fish poison (using high concentrations of cotton pesticides) inside and outside the reserve will be curbed by intensified law enforcement - thereby reducing potential long lasting damage of the Bua river ecosystem. Watershed protection is further expected to increase water quantity and quality and reduce the level of siltation at the river mouth, hence contributing to maintaining the integrity of the Lake Malawi ecosystem, where the vast majority of fish species are endemic.

Socio-economic

The project is expected to contribute to poverty reduction in the communities surrounding the reserve through limited job creation in tourism and construction works, access to community user zones and the formation and training of Natural Resources Committees involved in the management of these zones.

DNPW has committed to employ 15-20 additional wildlife field staff and 2-4 additional technical staff for the reserve. The tourism operators are expected to employ 40-50 permanent staff in hospitality services. As for the maintenance of reserve roads, 300 casual workers will be recruited over the next 3 years. WESM will employ one project manager and one accountant as well as accountant services.

DNPW and the two tourism operators have pledged to buy food and scout rations as much as possible from local producers, thus contributing to the local economy. Around 50 families are assessed to benefit from the regular sale of rations and food supplies to DNPW and the tourism operators. Tourism operators have also pledged to assist community producer groups with quality control with a long term view to achieve a sustainable income. Employment in rural areas may lead to a rural economic spin-off as employees tend to hire other community members to work on their land, and spend part of their salary in rural shops.

Negative impacts

Environmental

Construction

Minor site-specific clearance of vegetation and soils will be unavoidable during construction works. As per DNPW guidelines, careful consideration must be taken when choosing sites for the construction or rehabilitation of scout camps, entrance gates and access roads. Where possible, the project strives to allocate construction sites at previously occupied areas. The ESMF environmental and social screening form should be used before any construction site is selected and an EMP completed, as required, before any works begin. Vulnerable habitats such as dambo's and riverine forests should be identified and protected from any development. Buildings and especially toilets should be constructed away from any source of drinking water to avoid contamination.

Construction works and associated site clearing and vehicle movements may cause minor environmental impacts which can be mitigated by avoiding construction works in the rainy season as well as keeping vegetation clearance to a minimum.

The current tourism operators in NWR both signed concession agreements with DNPW wherein they agreed to specific operating procedures with respect to waste water, litter, lighting, heating, mechanical equipment, fuel and chemicals; all to be managed in an environmentally friendly manner. As for firewood collection, it has been agreed that in the near term both lodges only use dead firewood

collected from inside the Reserve. They will also set up a woodlot outside the reserve which will provide firewood for use by both lodges over the long term.

Roads
The renovation and maintenance of reserve roads needs special attention as the NWR terrain is rugged and sensitive to erosion. Movement of heavy vehicles and equipment will result in soil compaction and should be restricted as much as possible. Fragile areas like steep slopes, erosion prone soils and scarce vegetation should be treated with caution. Vegetation clearance should be avoided and construction works should only be done in the dry season. Road construction must always include essential drainage systems. Throughout the year, heavy vehicles (> 3 ton) should be allowed only on main roads – to be specified in the Reserve management plan. No new roads will be constructed under this project only existing roads will be renovated.

Tourism and reserve management operations
There is a small chance that improved access to the reserve as a result of better roads will lead to an increase in poaching. However, results in other PA's have shown that the positive impact of improved access for law-enforcement personnel outweighs the negative impact of improved access for illegal hunters; with an overall result of better reserve protection.

The baseline survey will reveal whether late, early or no burning has been the practice over the past few years. The introduction of an early burning regime could have a negative impact on the environment if there was no burning before. An assessment of vegetation damage due to burning provides information for development of a controlled burning regime.

Scout Camp Tsetse fly control program
Tsetse fly control is aimed at the reduction of sleeping sickness as part of a national campaign by the GoM. The system is being implemented and monitored by DNPW, and requires the use of insecticide *glossinex deltamethrin* and an attractant acetone on flags. Staff involved in the application will be issued safety clothing. The WHO toxicity rating for this insecticide is listed as Moderately Hazardous.

Known impacts of *glossinex deltamethrin*, include:
- Irritation of skin and eyes.
- Irritability to sound or touch, abnormal facial sensation, sensation of prickling, tingling or creeping on skin, numbness.
- Headache, dizziness, nausea, vomiting, diarrhea, excessive salivation, fatigue.
- In severe cases: fluid in the lungs and muscle twitching may develop. Seizures may occur and are more common with more toxic cyano-pyrethroids.

Insecticides such as deltamethrin have extremely high levels of toxicity for most insects, including tsetse, are very stable, and are only mildly toxic to mammals. They are, therefore, relatively safe to handle and are less likely to have undesirable effects on other non-target animals, particularly mammal and bird species. The properties of deltamethrin make it the most suitable of all known insecticides for tsetse control. Currently, in the NWR, 67 flags are placed along the main reserve roads – this will be expanded under this project at scout camp sites. The flags are treated annually. The system has been tried for 2 years in NWR and has shown good results.

Socio-economic

The project is small in scale and its contribution to NWR related tourism is not expected to attract large numbers of tourists. Moreover, the type of tourism one can expect is mid- upper market tourism with an emphasis on nature experiences and game viewing. Therefore, no major impacts are expected on the local social and traditional organisation and behaviour over the 3 year implementation period.

A potential negative impact could be an increase in human-wildlife conflicts as a result of an increase in animal populations in the reserve. Elephants are already considered a nuisance by community members, as they tend to leave the reserve during harvest time and raid farmers' crops. A long term solution to this will be addressed in the Reserve management plan. Alternatives such as chilli fences, chilli briquettes and bee hive fences will be considered by communities in partnership with the Reserve management team.

Assessment

The combined ecological impacts from the project are expected to result in a positive overall balance.

The construction works and associated vegetation clearance cover a small proportion of the reserve. The new construction projects involving a new area (1 reserve gate and 2 scout camps) each cover less than 4 ha.

The new reserve gate will be at the Liwala river in the NW section of the reserve along the main entrance road. Accessibility and reduced chance of erosion (i.e., not on a slope) are criteria for gate site selection. As for the new scout camps it has been agreed that a matrix with possible locations will be provided by DPNW together with pros and cons of each site. A final decision about the locations will be made by WESM and DPNW based on the ESMF screening form of each site.

Game viewing and management roads will be rehabilitated over existing old tracks - no new roads will be opened thus ensuring the least amount of environmental disturbance.

As for the new GEF funded scout camp location, it was agreed that DNPW will develop a matrix showing possible locations including their positive and negative impacts, after which a decision will be made by DNPW and WESM following application of the ESMF screening form.

The proposed baseline data collection, reserve management plan, staff capacity building efforts as well as improved law enforcement initiatives will lead to better protection of the reserve – thus to the preservation of habitats, water retention and biodiversity. Fish stocks including Lake Salmon in Lake Malawi and the Bua River system will be conserved on the long term thus contributing to the survival of this important part of the Malawian economy.

For tsetse control, various methods are available including aerial spraying, sterile insect technique, odour bait tsetse traps and targets. In the case of NWR, the method that generates the least adverse impact will be applied: odour bait targets with deltamethrin. This insecticide falls under class II (moderately hazardous) WHO toxicity classification. Deltamethrin is a synthetic pyrethoid which are highly toxic to fish and possibly also to some birds and pollinating insects. However, pyrethroids are low to moderate toxic to mammals, biodegradable and generally considered the least harmful option in tsetse control. Careful adherence to mitigation measures such as location of targets and staff health measures will be taken to avoid a negative impact.

Better Reserve protection may result in increased animal populations. The carrying capacity of the reserve allows for an increase of various species.

With respect to social impacts, some individuals may lose their previous (illegal) access to the reserve's resources – this will be replaced by regulated access to reserve resources for a much larger portion of the community through collaborative management zones. Community groups will be assisted to adopt environmentally friendly livelihoods and sustainable management of natural resources. Villagers, especially women, will benefit from village woodlots thus reducing the walking distance to collect firewood.

The EMNWR Project has been planned in such a way that negative impacts on the environment and the surrounding communities are expected to be minimal and positive impacts maximized. Throughout project preparation, stakeholders at national and local level were consulted and participated in the planning. The project has been designed in accordance with the laws of the Government of Malawi and World Bank safeguard policies.

Figure 4 presents an overview of project activities that may generate adverse environmental and social impacts.

Figure 4: Project Activities that may generate adverse impacts

Environmental Screening	Planned Activities	Environmental Impacts	Social Impacts
Environmental Impact Assessment (EIA) including Environmental Management Plan (EMP). ***EMP to be prepared and approved before works begin.***	**Construction of new facilities** **Construct 1 scout camp of 6 staff families each**	**Increase in human disturbances, loss of trees and habitat in affected area** **Restricted wildlife access to resource requirements**	**Restricted areas, could cause antagonism with park authorities**
Environmental screening and application of appropriate mitigation measures	**Linear Infrastructure rehabilitation** **Rehabilitate 300 km of existing bush tracks** **Rehabilitate 200km of existing gravel road inside the NWR**	**Potential erosion, soil/water loss. Increased access for illegal extraction of natural resources in the NWR.** **Silting of streams.** **Increased wildlife disturbance near water holes and feeding grounds. Potential destruction of natural vegetation and habitat during construction. Increased human impact on vegetation and wildlife movements.**	**Increased undesired human immigration into area.** **Increased exposure to illegal markets.**
	Rehabilitation of facilities **Rehabilitate 1 scout camp**	**Loss of habitat in affected area**	**None identified**
No environmental analysis required.	**Increased law enforcement**	**Nil**	**Reduced income from illegal use of natural resources from the Reserve**
	Increased fire management control	**Nil**	**Possible fines**

	Increased controls on tree cutting and collection of firewood in park	**Nil**	**Possible fines, reduced access to natural resources**
	Controlled access to natural resources	**Nil**	**Loss of income and food**
Environmental screening and application of appropriate measures as outlined in the pest management approach section of the ESMF	**Implementation of tsetse control program** **Expand and maintenance of tsetse baits**	**May impact vulnerable species such as fish and amphibia.**	**Health risk for staff handling pesticide.** **Reduced incidence of sleeping sickness in reserve and tourism staff and visitors.**

Management of Environmental and Social Impacts

EIA procedures

The Environmental Affairs Department (EAD) of the Ministry of Natural Resources, Energy and the Environment is mandated to review activities in the NWR that require an EIA and provide guidelines to regulate against potentially destructive practices or activities in the reserve.

Generally, an Environmental Project Brief (EPB) is requested upon which the Department will advise whether a more elaborate EIA is needed. Submissions will first be scrutinized by the Technical Committee on the Environment upon which the Director of Environmental Affairs will make a final decision.

A project cannot receive the required authorisation to proceed from the relevant licensing authorities unless the Director has issued a certificate stating that an EIA is not required, or has approved the project on the basis of an EIA report. If an EIA is not required, the project is exempted from further EIA compliance. In such instances, the Director advises the developer and relevant licensing authority of the exemption with appropriate recommendations for the environmental management of the project.

The EAD Director is mandated to carry out periodic environmental audits of any project as s/he may consider appropriate in consultation with the lead agency. For this purpose, the developer is required to keep records of environmental management plans, mitigation measures and monitoring results of relevant activities.

In the case of the EMNWR project, many activities are still at an identification and pre-planning stage. As such, an ESMF provides a set of methods and procedures for mitigating possible negative impacts while enhancing expected positive impacts and to ensure full safeguard policy compliance with Bank safeguard policies. A Process Framework has also been prepared to address the specific considerations of OP 4.12 on Involuntary Resettlement.

DNPW has published Tourism Concession Guidelines which specify guidelines for building tourism facilities in protected areas. Issues such as site selection, waste and effluent control, extraction of building materials from within the PA are addressed, among others. The two tourism operators active in the reserve submitted an EIA following national guidelines.

Project Impact Mitigation Measures

Based on the preliminary assessment of environmental and socio-economic impacts that are likely to be generated by tourism development and park management activities during the operational phase of the project, the following mitigation measures are recommended. It is the responsibility of the project management team to ensure that the proposed measures are implemented.

For each construction project, WESM or the investor will prepare and submit to the Environmental Affairs Department, environmental and social screening forms for all project activities and upon completion, a short report on implementation of project-financed civil works.

Mitigation measures for the construction of scout camps and reserve entrance gates:

a. All construction works should be done during normal business hours of the day to avoid or to keep noise pollution to a minimum level. Breaking of stones and mixing of cement should also be done on site.

b. Sites should be selected in a reserve border area close to social services such as a school and a clinic. Site selection should be done carefully in order to minimize both short and long term negative impacts to the surrounding environment of the proposed site.

c. Site clearing should be based on site plans approved by DNPW to avoid cutting of trees. Clearing should be strictly limited to the actual areas of development and access to these sites should be restricted along the cleared parts of the site in order to avoid damage to surrounding areas.

d. The total area for the camp gate should not exceed 4 ha.

e. Bare slopes should be replanted with fast growing, ground covering plants indigenous to the reserve.

f. Extreme care should be observed in the movement of materials, light and heavy machinery and vehicles around the site in order to minimize the impact of damaging soil and vegetation. Heavy vehicles (3 ton or more) should be allowed only on main roads.

g. The siting of the buildings depend on the soil conditions of the proposed location. At locations with a high chance of water front erosion or flooding, the location should be at least 50 m away from the water front. Where there is little chance of erosion, the location should be at least 3-5 m away from the water front of any river.

h. Earth work slopes must be suitably graded, to ensure that runoff speeds will not cause erosion.

i. The ablution rooms/toilets should be located at least 30 m away from any well used for drinking purposes. There should be 1 meter of pervious soil below the bottom of the system and above the groundwater level.

j. All buildings should as much as possible blend in with the environment. This can be achieved by using locally available natural materials such as thatch, reed, lime and mud colourings.

k. Construction waste should be appropriately discarded outside the reserve.

l. Staff and families must be made aware of the importance of proper waste management. Each family should be provided with a baboon proof waste container. Reserve management should encourage careful waste management at scout camps.

m. A site should be identified close to the construction site (not in the prevailing wind direction) where degradable material wastes can be burnt in a pit with a minimum depth of 2m.

n. Construction labor should be hired from the local communities surrounding the Reserve to the extent possible.

Mitigation measures and recommendations for the rehabilitation and maintenance of roads inside the Reserve:

a. All road rehabilitation works should be done during the normal working hours of the day to avoid or to keep noise pollution to a minimum level.

b. All construction of road works should be done during the dry season only or at the onset or during the final weeks of the rainy season. If rehabilitation and maintenance is done during the dry season roads must be kept wet for optimal results as well as to avoid dust impact on visibility and health problems amongst workers.

c. The width of all park management roads / game viewing loops being opened, constructed, graded, rehabilitated and maintained should not exceed 6m.

d. Site selection for new roads should be done carefully in order to minimize cutting of trees by choosing pockets of sites that are between trees. Vulnerable sites (e.g. river valleys, evergreen forest) which could lead to short and long term damage to the ecosystem, cultural, historical, archaeological sites will be avoided.

e. Side drains should be constructed along each road in order to drain the water during the rainy seasons and to avoid roads flooding or eroding. The steeper the slope, the more care is needed for the siting of drains. The road body must be suitably graded, to ensure that runoff speeds will not cause erosion.

f. Roads through wetland areas and roads prone to heavy erosion should be closed during the rainy season.

g. Construction teams should be recruited as much as possible from surrounding communities.

h. Construction teams should be provided with adequate food rations to avoid poaching as well as firewood to avoid cutting of trees.

i. Oil and diesel spills should be avoided when opening/ grading roads as this may contaminate the soils and the river systems of the park. Used oils should be properly stored and disposed of away from the reserve.

j. The driving speed inside the reserve should not exceed 40 km/hour.

k. The weight of trucks and other vehicles allowed in the reserve should not exceed 5 tons.

Mitigation Measures for the Scout Camp Tsetse Control Program:

Proposed mitigation measures to be included in the pest management approach developed for the program include:

a. Tsetse control using impregnated targets is preferred over aerial spraying.

b. Targets (flags) should be impregnated annually.

c. Four targets are recommended per km2. They should be placed in the shade as the insecticide *Glossina deltamethrin* is sensitive to sunlight. The surrounding area should be protected against fire.

d. The targets should be placed well away from rivers and dambo's (min. 500 m) as the insecticide is highly toxic for fish.

e. Staff should be issued appropriate safety clothing including a face mask, safety glasses, gloves, boots and overalls. Avoid exposure to any spray mist and try not to spray into the wind. Avoid contact with the mouth, skin, and eyes. Wash off any skin contamination immediately using soap and water. If eyes are contaminated, flush immediately with plenty of clean water and obtain medical attention.

f. Store surplus or unused material, tightly closed, in the original container, out of reach of children and away from food or animal feed.

g. Do not contaminate ponds, waterways or ditches with insecticide or used and empty containers. Although pyrethroids are relatively safe in the environment, release of concentrates directly into waterways may cause significant problems to fish and freshwater invertebrates. Empty all chemical containers completely and dispose of them properly off site and outside the reserve.

In addition to the aforementioned mitigation measures and before implementing the scout camp tsetse control program, a pest management approach will be prepared to inform pesticide use and management as well as monitoring for this program in the NWR at each of the scout camp sites where the program will be implemented.

The Pest Management Approach for the NWR Scout Camp Tsetse Control Program will be prepared along the following lines:

a. Describe present, proposed and/or envisaged pesticide use and assess whether such use is in line with IPM principles: *Provide purpose of pesticide use, type of products used, frequency of application and application methods. Is pesticide use part of an IPM approach and is it justified? Justification of pesticide use under the project should (a) explain the IPM approach and the reason why pesticide use is considered, (b) provide evidence that the proposed pesticide use is justified from the best available (preferably WHO-supported) public health evidence.*

b. Indication of type and quantity of pesticides envisaged to be financed by the project (in volume and dollar value) and/or assessment of increase in pesticide use resulting from the project.

c. Circumstances of pesticide use and the capability and competence of end-users to handle products within acceptable risk margins *(e.g. user access to, and use of, protective gear and appropriate application equipment; users' product knowledge and understanding of hazards and risks; appropriateness of on-farm storage facilities for pesticides).*

d. Assessment of environmental, occupational and public health risks associated with the transport, storage, handling and use of the proposed products under local circumstances, and the disposal of empty containers.

e. Pre-requisites and/or measures required to reduce specific risks associated with envisaged pesticide use under the project *(e.g.: protective gear, training, upgrading of storage facilities, etc.).*

f. Selection of pesticides authorized for use, taking into consideration the hazards and risks and availability of newer and less hazardous products and techniques.

<u>Monitoring and Supervision</u>

a. Description of activities that require local monitoring during implementation

b. Description of activities that require monitoring during supervision visits *(e.g. regarding effectiveness of measures to mitigate risks; progress in strengthening regulatory framework and institutional capacity; identification of new issues or risks arising during implementation)*

c. Monitoring and supervision plan, implementation responsibilities, required expertise and budget

Mitigation measures to avoid adverse impacts in communities surrounding the Reserve:

The Process Framework is designed to respond to the principle considerations of OP 4.12 on Involuntary Resettlement as they pertain to the project.

The following is a summary of the measures to be taken during project implementation and to be adopted in tandem with application of the PF.

a. Prioritize local community members for employment.

b. Expand reserve village user zones for sustainable harvesting of forest produce.

c. Train Village Natural Resources Management Committees in sustainable use and monitoring of natural resources, including fire management and beekeeping.

d. Community members wishing to traverse the reserve should obtain a permit from DNPW, and should be allowed only on specific and controllable routes during daylight.

e. Ensure demarcation of reserve boundaries in sensitive areas.

Physical Cultural Resources Impact Mitigation Measures (Chance Finds Procedures):

Cultural property includes structures, works of art, or sites of significant points of view, and is defined as including sites and structures having archaeological, historical, architectural, or religious significance, and natural sites with cultural value. This includes cemeteries, graveyards and graves. The Contractor shall not undertake any activity that adversely impacts cultural property without prior approval of DNPW.

All sites with known PCRs will be avoided and no project-financed activities will impact any known PCRs in the NWR.

However, should the Contractor discover unknown archaeological sites, historical sites, remains and objects, including graveyards and/or individual graves during excavation or construction, the Contractor shall:

(a) Stop the construction activities in the area of the chance find;
(b) Delineate the discovered site or area;
(c) Secure the site to prevent any damage or loss of removable objects. In cases of removable antiquities or sensitive remains, a night guard shall be present until the responsible authorities take over;
(d) Notify the Engineer who in turn shall notify DNPW within 24 hours;
(e) Contact the responsible authorities who shall be in charge of protecting and preserving the site before deciding on the proper procedures to be enforced. This will require a preliminary evaluation of the findings performed by the archaeologists approved by DNPW (within 72 hours). The significance and importance of the findings shall be assessed according to the

various cultural heritage criteria, including aesthetic, historic, scientific or research, social and economic values;

(f) Ensure that decisions on how to handle the finding be made by the responsible authorities. This could include changes in the layout (for example when the finding is a remain of cultural or archaeological importance that cannot be moved), conservation, preservation, restoration and salvage;

(g) Implementation of the decision concerning management of the finding shall be communicated in writing by the responsible authorities; and

(h) Construction work shall resume only after authorization is given by the responsible authorities concerning the safeguard of the heritage item, site or property.

Environmental and Social Safeguards Screening Form

I. Basic Data

Name of Subproject:
Subproject Location:
Subproject Objective:
Civil Works to be rehabilitated/constructed:
Estimated Subproject Cost:
Proposed Date for Commencement of Work:
Technical Specifications Reviewed: Yes __ No __

II. Site Description

Site Features	Description
Physical description of the site	
Site drainage	
Proximity of existing wells	
Types of soil	
Presence and type of vegetation	
Who identified the site?	
Is the site located in an area prone to floods?	
Has human activity caused any change in the natural setting of the site?	

II Subproject Site Related Considerations

Issues	Yes	No	Comments
Is the subproject located in an area which would create a barrier for the movement of conservation-worthy wildlife?			
Is the subproject located close to groundwater sources, surface water bodies, water courses or wetlands?			
Is the subproject in an area that would require land acquisition or restriction of access to natural resources in a protected area?			
Is the subproject located in an area with designated cultural properties such as archaeological, historical and/or religious sites?			
Is the subproject in an area with religious monuments, structures and/or cemeteries?			
Is the subproject in a polluted or contaminated area?			
Is the subproject located in an area of high visual and landscape quality?			
Is the subproject located in an area susceptible to landslides or erosion?			
Is the subproject located in an area of seismic faults?			
Is the subproject located in an area of tourist importance?			
Is the subproject located near a waste dump?			
Does the subproject have access to potable water?			
Is the subproject located far (1-2 km) from accessible roads?			

III. Subproject Environmental and Social Considerations

Utilities and Facilities

Issues	Yes	No	Comments
Will the subproject require the setting up of ancillary production facilities?			
Will the subproject require significant levels of accommodation or service amenities to support the work force during construction (e.g., contractor will need more than 20 workers)?			

Water and Soil Contamination

Issues	Yes	No	Comments
Will the subproject require large amounts of raw materials or construction materials?			
Will the subproject generate large amounts of residual wastes, construction material waste or cause soil erosion?			
Will the subproject result in potential soil or water contamination (e.g., from oil, grease and fuel from equipment yards)?			
Will the subproject lead to contamination of ground and surface waters by herbicides for vegetation control and chemicals (e.g., calcium chloride) for dust control?			
Will the subproject lead to an increase in suspended sediments in streams affected by road cut erosion, decline in water quality and increased sedimentation downstream?			
Will the subproject involve the use of chemicals or solvents?			
Will the subproject lead to the destruction of vegetation and soil in the right-of-way, borrow pits, waste dumps, and equipment yards?			
Will the subproject lead to the creation of stagnant water bodies in borrow pits, quarries, encouraging for mosquito breeding and other disease vectors?			

Noise and Air Pollution Hazardous Substances

Issues	Yes	No	Comments
Will the subproject increase the levels of harmful air emissions?			
Will the subproject increase ambient noise levels?			
Will the subproject involve the storage, handling or transport of hazardous substances?			

Fauna and Flora

Issues	Yes	No	Comments
Will the subproject involve the disturbance or modification of existing drainage channels (rivers, canals)or surface water bodies (wetlands, marshes)?			
Will the subproject lead to the destruction or damage of terrestrial or aquatic ecosystems or endangered species directly or by induced development?			
Will the subproject lead to the disruption/destruction of wildlife through interruption of migratory routes, disturbance of wildlife habitats, and noise-related problems?			

Destruction or Disturbance of Land and Vegetation

Issues	Yes	No	Comments
Will the subproject lead to long-term or semi-permanent destruction of soils in cleared areas not suited for agriculture?			
Will the subproject lead to the interruption of subsoil and overland drainage patterns (in areas of cuts and fills)?			
Will the subproject lead to landslides, slumps, slips and other mass movements in road cuts?			
Will the subproject lead to erosion of lands below the roadbed receiving concentrated outflow carried by covered or open drains?			
Will the subproject lead to health hazards and interference of plant growth adjacent to roads by dust raised and blown by vehicles?			

Physical Cultural Resources

Issues	Yes	No	Comments
Will the subproject have an impact on archaeological or historical sites, including historic areas?			
Will the subproject have an impact on religious monuments, structures and/or cemeteries?			

Expropriation and Social Disturbance

Issues	Yes	No	Comments
Will the subproject involve land expropriation or demolition of existing structures?			
Will the subproject lead to induced settlements by workers and others causing social and economic disruption?			
Will the subproject lead to environmental and social disturbance by construction camps?			

Other Social Impacts

Issues	Observations
Number of project affected people (PAPs)	
How will PAPs be affected by the proposed interventions and what is the magnitude of the impact?	
Will there be any new permanent or temporary job opportunities created for local residents?	
What are the potential impacts on human health?	
What are the potential impacts on vulnerable or marginalized groups (women, youth, elderly, disabled)?	

Construction Phase

1. Will construction or operation of the Project use large amounts of local natural resources such as water, timber, gravel from river beds, stones especially any resources which are non-renewable or in short supply?
2. Will the Project involve use, storage, transport or handling of substances or materials which could be harmful to human health or the environment (e.g., pesticides)?
3. Will the Project produce solid wastes during construction?
4. Will construction require the use of heavy machinery or equipment?

Operation Phase

5. Will the Project result in the production of solid wastes?

6. Will the Project result in the production of hazardous wastes?

7. Will the Project produce waste water that requires drainage?

8. Will the Project accumulate rain water that requires drainage?

Recommended Action

Are all of the answers 'NO'?

Are any of the answers 'YES' ?

If all the above answers are 'NO', then there is no need for further action and the proposed action is to proceed with the proposed project intervention or subproject activity following the ESMF guidelines. If there is at least one 'YES' answer, are there appropriate mitigation measures that can be adopted so as to minimize the adverse impacts of the activity? If so, please describe the mitigation measures to be adopted as part of the implementation procedures of the proposed project intervention or subproject activity is to be financed:

The completed form should be sent for review and approval to the Project Manager of the PIU. If any of the aforementioned answers are "Yes", then the Project Manager will take the final decision as to whether to clear the proposed project intervention or subproject activity for implementation, based on the safeguards screening form and set of recommended mitigation measures.

Recommendation:

Signed by Safeguards Specialist:
Date:

Signed by Project Manager:
Date:

Note: One copy of the completed and signed form and accompanying documentation will be filed and kept in the PIU office and one copy will be sent to the World Bank.

Institutional Responsibilities

WESM holds primary responsibility for applying the ESMF and PF. The project will implement the guidelines contained in this framework to promote environmentally and socially responsible implementation of all project activities. Once the details of the project activities with potential adverse impact are known and agreed, the project management team will first prepare a separate EPB and submit it to EAD for approval.

WESM is responsible to ensure all agreed mitigation measures are implemented and results monitored on an annual basis. Additional monitoring will be planned for where necessary, e.g. before, during and at the end of construction activities. EMNWR environmental monitoring reports will be submitted to EAD, PAC, DNPW and the WB on an annual basis coinciding with the annual planning and reporting cycle.

Environmental Management and Monitoring Plan Template

The purpose of the Environmental Management Plan is to clarify environmental and social impacts and enhancements, mitigation measures to be undertaken and the institutional responsibilities for: (i) identification of environmental and social impacts; (ii) implementation of mitigation measures; (iii) monitoring the implementation of the mitigation measures; (iv) capacity building to ensure the aforementioned responsibilities will be carried out effectively.

An overview of a typical Environmental Management and Monitoring Plan for this type of project includes the following elements:

An appropriate environmental management and monitoring plan will depend on the scope of identified impacts to be addressed during implementation of the project. What is presented below is an example of a simple environmental management and monitoring plan, which would easily fit in the implementation of the small scale activities planned for project financing of the type proposed by the GEF project.

Guidelines for Preparation of Environmental and Social Management Plans

The EA process involves identification and development of measures aimed at eliminating, offsetting and/or reducing environmental and social impacts to levels acceptable during implementation and operation of the project. As an integral part of the EA process, the EMP provides an essential link between the impacts predicted and mitigation measures specified within the EA and implementation and operation activities.

Standard elements of EMPs to be prepared by WESM for project activities are as follows:

a. Description of Impacts and Associated Mitigation Measures
Feasible and cost-effective measures to minimize adverse impacts to acceptable levels should be specified with reference to each impact identified. Further, the EMP should provide details on the conditions under which the mitigation measure should be implemented. The EMP should also distinguish between the type of solution proposed (structural and non-structural) and the phase in which it should become operable (design, construction and/or operation). Efforts should also be made to mainstream environmental and social aspects wherever possible.

b. Monitoring program
In order to ensure that the proposed mitigation measures have the intended results and comply with national standards and World Bank requirements, an environmental performance monitoring program should be included in the EMP. The monitoring program should give details of the following:

- Monitoring indicators to be measured for evaluating the performance of each mitigation measure (for example: national standards, engineering structures, extent of area replanted, etc).
- Monitoring mechanisms and methodologies
- Monitoring frequency

- Monitory locations

c. Institutional arrangements
Institutions/parties responsible for implementing mitigation measures and for monitoring their performance should be clearly identified. Where necessary, mechanisms for institutional coordination should be identified, if applicable.

d. Implementing schedules
Timing, frequency and duration of mitigation measures with links to the overall implementation schedule of the project should be specified.

e. Reporting procedures
Feedback mechanisms to inform the relevant parties on the progress and effectiveness of the mitigation measures and monitoring itself should be specified. Guidelines on the type of information wanted and the presentation of feedback information should also be highlighted.

f. Cost estimates and sources of funds
Implementation of mitigation measures mentioned in the EMP will involve an initial investment cost as well as recurrent costs. The EMP should include cost estimates to ensure that the contractors will comply with the mitigation measures. The costs for implementing the EMP will be included in the subproject design, as well as in the bidding and contract documents.

For monitoring of the Contractor's safeguards due diligence, the designated construction inspector will use the activity monitoring plan.

Each plan is site specific defining criteria and parameters which can be included in the works contracts, reflecting the status of environmental practice on the construction site that can be quantified and verified by the inspector during construction.

The following matrix would be completed during the design process of each activity to establish the key monitoring criteria that can be monitored.

EMP Monitoring Plan Matrix Template for each Project Activity

Phase	**What** (Is the parameter to be monitored?)	**Where** (Is the parameter to be monitored?)	**How** (Is the parameter to be monitored?)	**When** (Define the frequency / or continuous?)	**Why** (Is the parameter being monitored?)	**Cost** (if not included in project budget)	**Who** (Is responsible for monitoring?)
During activity **preparation**							
During activity **implementation**							
During activity **supervision**							

Such parameters and criteria include the use of personnel protective equipment by workers on the site, dust generation and prevention, amount of water used and discharged by site, presence of proper sanitary facilities for workers, waste collection of separate types (mineral waste, wood, metals, plastic, hazardous waste, e.g. asbestos, paint residues, spent engine oil), waste quantities, proper organization of disposal pathways and facilities, or reuse and recycling, where possible.

The site inspector's monitoring report would be a condition for full payment of the contractually agreed remuneration, the same as technical quality criteria or quantity surveys. To assure a degree of leverage on the Contractor's environmental performance an appropriate clause will be introduced in the works contracts, specifying penalties in case of noncompliance with the contractual environmental provisions, e.g. in the form of withholding a certain proportion of the payments, its size depending on the severity of the breach of contract. For extreme cases a termination of the contract shall be contractually tied in.

Public Consultations

The research for this report was undertaken by a team of national and international technicians. Data were gathered during field visits, meetings with relevant stakeholders and interviews with key personnel between January 2009 and December 2010**.**

The team responsible for producing this ESMF report was comprised of Mr. Chisamso Manda (Assistant Director, DNPW), Mr. Alex Chunga (Park Manager, DNPW), Mr. Samson Mkumbwa (Assistant Parks and Wildlife Officer in charge of research and planning), Mr. Samuel Kamoto (Environmental Education Specialist, WESM), Mr. Daulos Mauambeta (Executive Director, WESM) and Mrs. Catherine Chunga (Community Outreach Specialist, DPNW).

This ESMF and the associated PF have been shared with project stakeholders, including communities bordering the Reserve, concerned NGOs and development partners. Once approved by the Bank, the ESMF and PF will be disclosed in country and at the World Bank's InfoShop.

For any subproject, WESM will consult project-affected groups and local nongovernmental organizations on the investment's environmental and social aspects, and will take their views into account. WESM will initiate these consultations as early as possible, and for meaningful consultations, will provide relevant material in a timely manner prior to consultation, in a form and language(s) that are understandable and accessible to the groups being consulted.

Stakeholders at national, district and local levels were consulted throughout project preparation to obtain feedback and input regarding the design and potential impacts of project activities. Between 2009-2010, various stakeholder meetings, field visits and interviews with key informants were held and at which the draft ESMF was presented and discussed with a view to obtain comments on potential project impacts and proposed mitigation measures. Comments received were integrated in the final version of the ESMF.

The table below provides an overview of all public consultations held on the project's safeguard tools between 2009 and 2010:

Date	Participants	Location	No. of participants
23-24 July 2009	Tourism operators around NWR, DNPW, WESM	Nkhotakota town	10
25 Aug 2009	Government Officials (DNPW HQ + local, District Commissioner, District Planner, District Environmental Officer, Department of Forestry), WESM, World Bank	Lilongwe	13
2-4 Dec 2009	Traditional Authorities, DNPW, WESM	Nkhotakota town	12
2-4 Dec 2009	Tourism operators around NWR, DNPW, WESM	Nkhotakota town	10
15 Dec 2009	Traditional Authorities, DNPW, WESM	Nkhotakota town	22
15 Dec 2009	Tourism operators around NWR, DNPW, WESM	Nkhotakota town	14
16-26 Nov 2010	Interviews with various key persons	Lilongwe, Nkhotakota town, NWR	11
22-26 Nov 2010	NWR Field visit	NWR	18
2 Dec 2010	DNPW HQ, WESM, World Bank: Pre-launch mission and presentation of preliminary findings ESMF + PF	Lilongwe	8

Opinions expressed during these meetings were supportive of the project. Valuable input and support was obtained towards fine-tuning project activities. The main concern expressed by local communities was a potential loss of income and/or access to natural resources such as firewood or grass. Participants were assured of mitigation measures, amongst which is the expansion of community user zones in the reserve for the collection of grass and other non-wood products. Capacity building of the Natural Resources Management groups including good governance, sustainable resources management and beekeeping would be another mitigation measure to be supported by the project.

Capacity Building Program

The project's capacity building activities will be designed on the basis of a rapid diagnostic screening exercise to identify safeguards capacity gaps among staff tasked with project safeguards oversight and compliance.

The World Bank will provide capacity building support to the PIU and monitor safeguards implementation as outlined in the ESMF for all project activities as part of its regular project supervision missions. Specifically, the safeguard focal points in the PIU will receive training in the use and supervision of the ESMF.

To assist with these capacity building efforts, and to provide subsequent guidance and review of the ESMF's application, the GoM will contract consulting services for environmental and social safeguards technical support, as required.

Throughout the life of the project, the Bank task team will assess the status of project safeguards work and recommend additional capacity building interventions to WESM and the GoM.

Project Safeguard Budget

The budget allocated to finance the application and supervision of the project safeguard frameworks, i.e., the ESMF and PF, is 10% of the overall project cost. The costs for this work are embedded in Component 3 of the project.

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