



KENYA WATER TOWERS AGENCY



CONCEPT PAPER FOR ELECTRIC FENCE PROJECT IN MAASAI MAU FOREST (WATER TOWER)

SEPTEMBER 2019

1.0 INTRODUCTION

Maasai Mau Forest (MMF) is one of the 22 forest blocks of the Mau Forest Complex. MMF is located within Narok County, about 17 km North of Narok Town. It covers an approximate area of 46,278 Ha. It lies between Latitude 0040' and 0055' South and Longitudes 35035' and 35055' East. The MMF ecosystem is surrounded by 13 administrative locations as follows; Olposimoru, Olokurto, Naituyipaki, Naisoya, Nkareta, Ereteti, Ololulunga, OlShapani, Melelo, Enabelibel, Sogoo, Sagamia, Tendwet.

1.1 Importance of the Maasai Mau Forest- MMF (Water Tower)

MMF is a water catchment of major rivers which include Amalo, Enkare Narok, Ewaso Ngiro and Sikkinder. River Ewaso Ngiro drains into Lake Natron, a breeding ground for lesser Flamingos. River Amalo is the major tributary of Mara River which is the lifeline of the Maasai Mara Game Reserve and Serengeti National Park. The Maasai Mara is known for the big game and is classified as the 7th wonder of the world under UNESCO World Heritage classification which provides intrinsic touristic value that contributes to the country's revenue base. In addition, MMF hosts sites of conservation importance, which have been identified for tourism development that include caves and waterfalls.

MMF is a critically important biodiversity conservation area; home to over diverse flora and fauna species including 393 plants, 132 birds, 49 mammals, 10 reptiles and amphibians, and 368 spiders among others. The forest block hosts floral species of conservation concern which include one rare, one vulnerable and one endemic. The most threatened tree species includes *Juniperus procera*, *Prunus*

africana, *Olea capensis*, *Olea africana*, *Hagenia abyssinica* and *Podocarpus latifolia* as a result of logging and charcoal burning. Several faunal species of international conservation interest include: African Elephant (*Loxodonta africana*), Giant Forest Hog (*Hylochoerus meinertzhageni*) and the Leopard (*Panthera pardus*). Bird species of conservation interest occurring in MMF include two Afrotropical migrants, one regionally threatened/vulnerable species as well as several regional endemic species.

The MMF supports a microclimate favorable for wheat production, tea and other agricultural crops and vegetables. These crops benefit from the ecosystem goods and services provided by the MMF such as water from the streams and rivers, temperature and soil conditions. The forest block also provides non-timber forest products, including medicinal plants, pasture during dry season, wild honey and wild fruits. The MMF complex is an ecosystem of regional trans-boundary importance since its conservation supports several Multilateral Environmental Agreements to which Kenya is a signatory. Some of these include the East Africa Community Treaty, Agreement on the Nile River Basin Cooperative Framework, the African Convention on Conservation of Nature and Natural Resources.

1.2 Threats and Challenges Facing Maasai Mau Forest

The Maasai Mau Forest (Water Tower) is the most threatened forest block of the MFC due to human induced pressure and destruction. The destruction of MMF threatens its ability to provide ecosystem goods and services. Further, MMF destruction has contributed to environmental related disasters such as floods, drought and reduced river flows leading to poor land productivity, food shortage and loss of livelihoods.

Encroachment is the major threat facing MMF dating back to the 1970s when the government declared five adjudication sections in the north of Olpusimoru and Maasai Mau forest. The sections were Olposimoru A and B, Kamurar, Kilapa and Olkurto. Five other adjudication sections namely; Illmotiok, Ololulunga, Nkareta, Nkoben and Naisuya, were later declared to the south of the MMF thereby increasing pressure on the forest block.

The pressure on MMF started again in 1984 when six group ranches adjacent to the forest block that had been adjudicated in 1970s (Sisiyan-Illmotiok Adjudication Section; Nkaroni, Enoosokon and Enakishomi-Ololulunga Adjudication Section; Reiyon-Nkoben Adjudication Section and Nkareta Adjudication Section) applied for consent from the local land control board to subdivide their land among members. The boundaries of these sections were well defined during land adjudication and therefore adopted at First Registration.

After consents were issued, boundaries of the Group Ranches were irregularly expanded beyond the original adjudication areas and people fraudulently issued with title deeds. By 2005, illegal encroachment into the MMF due to expansion of Group Ranches created parcels of land inside the forest.

The “ballooning” of areas beyond the original adjudicated group ranches boundaries led to massive encroachment and degradation into MMF, hence the genesis of the current land ownership crisis. Since then there has been continuous influx of people and human settlement arising from increased population, land subdivisions and speculative squatters. This has led to further encroachment into MMF and if the settlers are allowed to continue inhabiting the illegally acquired forest land totaling 21,336 Ha, only 24, 942 Ha of MMF will be left. Consequently, the ability of MMF to sustainably provide the required ecosystem

goods and services at local, national, regional and international levels will be adversely affected.

Due to encroachment, charcoal burning has been rampant in the MMF and is considered by the communities as one of their livelihood sources. Illegal logging in Maasai Mau has contributed to destruction of indigenous trees species and overall biodiversity loss. A threat assessment conducted in 2018 established that illegal logging was highest in Olokirikirai area while cattle grazing was the predominant threat in Nkareta and Olokirikirai (KWTA 2018). Pit sawing of high value indigenous timber tree species for the construction temporary shelters, poles, timber and other uses was very rampant in MMF.

Targeted high value trees species included Podocarpus, Euclea and Olea species preferred for their quality wood and timber. Red cedar has nearly been wiped out completely. This logging without replacement contributed to reduced biodiversity and opening of forest canopy and colonization by invasive species.

Large tracks of forested land in MMF have been cleared for agricultural activities. Cultivation on steep slopes, encroachment of both riparian and Wetland areas has accelerated soil erosion, landslides and flooding leading to reduced land productivity.

Other threats facing Maasai Mau are forest fires and political interference.

2.0 PROJECT DESCRIPTION AND GOAL

An electric fence project has been proposed in Maasai Mau Forest. The fence is proposed to cover a perimeter of about 120 kilometers from Sierra Leone to Olokurto as shown in figure 1 below;

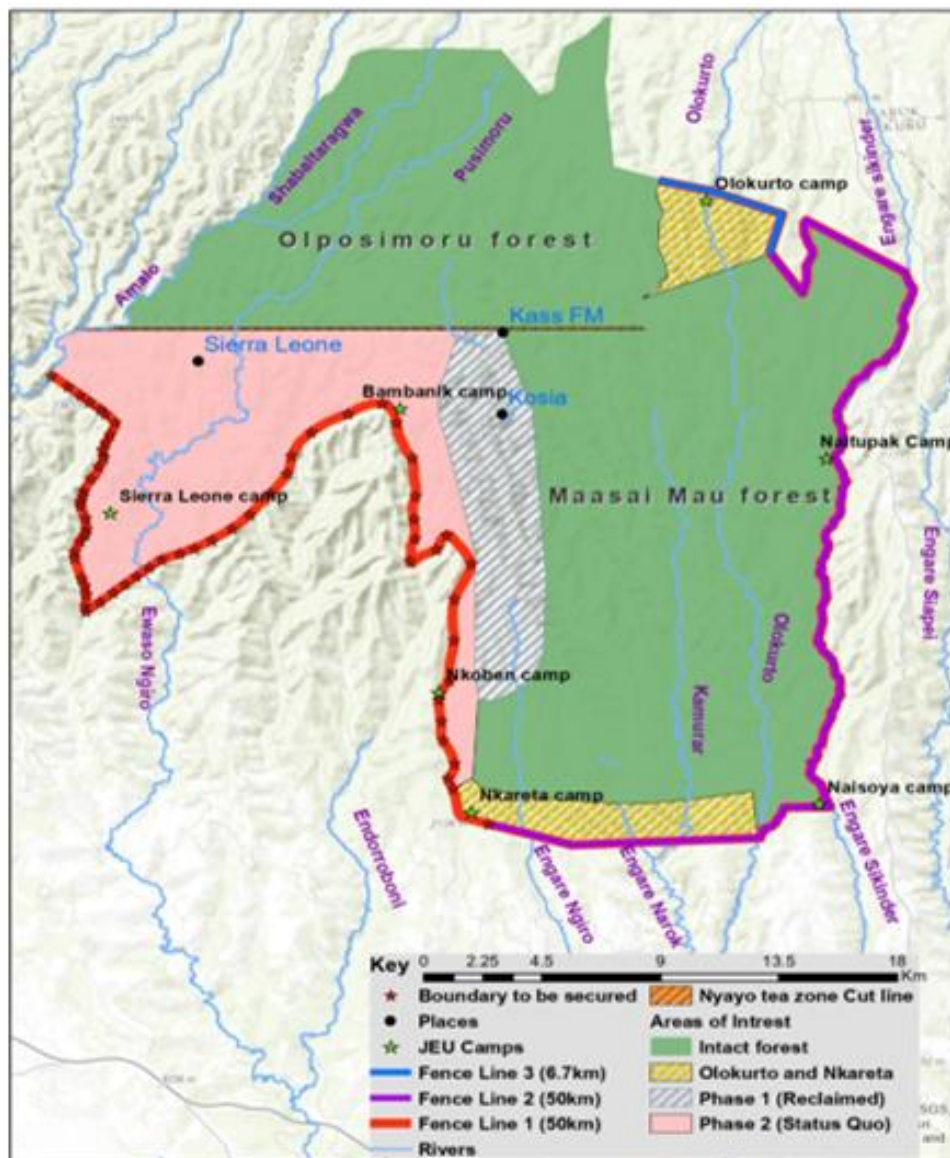


Figure 1. Map of Maasai Mau Forest showing the perimeter proposed for electric fencing

The overall goal of the proposed electric fence project is to enhance management, conservation and protection of Maasai Mau Forest (Water Tower) to ensure that it continues to meet the ecological, social, economic and cultural needs of the current and without compromising the ability of the future generations to meet their own needs.

2.1 Specific Objectives of the Electric Fence Project

The specific objectives of the project are:

- a) Protect the forest and the communities through the establishment of a game –proof electric fence that will help reduce human-wildlife conflicts, enhance biodiversity and improve controlled access to the forest resources.
- b) Promote ecotourism development for socio-economic growth and improved forest conservation.
- c) Engage and build the capacity of forest- adjacent communities through conservation education; conservation programme that provide employment opportunities; and conservation-based livelihoods.

2.2 Justification for Electric Fencing

The MMF is currently the most degraded forest block of the Mau Forest Complex particularly from human induced pressure and destruction. This is largely reflected through land cover and land use changes of MMF indicating a reduction in forest land and an increase in cropland. Encroachment, illegal settlements, cultivation, rampant charcoal burning, illegal logging are cited as the main causes of degradation for this forest block. This puts MMF's ability to provide the ecosystem goods and services at risk yet the block is an important ecosystem locally, nationally, regionally and internationally. It provides critical ecological services such as water storage; river flow regulation; flood mitigation; recharge of ground water; reduced soil erosion and siltation; water purification; conservation of

biodiversity. Through these ecological services, the forest supports key economic sectors including energy, tourism, agriculture and industries which are important drivers of the BIG 4 Agenda. The forest block is also the lifeline of the famous Mara-Serengeti game and national park as well Lake Natron which is the breeding ground for Lesser Flamingoes.

There is need to fence off the entire MMF to curb future encroachment and also establish a real-time surveillance and monitoring system for MMF. The entire area proposed for fencing in the MMF runs is approximately 120km and covers the perimeter of Maasai Mau forest but excluding the boundary between Maasai Mau and Olpusimoru forest block (Fig 1).

Fencing of MMF shall contribute to the recovery of the water tower through three main approaches: rehabilitation, protection and promotion of community livelihood initiatives for ecosystem integrity, health and resilience.

2.3 Fence Design

An **Intermediate Type** of fence has been proposed in MMF. This fence type comprises of treated timber gum poles (*eucalyptus saligna*) spaced at 10m centres with 5 to 10 No. strands for the control of big game, antelopes, carnivores. This design has been constructed at Mwea Game Reserve, Mt. Elgon, Shimba Hills, Arabuko Sokoke, Marsabit, Tsavo East and Tsavo West and Lake Nakuru national parks. An intermediate fence has the following merits;

- a) Effective in mitigating human –wildlife conflicts since it controls large animals. However, it cannot control burrowing and crawling animals.
- b) Effective in protecting flora and fauna within the protected areas because it controls human access.
- c) Good in protecting water catchment areas since it keeps away cattle, sheep and goats that can destroy planted tree seedlings.

d) It is relatively cheaper per kilometer.

Figure 2 below shows the design of an intermediate fence.

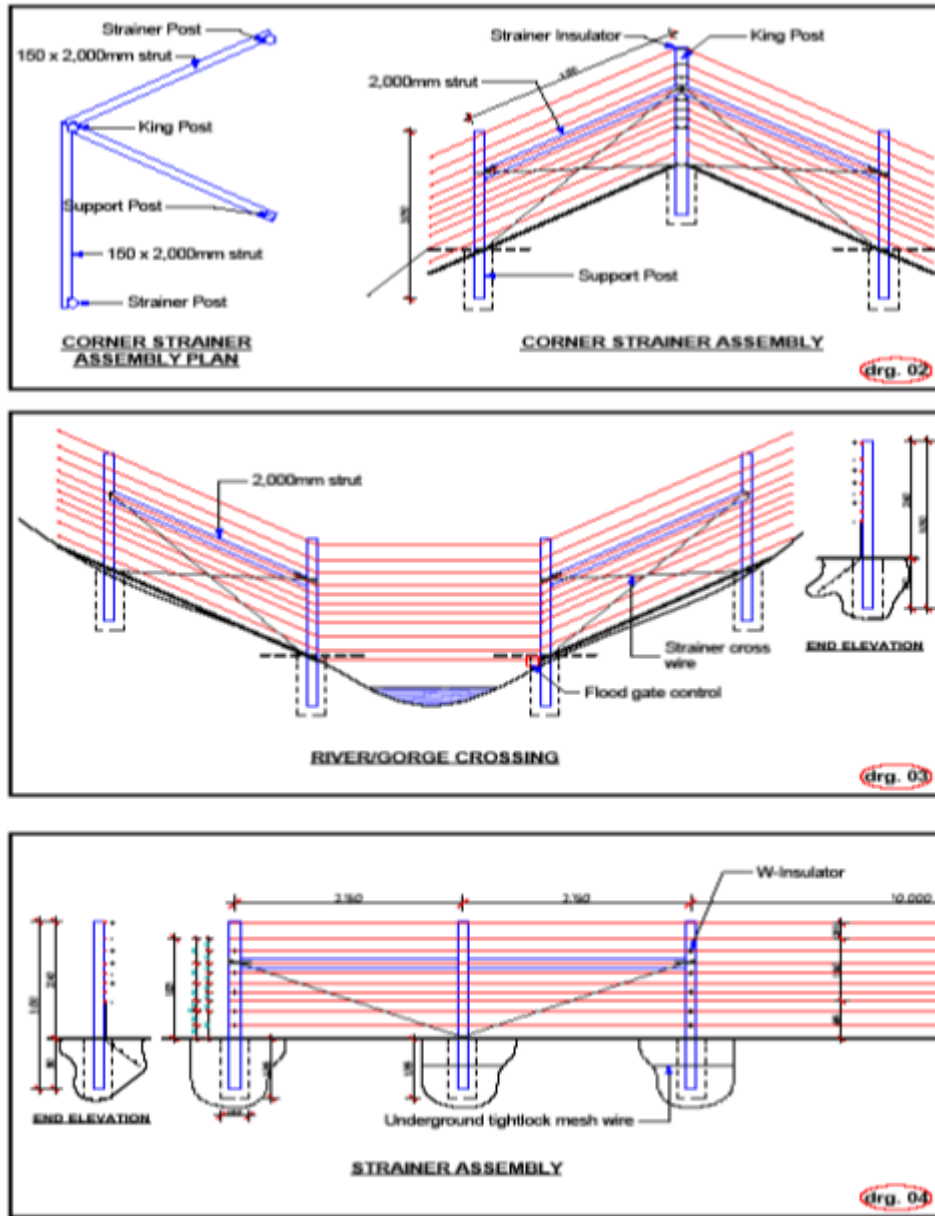


Figure 2. Drawing of an intermediate fence

3.0 Fence Project Implementation and Road Map

The proposed project will be implemented in a participatory, consultative, collaborative and partnership approach among Kenya Water Towers Agency, Kenya Forest Service, Kenya Wildlife Service, County Government of Narok, Rhino Ark, local communities and other stakeholders. This approach will ensure that there is consensus, buy-in and ownership of the project by all the relevant stakeholders and that the project is sustainable in the long term.

	Activity	Date
1.	Presentation of draft ESIA report to KWTA management	16 th Dec 2019
2.	Submission of ESIA report to NEMA	20 th Dec 2019
3.	Public notice in local dailies	By December 30 th 2019
4.	Submission of comments by the public and subsequent approval of the ESIA	2 weeks
5.	Tender advertisement by KWTA	3 rd or 4 th week of January 2020
6.	Award of tender	March 2019
7.	Construction of electric fence	April- July 2019