INVESTING IN FORESTS AND PROTECTED AREAS FOR CLIMATE-SMART DEVELOPMENT (IFPA-CD) PROJECT

PROJECT BRIEF

FOR THE PROPOSED CONSTRUCTION OF MURCHISON FALLS PROTECTED AREA (MFPA) ELECTRIC FENCE IN NWOYA, BULIISA, MASINDI AND KIRYANDONGO DISTRICTS

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ACRONYMS

CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CMS	Convention on Migratory Species of Wild Animals
DLG	District Local Government
ESF	Environmental and Social Framework
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan
GHG	Green House Gas
GMP	General Management Plan
HEC	Human Elephant Conflict
HWC	Human Wildlife Conflict
MFCA	Murchison Falls Conservation Area
MFNP	Murchison Falls National Park
N/A	Not Applicable
NEA	National Environment Act
NEMA	National Environment Management Authority
PA	Protected Area
PPP	Public Private Partnership
QECA	Queen Elizabeth Conservation Area
QENP	Queen Elizabeth National Park
QEPA	Queen Elizabeth Protected Area
SFG	Space for Giants
UNMA	Uganda National Meteorology Authority
UWA	Uganda Wildlife Authority
WCC	Warden Community Conservation
WIC	Warden-in-Charge

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EXECUTIVE SUMMARY

Uganda Wildlife Authority (UWA) has been grappling with the challenge of Human Wildlife Conflict (HWC) since its creation. The Authority, together with surrounding communities and partners, has deployed a number of initiatives to address this challenge including digging trenches, planting unpalatable crops such as red chili, cotton, coffee along the boundary, bee hives, use of community scouts among others. Despite the numerous efforts, the challenge of HWCs still persists and this has increased friction between community and park management.

In 2018, UWA in collaboration with Space for Giants (SFG) started implementing electric fencing to contribute to the already existing initiatives to curb human wildlife conflict. This was first piloted in Queen Elizabeth National Park under the Public Private Partnership (PPP) arrangement and later extended to Murchison Falls National Park. The objective of the fence was to reduce the human wildlife conflict especially elephants which are affecting the agricultural community around the park.

So far 44 km of the electric fence has been constructed in MFNP and over 52 km in QENP and is operational. Communities have expressed appreciation of the electric fence as it has tremendously reduced the incidences of animals going out of the park to their gardens. This has improved farm yields, increased household income, helped families to diversify their sources of income as men now have time to look for other jobs, helped children to concentrate at school among others. Communities where the fence has not reached are strongly demanding for extension of the fence to their areas.

Given its effectiveness, UWA has now received funding from World Bank under the Investing in Forests and Protected Areas for Climate Smart Development (IFPA-CD) project to construct additional 101 kms of the electric fence to further minimize HWC in areas around MFPA. The areas where this will be constructed include Nwoya district (31km), Buliisa district (20km), Masindi district (20km) and Kiryandongo district (30km).

It is a requirement under the National Environment Act (2019), that all projects that are likely to have negative impacts on the environment undergo Environmental and Social Impact Assessment (ESIA). UWA prepared a project brief for the pilot project which was approved by NEMA in 2018. UWA is now updating the project brief given that it is in the same protected area to include the new sections where the fence will be constructed.

The impacts associated with this activity have been identified and mitigation measures proposed in this project brief. UWA will work with all partners and stakeholders to ensure that this project is implemented in a more sustainable manner in order to achieve the intended objectives with minimal impacts on the environment.

CHAPTER 1

1.0 INTRODUCTION

1.1 Overview and Background

Human-Elephant Conflict (HEC) is a widespread and by all accounts, escalating problem around both Murchison Falls Conservation Area (MFCA) and Queen Elizabeth Conservation Area (QECA). HEC is characterized by crop raiding and physical attacks on individuals in communities by the elephants resulting into deaths.

In retaliation, communities kill elephants in defense and protection of their gardens. Another key manifestation of HEC is the killing of elephants by poachers for their ivory. As indicated in Table 1 below, MFNP has experienced the highest number of reported Human Wildlife Conflicts (HWC) most of which are HEC.

Both MFCA and QECA are characterized by hard boundaries with communities cultivating directly up to the park boundary in the entire landscape within which these parks lie. Given the scale of the problem at a landscape level, ring fencing a single farm or multiple farms will not have the desired effect.

Table 1: Reported Human-Wildlife Conflict Incidences across the Conservation Areas and UWA Head Office 2009 – 2018

YEAR	LMCA	BMCA	QECA	KCA	MFCA	KVCA	UWA HQTRS	TOTAL
2009	54	1,230	24	89	238	0	69	1,704
2010	61	1,153	16	128	216	0	89	1,663
2011	67	80	45	148	231	5	138	714
2012	103	127	65	182	236	35	165	913
2013	75	114	16	210	864	25	142	1,446
2014	50	260	71	166	1,192	33	179	1,951
2015	86	190	131	206	1,082	20	182	1,897
2016	99	104	212	161	1,173	149	179	2,077
2017	210	169	302	287	774	208	136	2,086
2018	135	150	590	364	1336	408	133	3,116
TOTAL	**940**	**3,577**	**1,472**	**1,941**	**7,342**	**883**	**1,412**	**17,567**

Source: UWA Problem Animal Reports

In 2018, UWA in collaboration with Space for Giants (SFG) started implementing electric fencing to contribute to the already existing initiatives to curb human wildlife conflict. This was piloted in Queen Elizabeth National Park under the Public Private Partnership (PPP) arrangement and was later extended to Murchison Falls National Park. The objective of the fence was to reduce the human wildlife conflict especially elephants which are affecting the agricultural community around the park. So far, over 52km of the fence was constructed in QENP and 44km in MFNP and is operational.

Communities have expressed appreciation of the electric fence as it has tremendously reduced the incidences of animals straying out of the park to their gardens. This has improved farm

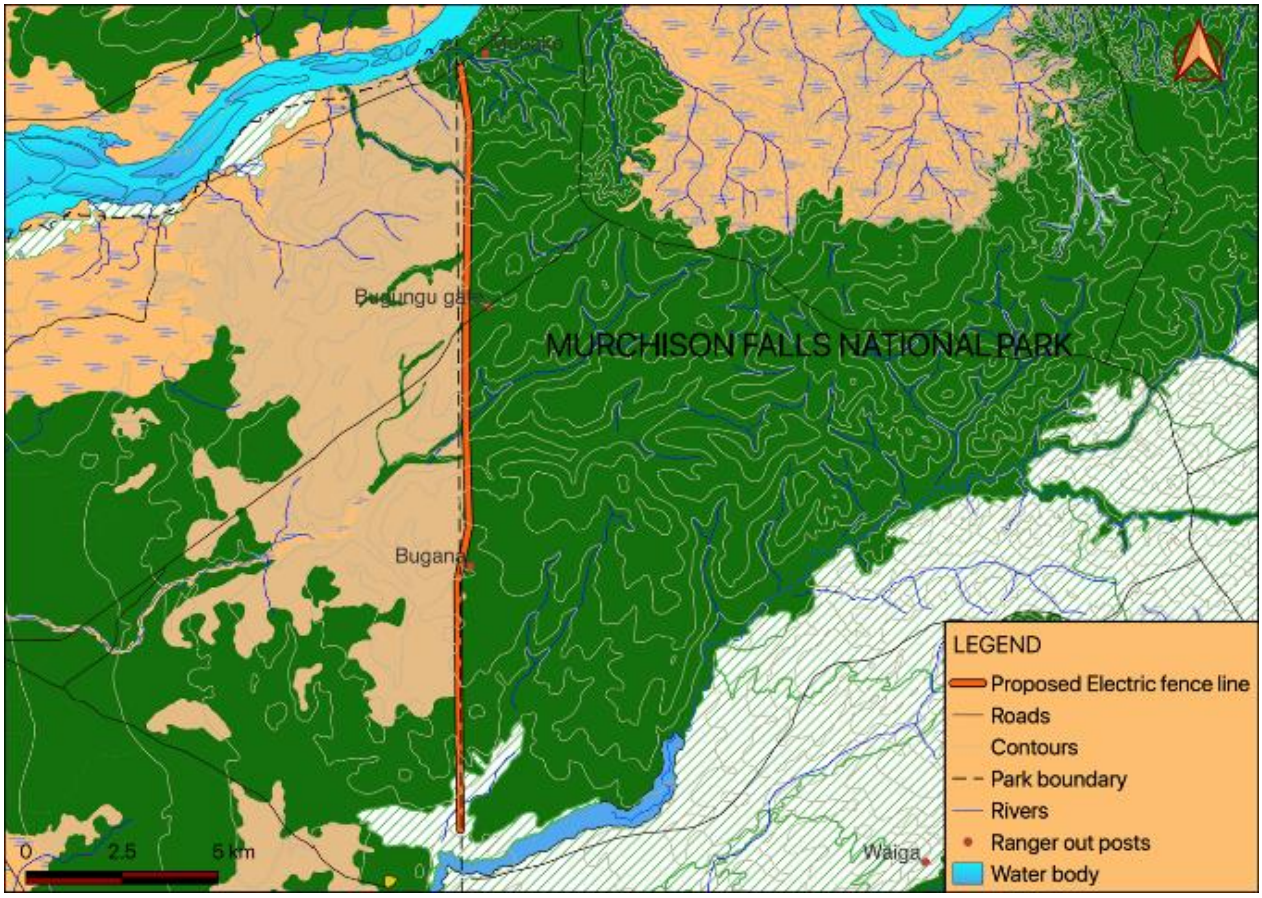
yields, increased household income, helped families to diversify their sources of income as men now have time to look for other jobs, helped children to concentrate at school among others. Communities where the fence has not reached are strongly demanding for extension of the fence to their areas.

The project is now being proposed to be extended to Murchison Falls National Park in the 4 districts of Nwoya, Buliisa, Masindi and Kiryandongo. Given its effectiveness and government desire to solve the issue of HWC for communities living close to the protected areas, UWA has now received funds fromWorld Bank under the IFPA-CD project to construct additional 101 kms of the fence to further minimize HWC in these areas.

The specific five sites proposed include:

DISTRICT	TOTAL BOUNDARY DISTANCE	DISTANCE SO FAR FENCED	DISTANCE TO BE FENCED UNDER IFPA-CD WB PROJECT	LOCATION/ VILLAGE/LC1
Nwoya	141.99	34	31	Okwoto, Ogelo, Gotlonyang, Kal A, Kal B, Pakawero, Te-achan, Lagaji, Patira West, Latoro Central, Pajengo, Katinya, Obira South, Kololo
Buliisa	81.27	00	20	Mubako, Kiryangu, Khartoum, Mvule-Nunda, Mvule, Ajigo, Kasenyi, Pondiga, Gotlyec, Oribu, Biroya, Kakoora, Kicooke, Katalyeba, Waiga
Masindi	35.9	00	20	Nyakarongo, Kitengule, Kimina, Alimugonza, Kaborogota, Kituka I, Kituka Central, Kigaragara
Kiryandongo	62.2	00	30	Rwamudopio, Kigangara, Mpumwe, Kibyama, Kiroko Kisweka, Kibimbia, Bunyama I Kahara I, Kihura, Nyinga, Tenanda
Total	**321.36**	**44**	**101**	

Plate 1: Map showing the Project Area



Uganda Wildlife Authority together with Space for Giants (SFG) carried out an assessment of the most affected areas around the park boundary in 2022 and 2023. The assessments were done through physically walking along the park boundary and review of HWC reported cases over the past 5 years. The assessment considered: the alignment of the fence along the boundary; vegetation cover; relief; soils; corridors; accessibility and beneficiary community among others. The detailed assessment is presented in section 3.6. UWA and SFG have agreed to start with areas where the Human-Elephant Conflict is more rampant.

1.2 Project Objectives

The overall objective of the fencing project is to combat the escalating levels of Human-Elephant Conflict (HEC) in communities along the boundaries of MFPA through the construction of an electric fence.

1.2.1 Specific Project Objectives

- To construct an electric fence along parts of the park boundary to reduce crop damage, loss of life and livelihoods as a result of incursions into villages and farmlands from elephants.
- To promote the conservation of elephants in Murchison Falls National Park

1.3 Purpose of the Project Brief

Section 112 of the National Environment Act, 2019 requires developers of projects that may, or are likely to have impacts on the environment to submit a project brief to NEMA (the Authority) in the prescribed form and giving the prescribed information.

The purpose of this Project Brief is to objectively assess and evaluate the likely environmental and social impacts that could result from the implementation of the project. It proposes mitigation measures for the potential impacts that have been identified which are likely to accrue from the construction of the electric fence along the boundaries of MFNP. This project brief is to ensure that the project is implemented in an environmentally sound manner consistent with national regulations as well as the World Bank's environmental and social standards. It will also assist the National Environment Management Authority (NEMA) and lead agencies to make a decision on the implementation of the project.

1.4 Specific Objectives of the Project Brief

The objectives are:

1. To define the baseline environmental and social conditions in the project area;
2. To describe design specifications for the fence so as to be able to identify and assess possible environmental and social impacts;
3. To identify the potential environmental and social impacts, and propose recommendations for their mitigation and/or enhancement, and monitoring;
4. To summarize the views, concerns and suggestions of the relevant key stakeholders (including potentially affected persons) regarding the environmental and social impacts of the project; and
5. To present the environmental and social management plan for the fencing project, summarizing potential impacts, sources, management arrangements of local communities, monitoring indicators, frequency of monitoring, roles and responsibilities for and the regulatory agencies.

1.5 Methodology for the preparation of the Project Brief

The study was carried out in accordance with the National Environment Act 2019, the Environmental and Social Assessment Regulations, 2020 and other legal frameworks relevant to the proposed project. Additionally, the study was done in accordance with the World Bank's environmental and social standards and project documents such as the ESMF, ESCP, OHS Protocols, SEP etc were consulted during the study. Consequently, the project will be in compliance with the Project ESMF and LMP, and also comply with the WB EHS General Guidelines.

The technical team used a number of techniques and methods at each stage of data gathering and information synthesis that include but are not limited to, literature review, stakeholder consultations, onsite observation and analyses. Some of these methods are further described below.

Review of relevant literature – The team reviewed literature to obtain background and secondary baseline information on electric fencing and the site considering the previous project

in, the regulatory and institutional context relevant to the project, the environment, and the economic situation in Uganda.

Consultations with stakeholders – The team also made consultations with UWA staff to obtain their views and create awareness about the project. Consultations were also made with the stakeholders including communities neighboring the Park, technical and political leaders of the neighboring communities.

Other quantitative and qualitative methods applied - Qualitative methods such as direct observation and photography were used to obtain information on the site and the neighborhood.

1.6 Location and Physical Boundaries

The largest component in Murchison Falls Protected Area (MFPA) is the Murchison Falls National Park, straddling the Victoria Nile. Along its southern edge, lie Bugungu and Karuma Wildlife Reserves (WR). Bugungu WR includes that portion of land between the Lake Albert escarpment and the Waiga River, and also takes in a portion above the rift valley escarpment.

Karuma WR forms a long strip along the southern and eastern flanks, and includes a 15 km length of the Victoria Nile as far east as Karuma Falls. To the south of Bugungu lies Budongo Forest Reserve, a portion of which overlaps with both Bugungu and Karuma WRs. In Karuma WR, a particular patch of high forest within Budongo Forest Reserve is known as 'Kaniyo-Pabidi'. Due to the complex boundary descriptions of the different components of the MFPA, many erroneous maps have been produced of the Wildlife Reserves and the overlapping Budongo Forest. Estimates of the land area of the different PAs have varied widely. Table 2 below gives the correct areas of the different components of the protected area, as calculated by the MTTI/UWA Protected Area Assessment Programme, using a Geographical Information System (GIS).

Table 2: Area of the different component PAs of MFPA

WILDLIFE ESTATE	SQ. KM
Murchison Falls National Park	3,877
Bugungu Wildlife Reserve	501
Karuma Wildlife Reserve	678
Total wildlife estate	5,056
Budongo overlap with Bugungu	135
Budongo overlap with Karuma	99
Budongo outside UWA estate	591
Total area Budongo Forest	825

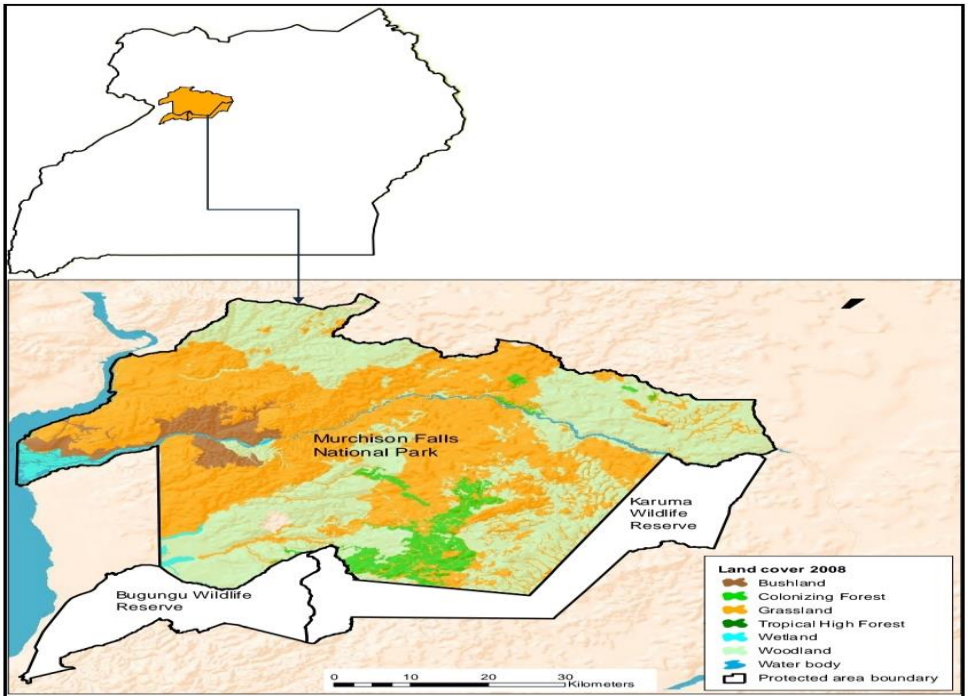


Plate 2: Map showing location of Murchison Protected Area in Uganda

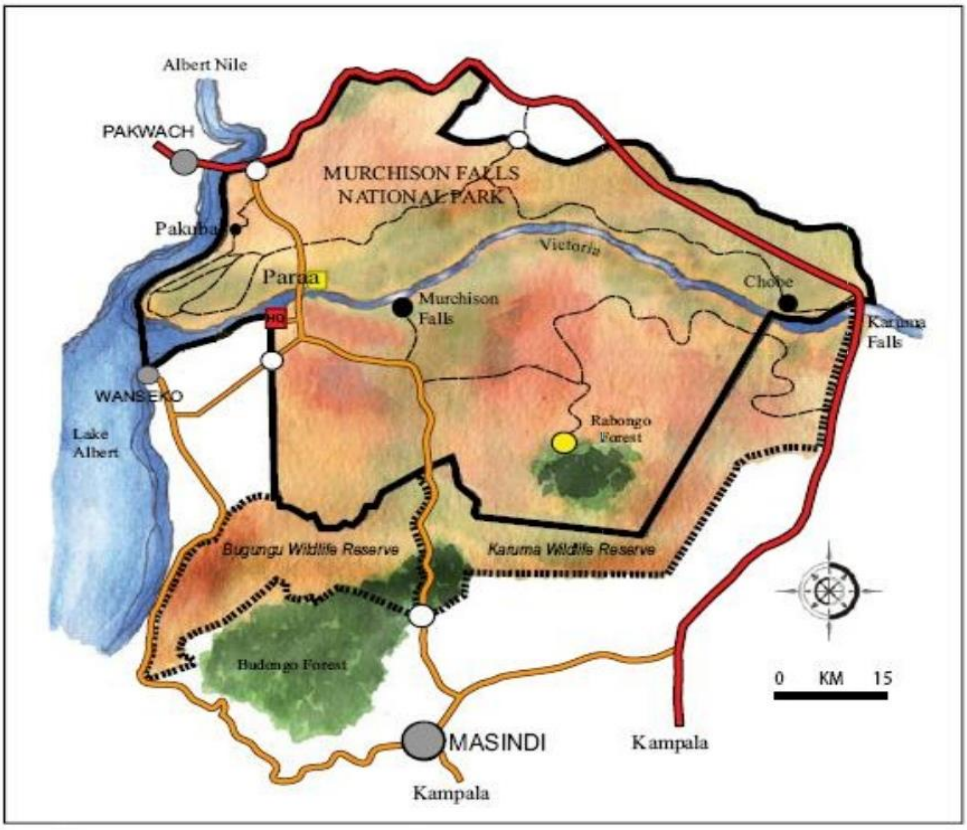


Plate 3: Map of the MFNP with the adjoining Karuma and Bugungu Wildlife Reserves

The park can be accessed through Kampala - Masindi entering through the Kicumbanyobo gate. Alternatively, it can be accessed through Kampala-Karuma- and either through Wankwar gate or Tangi gate. Bugungu reserve can be accessed through Masindi-Biiso-Buliisa road.

1.7 Project cost

The project is estimated to cost about 5 billion (5,000,000,000/=) Uganda shillings.

1.8 Contact Details

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CHAPTER 2

2.0 POLICY, LEGAL, REGULATORY AND INSTITUTIONAL FRAMEWORK

2.1 National Policy and Legal Framework

Electric fencing is a new concept in Uganda which is being adopted by UWA to address the escalating HWC, specifically HEC. This is aimed at improving conservation of elephants and other species in general in Protected Areas. The national legal and policy framework that relate to conservation were analyzed during the preparation of this project brief to ensure that this project is in line with national interests.

2.1.1 The Constitution of Uganda (1995)

The overall government policy on natural resource conservation in Uganda isenshrined in the Constitution of the Republic of Uganda of 1995. The principles are spelt out in the National Objectives and Directive Principles of State Policy. The purpose of the objectives is to provide a legal foundation upon which future policies and juridical interpretation of the substantive constitutional provisions must be based.

The relevant constitutional provisions in the National Objectives and Directive Principles of State Policy include the following:

a) Principle of State Policy XXVII mandates the State (both central and local government) to create and develop parks, reserves and recreational areas, and to ensure the conservation of and promoting the rational use of natural resources so as to safeguard and protect the biological diversity of Uganda.

2.1.2 The Uganda Wildlife Policy, 2014

The Wildlife Policy vision for the wildlife sector is “sustainably managed and developed wildlife resources and healthy ecosystems in a transformed Ugandan society. The policy goal is to conserve wildlife resources of Uganda in a manner that contributes to the sustainable development of the nation and the well-beingof its people.

Through management of HWC, UWA will be implementing the following policy objectives:

a) Promotion of sustainable management of Uganda’s wildlife protected areas;
b) Sustainable management of wildlife populations in and outside wildlife protectedareas;
c) Effectively mitigate HWCs; and
d) Effectively combat wildlife crimes.

2.1.3 The Uganda Wildlife Act, 2019

The management of wildlife and protected areas including MFNP is guided by the Uganda Wildlife Act of 2000 (Chapter 200 in the Laws of Uganda, 2000) which has now been amended to Wildlife Act, 2019. The Act authorizes UWA to assume responsibility for wildlife management in Uganda, both inside and outside protected areas. Under the Act, a Board of

Trustees is appointed by the Minister ofTourism, Wildlife and Antiquities as the governing body of UWA. The Act spells out offenses within protected areas and gives mandate to UWA to ensure that the protected areas are well secured.

2.1.4 The National Environment Act No.5 of 2019

The National Environment Act establishes the National Environment Management Authority (NEMA) as the principal agency in Uganda for the management of the environment. Section 11 lists the functions of the lead agency where the lead agency should plan, regulate and manage the segment within its mandate.

The Fourth Schedule of the Act requires that Project Briefs are prepared and submitted to NEMA when wildlife protected area buffer zones and corridors are being created. Guidelines for this process are given in the National Environment (Environmental and Social Assessment) Regulations, 2020.

2.1.5 The Tourism Policy of Uganda, 2003

The Tourism Policy recognizes that in the 1960's Uganda was a main tourism destination in Eastern Africa and therefore tourism was one of the major economicsectors for the country. Unfortunately, the turmoil of the 1970's and 1980's drastically reduced wildlife numbers and destroyed infrastructure resulting into reduced numbers of tourists. This policy is aimed at ensuring that tourism becomesa vehicle for poverty eradication in the future to the extent possible within the resource base and market limitations. It further recognizes UWA"s role and contribution towards the achievement of this objective. This is mainly in the area of managing and developing the extensive resource base as well as developing and marketing various products. The policy further emphasizes the need to facilitate the flow of tourists within the region and promotion of East Africa as a single tourist destination. Addressing the challenge of HWC will lead to increased numbers and hence a boost in tourism.

2.1.6 The National Forestry and Tree Planting Act, 2003

The Act provides for among other things, the conservation, sustainablemanagement and development of forests, and the promotion of tree planting for the benefit of people of Uganda and the international community. It classifies forestsin Uganda as central forest reserves, local forest reserves, community forests and forests forming part of a wildlife conservation area declared under the Uganda Wildlife Statute, 1996. The Act recognizes various stakeholders in the managementof forest reserves, which should be guided by the Management Plan prepared bythe responsible body. In addition, the Act aims at ensuring that forests and trees are conserved and managed in a manner that meets the needs of the present generation without comprising the rights of future generations by safeguarding forest biological diversity and the environmental benefits that accrue from forest and trees.

2.1.7 The Occupational Safety and Health Act, 2006

The Occupational Safety and Health Act of 2006 consolidates, harmonizes and updates the law relating to occupational safety and health and repeals the Factories Act of 1964. It makes provisions for the health, safety, welfare and appropriate training of persons employed in work places. The Act provides for safe access to the workplaces and safe work practices which applies to this project as well.

The key areas addressed by the Act include:

a) General health provisions including cleanliness, ventilation, lighting and sanitary conveniences;
b) Machinery safety including safe handling of transmission machinery, hand held and portable power tools, self-acting machines, hoists and lifts, chains, ropes & lifting tackle, cranes and other lifting machines, steam boilers, air receivers, refrigeration plants and compressed air receiver;
c) General safety provisions including safe storage of dangerous liquids, fire safety, evacuation procedures, precautions with respect to explosives or inflammable dust or gas; and
d) General welfare provisions including supply of drinking water, washing facilities, and first aid.

The Act also states that all electrical apparatus and fittings shall be sufficient in size and power for the work they are meant for and shall be constructed, installed, protected, worked and maintained to prevent danger as far as practicably practicable.

The Act is applicable in relation to protection of the workers and staff against secondary injuries and hazards during execution of their duties or work. UWA shall provide for the protection of workers from adverse weather, provision of a clean and healthy work environment, sanitary conveniences, washing facilities, First Aid and facilities for safe drinking water and meals. In summary, this act shall be used as a guideline to ensure health and safety of workers is guaranteed.

UWA shall provide PPE such as safety shoes, safety helmets, gloves, waterproof clothing etc. to its entire staff that will be working on the sub-project.

2.1.8 The Wetlands Policy, 1995

Wetlands cover about 11% (26,600 km^2) of Uganda's total land surface (241,500 km^2) and provide a range of biophysical and socio-economic functions. The National Wetlands Policy for the conservation and management of wetland resources seeks to promote the conservation of wetlands in order to sustain their values for the present and futurewell-being of the people.

The Policy sets five goals:

a) To establish the principles by which wetland resources can be optimallyused now and in the future;
b) To end practices which reduce wetland productivity;
c) To maintain the biological diversity of natural or semi-natural wetlands;
d) To maintain wetland functions and values; and,
e) To integrate wetland concerns into the planning and decision making ofother actors.

2.1.9 The National Environment (Wetlands, River Banks and Lake Shores Management) Regulations, 2000

The Regulations provide for management and protection of Wetlands, River Banks and Lake Shores. The management of invasive alien where the lake shore is to be developed for purposes of promoting tourism or any other development, the developer should ensure that:

a) Pre-treatment or full treatment of effluent or waste from the facility is carriedout to prevent contamination of the water
b) Litter is cleared and disposed in a manner in conformity with best environmental practices; and
c) The river banks, lake shores or beaches are not degraded.

In addition, the regulations provides that for any developer to conduct a project which may have a significant impact on a wetland, river bank or lake shore, shall be required to carry out an Environmental and Social Impact Assessment (ESIA) and to apply for the relevant permits from NEMA under these Regulations.

2.1.10 The National Environment (Environmental and Social Assessment) Regulation, 2020

These regulations underscore the ESIA requirement and prescribe the procedures for conducting the ESIA in Uganda. They require the developer to ensure that the mitigation measures are implemented and conditions of the certificate of approvalare complied with during the lifecycle of the project. Additionally, they pose a responsibility to the developer to undertake self-auditing with the first audit not less than 12 months but not later than 36 months from the project commencementand submit the findings thereafter to NEMA. This project brief has been preparedin line with these regulations.

The main sections of a Project Brief as required by the regulations, include:

a) a description of the proposed project, including the name, purpose and nature of the project in accordance with the categories in Schedule 4 of the Act;
b) the proposed location and physical boundaries, including a map and coordinates of the project clearly showing the projected area of land or air that may be affected by the project activities, or, if it is—
    i. a linear activity, a description of the route of the activity and an alternative route, if any; or
    ii. an activity on a water body, the coordinates within which the activity is to be undertaken;
c) an evaluation of project alternatives, including a zero or no-project alternative in terms of project location, project design or technologies to be used, and a justification for selecting the chosen option;
d) the design of the project and any other project related components and associated facilities, including the activities that shall be undertaken and a description of the major material inputs to be used during construction or development and operation of the project;
e) the estimated cost of the project evidenced by a certificate of valuation of the capital investment of the project, issued by a qualified and registered valuer;
f) the size of the workforce;
g) a description of the manner in which the proposed project and its location conform to existing laws, standards and international agreements governing the projects, including reference to relevant plans required under the Physical Planning Act, 2010 and Building Control Act, 2013;
h) an indication of permits, licences or other approvals that may be required for the project; baseline conditions of the physical, biological and socio-economic environment of the project area, including results of relevant studies and other geophysical and geotechnical studies;

i) a description of potential direct, indirect, induced, cumulative, transboundary, temporary and permanent environmental, health, social, economic and cultural impacts of the project and their severity, and the proposed mitigation measures to be taken during the planning, design, pre-construction, construction, operational and decommissioning phases of the project;
j) proposed mitigation and preparedness measures for potential undesirable impacts that may arise at project implementation, but were not contemplated at the time of undertaking the project brief;
k) a description of climate-related impacts associated with the project, including potential climate benefits and carbon footprints of the proposed project, as well as the potential vulnerability of the proposed project or activity to climate change, and the proposed adaptation and mitigation measures;
l) a description of alternative resettlement areas for project affected persons, if any, their associated environmental and social impacts, and or any plans for compensation to project affected persons;
m) an environmental management and monitoring plan developed in accordance with regulation 46, incorporating climate adaptation and mitigation plan;
n) plan for stakeholder engagement throughout the proposed project or activity development, including details on how to address potential related grievances or requests for information, and evidence of stakeholder consultation.

2.1.11 The National Environment (Waste Management) Regulations, 2020

These regulations apply to construction waste which should be managed in a way such as to avoid environmental pollution and public health impact. UWA shall ensure there is proper contractual agreement with licensed solid waste handlers and that solid wastes are disposed in the manner prescribed by the regulations.

2.1.12 The National Environment (Noise Standard and Control) Regulations, 2002

The regulation provides standards for:
a) The maximum permissible noise levels to which a person may be exposed from a facility, activity or construction site.
b) Control of noise and mitigating measures for the reduction of noise levels.

Regulation 6 establishes permissible noise levels in the following sub regulations:

- Regulation 6 (1) provides that the maximum noise levels to which a person may be exposed from any area shall not exceed the level specified in Column 2 of Part 1 of the First Schedule.

- Regulation 6(4) provides that the maximum noise level from a construction site to which a person in a facility specified in column 1 of Part IV of the First Schedule may be exposed shall not exceed the level specified in Column 2 during the time specified in that part.

- Regulation 7(1) states that no person shall, for any activity specified in regulation 6, emit noise in excess of the permissible noise level, unless permitted by a license issued under these regulations.

Table 3: Maximum Permissible Noise Levels for Construction Site

Column 1	Column 2	
Facility (Leq) in dB (A)	Maximum Noise Level Permitted	
	Day	Night
Hospitals, Schools, Institutions of Higher learning, homes for the disabled etc.	60	50
Buildings other than those prescribed in paragraph (i) above	75	65
Residential	60	40

Time Frame:
Day 6:00 AM - 10:00 PM
Night 10:00 PM - 6:00 AM
**The time frame takes into consideration human activity*
These noise standards apply to the construction of the project. During construction of the project, noise generated should not exceed limits prescribed by these regulations.

2.2 International Conventions and Agreements

The following conventions are some of the most relevant to the conservation ofbiodiversity in Uganda:

2.2.1 Convention on Biological Diversity, 1992

In 1993, Uganda became a signatory to the Convention on Biological Diversity,which in Article 8, obliges member states to:

a) Establish a system of protected areas.
b) Develop guidelines for the selection, establishment and management ofprotected areas.
c) Promote the protection of ecosystems, natural habitats and themaintenance of viable populations of species in natural surroundings.

2.2.2 Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)

Uganda is a party to CITES, which obliges member states to adhere to the recommendations of the Conference of Parties with respect to trade in endangeredspecies.

2.2.3 Convention on migratory species of wild animals (CMS)

Realizing that animal migration is a global phenomenon in response to biological requirements, several countries have come together under the CMS, also known as the Bonn Convention, to cooperate in the conservation of animals that migrate across national boundaries and between areas of national jurisdiction and the sea. The Convention aims to improve the status of all threatened migratory species through national action and international Agreements between range states of particular groups of species. Agreements can range from legally binding multilateral treaties to less formal memoranda of understanding. The object of such agreements is to restore the migratory species to a favorable conservation status or to maintain it at that status. The Convention has two appendices: Appendix I lists endangered migratory species, Appendix II lists migratory species to be subject to agreements. It also establishes a scientific council to provide advice on scientific matters.

2.3 The World Bank Environmental and Social Framework

This project is financed by the World Bank and as such, projects financed by the World Bank need to comply with the requirements of the World Bank Environmental and Social Standards (ESS) contained in the Environmental and Social Framework (ESF).

This project triggers ESS1, ESS2, ESS3, ESS4, ESS5, ESS6, ESS7, ESS8 and ESS10 and the table below shows the key provisions of the ESSs.

Table 4: Key Provisions of ESSs

Environmental and Social Standard	Provision
ESS1: Assessment and Management of Environmental and Social Risks and Impacts	ESS1 provides for carrying out an environmental and social assessment of the project to assess the environmental and social risks and impacts of the project throughout the project life cycle. The preparation of this Project Brief is in conformity with ESS1 and also conforms with the Project ESMF, LMP and the WBG EHS General Guidelines.
ESS2: Labor and Working Conditions	ESS2 promotes the fair treatment, non-discrimination provision of equal opportunities and safe working conditions for workers engaged on projects. It strongly encourages protection of all project workers, including vulnerable groups such as women, persons with disabilities, children (of working age) and migrant workers, contracted workers and primary supply workers, as appropriate. It provides certain requirements that the project must meet in terms of working conditions, protection of the work force (especially the prevention of all forms of forced and child labour), and provision of a grievance mechanism that addresses concerns on the project promptly and uses a transparent process that provides timely feedback to those concerned. The project prepared the Labour Management Procedures as well as the OSH Protocols which shall be used to guide the construction of the electric fence in accordance with ESS2. The construction of the live fence shall also be guided by the WBG EHS General Guidelines which contain OHS measures for construction.
ESS3: Resource Efficiency and Pollution Prevention And Management	The ESS3 provides requirements for projects to achieve the sustainable use of resources, including energy, water and raw materials, as well as implement measures that avoid or reduce pollution resulting from project activities. The standard places specific consideration on hazardous wastes or materials and air emissions (climate pollutants) given that the current and projected atmospheric concentration of greenhouse gases (GHG) threatens the welfare of present and future lives. The activity shall adopt the use of plastic poles as one of the measures to address ESS3.
ESS4: Community Health and Safety	This standard recognizes that project activities, project equipment and infrastructure increase the exposure of project stakeholder communities to various health, safety and security risks and impacts and thus recommends that projects implement measures that avoids or limits the occurrence of such risks. It provides further requirements or guidelines on managing safety, including the need for projects to undertake safety assessment for each phase of the project, monitor incidents and accidents and preparing regular reports on such monitoring. ESS4 also provides guidance on emergency preparedness and response. The Occupation Health and Safety Protocols prepared under the IFPA-CD project will guide in addressing the issues related to community health and safety in accordance with ESS4.

ESS5: Land Acquisition, Restrictions on Land Use and Involuntary Resettlement	This standard seeks to avoid involuntary resettlement. ESS5 promotes consideration of feasible alternative project designs to avoid or minimize land acquisition or restrictions on land use, especially where this would result in physical or economic displacement, while balancing environmental, social, and financial costs and benefits, and paying particular attention to gender impacts and impacts on the poor and vulnerable. ESS5 promotes engagement with affected communities, including host communities, through the process of stakeholder engagement described in ESS10. This is applicable as some communities have beehives in the park and will need continued access even after the construction of the electric fence.
ESS6: Biodiversity Conservation and Sustainable Management of Living Natural Resources	ESS6 promotes the conservation of biodiversity or natural habitats and supports the protection and maintenance of the core ecological functions of natural habitats and the biodiversity they support. It also encourages projects to incorporate into their development, environmental and social strategies that address any major natural habitat issues, including identification of important natural habitat sites, the ecological functions they perform, the degree of threat to the sites, and priorities for conservation. Some of the mitigation measures mentioned in this Project Brief are aimed at addressing issues under ESS6.
ESS7: Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities	This standard seeks to ensure that the development process fosters full respect for the human rights, dignity, aspirations, identity, culture, and natural resource-based livelihoods of indigenous peoples. ESS7 promotes sustainable development benefits and opportunities for Indigenous Peoples in a manner that is accessible, culturally appropriate and inclusive. ESS7 is not applicable under this activity.
ESS8: Cultural Heritage	This standard sets out general provisions on cultural heritage preservation and recommends protecting cultural heritage from the adverse impacts of project activities. Although there are no known cultural heritage sites in the direct and indirect influence of the electric fence line, a Chance Find Procedure has been included.
ESS10: Stakeholder Engagement and Information Disclosure	ESS10 seeks to encourage open and transparent engagement with project-affected parties throughout the project life cycle. The standard establishes a systematic approach to stakeholder engagement and helps to identify stakeholders and build and maintain a constructive relationship with them, as well as disclose information on the environmental and social risks and impacts to stakeholders in a timely, understandable, accessible and appropriate manner and format. It recommends that stakeholder engagements are commenced as early as possible in the project development process and continued throughout the lifecycle of the Project. This allows for stakeholders' views to be considered in the project design and environmental and social performance. ESS10 also provides for establishment and implementation of a grievance mechanism to receive and facilitate resolution of concerns and grievances. Various stakeholders were consulted as reflected in the Project Brief (Chapter 6) and more consultations have been planned in accordance with ESS10.

TABLE 5: COMPARISON BETWEEN THE WORLD BANK ESF AND UGANDA'S COUNTRY SYSTEM

Good International Practice	Uganda aligned?	Comments
VISION AND OVERALL GOALS		
Environmental sustainability, including action to support climate change mitigation and adaptation	YES	- Constitution (1995) requires GOU to ensure environmental protection & provides Ugandans a right to clean & healthy environment. - Vision 2040 outlines goals: political, economic, social, environmental, and cultural. Aspires to sustainable socio-economic development that ensures environmental quality and ecosystem resilience. - National Environment Management Policy (1994) calls for sustainable development that maintains and enhances environmental quality & resources to meet needs of present & future generations. - National Land Use Policy, 2007: promote land use that ensure sustainable utilization and management of environmental, natural and cultural resources for national socio-economic development. - Climate Change Policy 2013 promotes harmonised and coordinated approach towards a climate resilient and low-carbon development for sustainable development. Promotes conservation of water, wildlife, forests and fisheries in climate change adaptation and mitigation measures. - NEA 2019 has a variety of clauses (e.g. section 69) requiring promoting of activities that improve climate change resilience, as well as preventing activities that contribute to climate change.
Social development and inclusion, equality, and non-discrimination	YES (in theory) PARTIAL[3] (in practice)	*IN THEORY:* - NEA 2019 defines "environment" broadly to include land, water, air, atmosphere, climate, sound, odour and taste, animals and plants; social factors of aesthetics, health, safety and wellbeing of people and human interaction with both the natural and the built environment; - NEA 2019 5(b) provides for "equitable, gender responsive and sustainable use of the environment and natural resources, including cultural and natural heritage, for the benefit of both present and future generations" - National Gender Policy 1997: mainstreams gender concerns in the national development process to improve social, legal/civic, political, economic, and cultural conditions of Ugandans, particularly women. *IN PRACTICE* - There is still discrimination in labour, especially regarding gender and disability, in large projects, recruitment, and social stigma against persons with HIV/AIDS.[1] - There are still a number of interventions required at every level in the country to better ensure that gender, HIV and AIDS are properly mainstreamed[2].

[1] From UGANDA SRM technical report. Peter Cohen, 2019.
[2] Conclusion from EIA barometer workshop conducted by SAIEA in 2011.
[3] "partial" in this context means alignment is incomplete as there are aspects of practice that are inconsistent with policies and laws

Avoid or mitigate adverse environmental and social impacts, but also maximise benefits	YES (in theory PARTIAL (in practice)	*IN THEORY* - Mitigation hierarchy is explicitly required by the NEA (2019) (section 5.2(j) and further elaborated (section 115) - (avoid, minimize, restore, offsets), but maximizing benefits is not emphasized. Implementation is variable (see later). *IN PRACTICE* - In practice, ESIAs are stronger regarding environmental issues, weaker on social issues, and even weaker on health and gender. - Avoidance and/or mitigation of impacts appears to be relatively well planned and implemented in World Bank and other donor funded projects, but less so for government, parastatals or some private sector projects.
Standard 1: Assessment and Management of Environmental and Social Risks and Impacts		
i. ESIA required for high-risk projects	YES	- NEA 2019 (section 110-4) requires ESIAs for projects likely to have environmental impacts. Projects needing a full EIA are stipulated in Schedule 5. Also requires monitoring and audits - Mining Act, 2003 requires EIAs for exploration and mining (in accordance with the NEA) - Investment Code Act Cap 92 requires every investment licence to take necessary steps to ensure that its business does not cause any injury to the ecology or the environment.
ii. ESIA must include all standard contents (as specified)	YES	- 1999 EIA Regs outline the requirements, which are standard - 1997 EIA guidelines establish three major phases for the EIA; Screening impact study phase and decision making. Process is standard and straightforward.
iii. Country must properly implement ESIA/ESCP/ESMP throughout the project life cycle – following the mitigation hierarchy	YES (in theory) PARTIAL (in practice)	*IN THEORY* - The NEA (2019) (section 5.2(j) explicitly requires the application of the mitigation hierarchy in ESIAs (avoid, minimize, restore, offsets), - Section 49(3) of the NEA requires a proponent to have and implement an "environmental Management System", which seems similar to the more commonly used term ESMP. *IN PRACTICE* - implementation is variable – good in the case of donor or Bank funded projects, but modest to poor otherwise.
iv. ESIAs must include consideration of alternatives and good stakeholder engagement	YES (in theory PARTIAL (in practice)	*IN THEORY:* - The NEA (2019) requires the considerations of alternatives in ESIAs. Also, the 1998 regulations section 7(1) (k) (project brief), section 13(2) (g) (scoping), 14 (1)(h)(k) (ESIA contents) all require consideration of alternatives. *IN PRACTICE* - See ESS10 for discussion on stakeholder consideration - Consideration of alternatives appears to be relatively good for World Bank and other donor funded projects, but less so for government, parastatals or some private sector projects.

ESIAs must especially consider risks to human security, escalation of conflict, violence and crime; esp. for vulnerable people	NO	- Human security is not explicitly covered by the NEA 2019, and the 1998 regulations also do not refer to issues such as risks to human security, escalation of conflict, violence and crime or violence.
ESIA must also consider risks and impacts associated with the project´s primary suppliers	NO	- Not covered by the NEA nor regulations
ESCP and ESMP must allow for adaptive management if a project changes or there are unforeseen circumstances.	PARTIAL	- Current legislation allows for a licence to be withdrawn if implementation is not acceptable to the authorities, but the process enabling adaptive management is unclear. - Adaptive management has been evident in World Bank and other donor funded projects, but less so for government, parastatals or some private sector projects.
- ESCP and ESMP must be monitored for compliance and effectiveness	YES (in theory) PARTIAL (in practice)	IN THEORY Section 28 of NEA Regs allow for cancellation of approved ESIA at any time where - there is non-compliance with conditions in the certificate; - where there is a substantial modification of the project - where there is a substantive undesirable effect not contemplated in the approval. - A revocation under sub-regulation (1) shall lead to the automatic cancellation of the certificate issued under paragraph (c) of regulation 26. - (3) Where a certificate of approval is cancelled under sub-regulation (2) the developer shall stop further development pending rectification of adverse impact. IN PRACTICE - In practice the mandated institutions have limited resources to undertake monitoring, and, with some exceptions, monitoring and compliance assessment is inadequate or absent. In most cases, there is disproportionate reliance on the proponent to self-monitor and report. - Monitoring takes place for World Bank and other donor funded projects, but less so for government, parastatals or some private sector projects.
External/3rd party experts should be used to verify above	NO	Independent review is not specifically required under the existing EIA Regulations4 and as a result EIAs are commonly reviewed by Government agencies and other key stakeholders relevant in the sector under which the proposed project falls;
x.Country must have adequate technical institutional capacity and legal mandate to implement ES1	PARTIAL	The mandated institutions have limited resources to undertake monitoring, and, with some exceptions, monitoring and compliance assessment is inadequate or absent. In most cases, there is disproportionate reliance on the proponent to self-monitor and report. Monitoring takes place for World Bank and other donor funded projects, but less so for government, parastatals or some private sector projects.

[4] Though this is partially rectified in the proposed draft 2018 ESIA regulations

Standard 2: Labour and Working Conditions		
i. Must be adequate safety and health at work.	YES (in theory)	*IN THEORY* - National Industrial Policy 2008 provides strategies for OHS. - Workers Compensation Act, 2000 provides for the provision of financial compensation for work related injury or illness. - Occupational Safety and Health Act of 2006 consolidates, harmonizes and updates the law relating to occupational safety and health. It requires that every factory is clean, including floors, walls, workrooms, ceiling or top of rooms.[5]
	PARTIAL (in practice)	*IN PRACTICE* - There is still no policy to guide its implementation of the Occupational Safety and Health Act (2006). This, along with the poor staffing and funding of MoGLSD, has left many workers in unsafe working conditions. - There are conflicts between the mandates in the OSH and the Physical Planning Acts. There is also limited coordination between DOSH, Police, and Ministry of Health on data collection and oversight of OSH compliance in the workplace.[6] - The Auditor General (2016), reports a low rate of inspection and many workers continue to work in precarious conditions at risk of occupational diseases and accidents[7]. - HS practices are in place for World Bank and other donor funded projects, but less so for government, parastatals or some private sector projects.
ii. Must be fair treatment, non-discrimination and equal opportunity of project workers.	YES (in theory)	*IN THEORY* - Article 31(b) of Constitution guarantees (inter alia) gender equality and labour rights, and equal opportunity in political, economic, and social activities, including through affirmative action. - Vision 2040 prioritises gender equality - National Development Plan II (2015-2020) prioritises the mainstreaming of women's empowerment and gender equality in key sectors. - Domestic Violence Act (2010) ensures protection of women from acts or omissions that may harm them. The 2012 Regulations of the 2006 Employment Act prohibit sexual harassment in the workplace.
	PARTIAL (in practice)	*IN PRACTICE* - Employment laws have weak or non-existent penalties for violations. Sections 43 to 46 of the Employment Act No 6 (2006) address the payment of wages and outlaws the making of certain deductions from an employee's pay but offers no remedy for non-compliance in the timely payment of wages or for unlawful deductions. Section 53 of the Act sets the maximum acceptable working hours per day and per week but, with exception of overtime, the law provides no remedy for workers who are obliged to work beyond even 10 hours a day. Section 59 of the Act requires employers to provide written particulars (i.e., contracts) to their employees, but provides no penalty/fine for failures to do so.[8]
iii. No forced or child labour.	YES (in theory)	*IN THEORY* - The Employment Act (2006) (*inter alia*) prohibits the use of child labour - Labour policies that specifically address Gender and Vulnerability include the 2012 Employment (of Children) Regulations, 2012 Employment (Sexual Harassment) Regulations, National Gender Policy, National Action Plan on

[5] From Uganda Social Risk Management (SRM) Technical Paper (2019).
[6] Ibid.
[7] Ibid.
[8] Ibid.

	NO (in practice)	Elimination of the Worst Forms of Child Labour in Uganda (2012/13-2016/17), and National Policy on HIV/AIDS and the World of Work (2007). *IN PRACTICE* - No applicable legislation on a minimum wage. - Section 32 of the Employment Act contradicts other Ugandan laws, by allowing for the employment of children aged 14 for "light work" under adult supervision (in contradiction to Section 7 of the Children (Amendment) Act (2016) which sets the employment age at 16). - The Employment Act fails to clearly define hazardous employment. - The legal framework also fails to provide express punitive penalties for those found in violation of laws prohibiting the employment of minors, contributing to high school dropout rates, teenage pregnancies and health issues as children find work on project sites.[9]
iv. Must be freedom of association and collective bargaining of project workers consistent with national law.	YES (in theory) PARTIAL (in practice)	*IN THEORY* - National Constitution (1995) guarantees, in its Objective XIV(a), the right of all Ugandans to (inter alia) freedom of association, the right to collective bargaining, and paid vacation (Chapter Four). These and other rights are detailed in a set of laws that includes the Employment Act (2006), Workers' Compensation Act (2000), NSSF Act (1985), Labour Unions Act No 7 (2006), and Labour Disputes (Arbitration and Settlement) Act (2006), Occupational Safety and Health Act (2006). *IN PRACTICE* - Inadequate political space/bargaining power for ethnic minorities and historically disadvantaged groups[10] - The casual nature of employment affects unionization, as employees paid per day are unable to make the monthly check off in support of union activities. On an individual level, employers have also deployed legal machinery to delay and subsequently deny access to justice, especially for vulnerable workers[11].
v. Project workers must have accessible means to raise workplace concerns.	PARTIAL (in practice)	See below
vi. Protect project workers, including women, disabled, children (of working age) migrant workers, contracted workers, community workers and primary supply workers, as appropriate.	YES (in theory) PARTIAL (in practice)	*IN THEORY* - The Employment Act (2006) seeks to harmonise relationships between employees and employers, protect worker's interests and welfare, and safeguard their occupational health and safety. It provides guidance on the types of labour and conditions under which a person may be hired for project works, defines workers' rights in the construction and post-construction phases, and prohibits sexual harassment, the use of child labour, and discrimination in recruitment and payment of wages based on gender, race, colour, religion, political affiliation, HIV/AIDS status, and disability. - The Labour Disputes (Arbitration and Settlement) Act (2006) provides for the establishment of a strong Industrial Court with more effective and expeditious disputes resolution procedures to reduce the length of dispute settlements. The Act seeks to promote social dialogue, facilitate collective bargaining, and modernise procedures to address unresolved or mismanaged labour disputes that may have adverse effects. - The 2011 Employment Regulations deter employers from the casualization of labour by granting contractual/permanent rights to any worker exceeding four (4) months of service. Having a more permanent workforce across the project cycle also reduces the risk of labour influx.[1] *IN PRACTICE*

[9] Ibid.
[10] Ibid.
[11] Ibid.

		- Most workers are either undocumented or on casual employment, allowing employers to deny them access to rights (annual leave, weekly rest, overtime pay…) and exploit them. This is common in construction projects, partly because of the temporary nature of works. - Whereas Regulation 39 of the 2011 Employment Regulations sets a ceiling on casual employment of 4 months and requires that employees thereafter be given written contracts and entitled to all benefits provided by law, this is rarely followed, due to low capacity in MoGLSD to inspect workplaces and enforce these provisions.[12] - In practice, adherence is inconsistent – depending on the project, proponent, and funder.
vii. Written, clear and understandable contracts in place for project workers	YES (in theory) PARTIAL (in practice)	*IN THEORY* - Employment Act 2006 is the governing legal statutory instrument for the recruitment, contracting, deployment, remuneration, management, and compensation of workers. Mandates Labour Officers to regularly inspect the working conditions of workers to ascertain that the rights of workers and basic provisions are provided, and workers' welfare is attended to. *IN PRACTICE* - Adherence is inconsistent – depending on the project, proponent, and funder.
viii. Grievance mechanisms in place	YES (in theory) PARTIAL (in practice)	See vi
ix. Borrower ensure third parties who engage contracted workers are legitimate/reliable and have applicable labour management procedures	YES (in theory) PARTIAL (in practice)	See vi
Standard 3: Resource Efficiency and Pollution Prevention and Management		
i. Promote the sustainable use of resources, e.g. energy, water and raw materials.	YES	- NEA 2019, Section 5 (d) includes the principle that there shall be "optimum sustainable yield in the use of renewable natural resources" - 2011 EIA Guidelines for water resources related projects assist planners, developers, practitioners safeguarding water resources through EIAs. - Land Act Cap 227 obliges any person who owns or occupies land to manage and utilize it in accordance with the Water statute, the National Environment Act, the Forest Act and any other law.
ii. Avoid or minimize adverse impacts on human health and the environment by avoiding or minimizing pollution from project activities	YES (in theory) PARTIAL (in practice)	*IN THEORY* - National Water Policy, 1999: promotes integrated water resources management. Stipulates that drainage water shall not pollute surface or ground water, prevent increase in salinity levels, prevent soil pollution. - Water Act cap 152: Provides for use, protection, supply, management of water; establishes water and sewerage authorities, facilitates devolution of water and sewerage undertakings. Regulations are: Water Resources Regs (1998), Water Supply Regs (1998), Waste Water Discharge Regs (1998), Sewerage Regs (1999). - Public Health Act Cap 281 requires every local authority to take measures for preventing any pollution dangerous to public health. *IN PRACTICE* - Pollution remains a significant problem throughout Uganda (air, soil, water and noise). As with most other safeguards, adherence to best practice is relatively good for bank or donor funded projects, and those of stock-exchange listed companies, but poor when it comes to smaller proponents,

[12] Ibid.

		many government projects and where contractors from some countries are involved.
iii. Avoid or minimize project-related emissions of short and long-lived climate pollutants	YES	- NEA 2019, section 69 deals extensively with climate change, while Section 5(s) includes (inter alia) the principle that in the implementation of public private and projects, approaches that increase both the environment and people´s resilience to impacts of climate change, are prioritized; - NEA 2019, Section 6 creates a Parliamentary Committee on Environment to (*inter alia*) provide guidance in the formulation and implementation of environmental and climate change PPPs. Section 9(2)(a) empowers NEMA to advise on the formulation of such PPPs
iv. Avoid or minimize generation of hazardous and non-hazardous waste.	YES (in theory)	*IN THEORY* - Agricultural Chemicals (Control) Act, No. 1 of 2006 controls and regulates the manufacture, storage, distribution, and trade in, use, importation and exportation of agricultural chemicals - Uganda is a Party to the Rotterdam Convention on Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade.
	PARTIAL (in practice)	*IN PRACTICE* - There are still a number of challenges (e.g. in the mining sector) regarding hazardous waste management, especially in artisanal mining where the chemicals are not well regulated, and workers are not adequately protected from chemical risks. Not enough is being done by government, the private sector, CSOs and other stakeholders to raise awareness. There is widening gap between CSOs and government and the private sector, making it difficult for the establishment of a cordial working relationship[13]. - The oil and gas industry in Uganda has been using various chemicals during exploration and production. There are ongoing pollution concerns. - There is a general lack of awareness among consumers and collectors of the potential hazards of e-waste to human health and the environment[14]. - It is estimated that only 20-30% of the solid waste generated in Kampala is collected and disposed of properly.
v. To minimize and manage the risks and impacts associated with pesticide use	YES (in theory)	*IN THEORY* - Crop Protection Department in the Ministry of Agriculture, Animal Industries and Fisheries for plant pest prevention or eradication programmes. The department is also responsible for enforcing regulations on registration and the use of pesticides and other agrochemicals. - Agricultural Chemicals Control Board (ACB) regulates herbicides and pesticides - District Agricultural Officers and District Fisheries Officers are responsible for the surveillance and monitoring with regards to pest management and pesticide use chain. - There are several NGOs that monitor pest management.
	PARTIAL (in practice)	*IN PRACTICE* - Whilst there are no gaps between international good practice on pest management and the Ugandan legal system, there are no comprehensive regulations to guide the implementation of the various Acts. This hampers the control of the use of damaging pesticides[15].
Standard 4: Community Health and Safety		

[13] https://www.nape.or.ug/publications/chemical-management/7-chemical-management-booklet-2014/file.

[14] Wasswa and Schluep 2008.

[15] 2015 safeguards diagnostic report.

i. Anticipate and avoid adverse impacts on the health and safety of project-affected communities during the project life cycle from routine and non-routine circumstances.	YES (in theory) PARTIAL (in practice)	*IN THEORY* - Health and wellbeing are strongly articulated in the Constitution of Uganda and these principles have been carried through to the environmental policy and the NEA; - The EIA Regs require NEMA to send a Project Brief and/or EIA to lead agencies for comments. Lead agencies vary by activity and sector so a health-related project (or one with major health implications) is sent to the Ministry of Health (MoH). - Relevant sector legislation includes the Employment Act, No 6 of 2006, the Occupational Safety and Health Act, No 9 of 2006 and the Workers Compensation Act, No 8 of 2000. - EIA regs specifically require EIAs to consider health issues - 2008 Guidelines for OHS, Including HIV provide a framework for workplace health & safety for all workers within the health sector. - HIV/AIDS Policy 1992: recognizes HIV/AIDS is a risk in infrastructure projects, encourages employers to develop in house HIV/AIDS policies, provide awareness and prevention measures to workers and avoid discriminating against workers with HIV/AIDS. - National Health Policy, 2010 requires GOU to address increasing burden of water borne diseases associated with safe and clean water, hygiene and environmental sanitation. - MoGLSD has a Directorate of Labour, Employment, Occupational Safety and Health, and is responsible for implementation of Labour policies and laws. *IN PRACTICE* - Health and safety issues are generally taken care of in World Bank and donor funded projects, but less so otherwise - Most EIAs conducted focus mostly on environmental issues, with social and health issues receiving considerably less attention. - As in other countries, while the impacts of the project on the receiving environment are assessed in the EIA, issues around occupational health and safety at the workplace are often neglected because worker and workplace health are considered under separate bodies of law
ii. Promote quality and safety, and considerations relating to climate change, in the design and construction of infrastructure, including dams.	PARTIAL	- 2019 NEA provides for emerging environmental issues including climate change - Principle 5(s) of the NEA requires that in the implementation of public and private projects, priority must be given to approaches that increase both the environment and people´s resilience to the impacts of climate change. - Article 69 of NEA deals specifically with managing climate change impacts on ecosystems. The NEA requires ESIAs for Hydro-power generation facilities; including dams with an installed capacity of more than 1 megawatt, the construction of valley dams and valley tanks where the threshold is 1,000,000 m^3 or more. - The NEA establishes the Policy Committee on Environment, whose responsibilities include providing guidance in the formulation and implementation of environmental and climate change policies, plans and programmes (PPPs) - The NEA establishes NEMA, whose functions include advising on the formulation and implementation environmental and climate change PPPs; - Uganda has a National Policy for Disaster Preparedness and Management and makes disaster preparedness and management an integral part of the development planning process. The policy calls for community participation, public awareness and education, institutional capacity building, adequate expertise and technology, vulnerability analysis, human rights observance, social, environment and economic costs, climate change, partnership and coordination and regional and international partnerships. - The Uganda National Climate Change Policy 2013 aims at ensuring a harmonised and coordinated approach towards a climate resilient and low-carbon development path for sustainable development in Uganda. It seeks to promote and strengthen the conservation of water, wildlife, forests and

		fisheries in climate change adaptation and mitigation measures. but there is no legal framework for implementing the Policy. - However, there are substantive gaps between the international good practice requirements on the Safety of Dams and the Ugandan regulatory framework. There are inadequate competent professionals to design and supervise the construction of dams and implementation of dam safety measures through the project cycle. There is also no strong institution to regulate the safety of dams in Uganda.[16]
iii. To avoid or minimize community exposure to project-related traffic and road safety risks, diseases and hazardous materials.		See 4i and 4ii
iv. To have in place effective measures to address emergency events.		See 4i and 4ii
v. Ensure safeguarding of personnel and property carried out in a manner that avoids or minimizes risks to project-affected communities.		See 4i and 4ii
vi. Ecosystem services (provisioning and regulating) not compromised	YES (in theory) PARTIAL (in practice)	*IN THEORY* - The Constitution (1995) requires GOU to ensure environmental protection & provides Ugandans a right to clean & healthy environment. - Section 4(1) of the NEA (2019), proclaims the "nature has the right to exist, persist, maintain and regenerate its vital cycles, structure, functions and its processes in evolution". Section 4(2) provides that "a person has a right to bring an action before a competent court for any infringement of rights of nature - The NEA (Art 44) empowers the Minister of the Ministry of Water and Environment (MoW&E) to prepare a National Environment Action Plan (NEAP) which will include in clause (3)(h) the maintenance of ecosystem services and measures for preventing, reversing, or mitigating any deleterious effect. - In 2011, the MoW&E set up the Environment Protection Police Unit (EPPU) to enforce environmental laws and prevent the degradation of protected areas. The functions of the EPPU are wide-ranging and include (inter alia) monitor and enforce compliance with laws regarding the protection and maintenance of ecosystem services. - The National Environment (Wetlands, Riverbanks and Lake Shores Management) Regulations, 2000 highlight the importance of wetlands and other water bodies in the maintenance of a healthy ecosystem and state that they should be protected from the negative effects of development projects. Under Regulation 5, EIA is mandatory for all activities in wetlands that could have an adverse impact. Regulation 8 provides for declaration of certain wetlands as fully protected wetlands because of national or international importance for biodiversity, ecology, natural heritage, or tourism, and it prohibits all activities in such wetlands except for research, tourism, or restoration or enhancement. Various of the regulations require protection zones of between 30 and 200 meters along riverbanks and lake shores and state that no activity shall be permitted in the protection zones without the

[16] 2016 safeguards diagnostic report.

		approval of the NEMA Executive Director. Local government environmental officers have a duty to assist in implementation of the regulations. - Art 54 of NEA 2019 (wetland management) requires the lead agency to identify wetlands of local, national, and international importance as ecosystems and habitats of species of fauna and flora - Art 67 of NEA 2019 (payment of ecosystem services) empowers NEMA to issue guidelines and prescribe measures and mechanisms for (*inter alia*): - identifying and valuing ecosystem services that are critical for the environment and human well-being; - the instruments and incentives to generate, channel, transfer and invest economic resources for the conservation, restoration, and sustainable use of the sources of ecosystem services; and - the criteria for the design of payment for ecosystem schemes that ensure ecosystem sustainability. *IN PRACTICE* - Wetland cover decreased from 13 per cent in 1990 to 8.6 per cent in 2015. It is estimated that Uganda loses 846 km^2 of its wetlands annually. - Fish production is depleted due to overfishing, illegal fishing gear and invasive species. - Most rural water samples do not comply with national drinking water quality standards. - Soil fertility is compromised because of nutrient mining, loss of soil cover and organic matter, low rainfall infiltration and soil compaction. - Within protected areas, most wildlife populations are stable, but human-wildlife conflicts have increased because of habitat degradation, growth in urban settlements, agriculture expansion, and infrastructure developments. Other threats are illegal wildlife trade and alien invasive species. - Cultural sites are threatened by quarrying, agriculture, and erosion. - Natural forest cover has been declining because of agriculture, charcoal and wood fuel demand, infrastructure development, and excessive harvesting. - Rangelands are under pressure from crop production, overgrazing, privatization of the communal rangelands and invasive species.[17]
vii. Safety of dams must be ensured		See 4ii
Standard 5: Land Acquisition, Restrictions on Land Use and Involuntary Resettlement		
i. Avoid involuntary resettlement & forced eviction: When unavoidable, minimize by exploring project design alternatives	YES (in theory) PARTIAL (in practice)	*IN THEORY* - 1995 Constitution guarantees protection of private property rights and the Government's power to compulsorily acquire private land for public use or in public interest. The terms "public use" and "public interest" however, are not clearly defined, leaving room for varied interpretations. - Article 237(3) establishes four distinct land tenure systems, but these multiple regimes require multiple approaches to compensation for land. *IN PRACTICE* - The law does not, however, define any corresponding tenure-specific approaches to land acquisition or compensation, which has resulted in contested compensation processes in practice[18].

[17] National State of Environment Report 2016-7.
[18] See UGANDA SRM technical report. Peter Cohen, 2019.

i. Mitigate impacts from land acquisition or restrictions on land use by providing timely compensation for asset loss at replacement cost and assisting displaced persons to improve or restore, their livelihoods and living standards, to pre-displacement levels or to levels prevailing prior to beginning of project implementation, whichever is higher.	YES
	(in theory)
		IN THEORY
		- The Land Acquisition Act Cap 226 governs compulsory acquisition of land for public purposes in addition to the Art 26 (2) of Constitution of Uganda and S. 42 and S.77 of the Land Act.
		- Compensation and resettlement rights of spouses and children are protected under the Constitution and Land Act (Cap 227). The consent of spouse and children must be acquired prior to any transaction by head of households on land on which the family lives.
		
		IN PRACTICE
		- Above Land Acquisition Act contradicts the Constitution on several points. Law does not recognise other rights to land (e.g., the right to farm, build, hold a mortgage, occupy and grant use to another) nor the eligibility of renters, licensees, informal settlers or users of public lands for compensation when the land on which they reside or operate is compulsorily acquired, occupation or use is less than 12 years, or occupants/users have ignored calls to leave.
		- No legal requirement in cases of land acquisition to set a cut-off-date after which people moving into a project area are no longer entitled to compensation, regulate the management of the displacement and resettlement of project-affected persons, prioritise avoidance and minimisation of land acquisition, require the special protection of vulnerable persons, require the conducting of socio-economic and cultural studies or the undertaking of stakeholder consultation, participation, and information sharing, or define the social development aspects of the resettlement process[19].
		- In some case studies, resettled people were not assisted to resettle in their new communities; the resettlement policy does not have regard to the impact of the new community in which the resettled person has been resettled to[20]
		- The 2016 Safeguard Diagnostic Report listed (*inter alia*) the following as gaps between WB requirements and Ugandan laws:
		  - Ugandan laws do not appear to make provisions for avoidance or minimizing of involuntary resettlement
		  - The legal right to resettlement is applicable to only those with propriety interest in the affected land. Entitlement for payment of compensation is essentially based on the right of ownership or legal user/occupancy rights.
		  - In Uganda law those without formal legal rights or claims to such lands (e.g. tenants) are not entitled to be resettled or compensated.
		  - Those without formal legal rights or claims to such lands and/or semi-permanent structures are not entitled to resettlement assistance or compensation.
		- The 2019 SRM Technical report identified the following weaknesses:
		  - Outdated, incomplete and/or overlapping laws and regulations, and lack of a clear and comprehensive national policy and guidelines;
		  - Weak institutional arrangements and unclear mandates, roles, and responsibilities;
		  - Multiple tenure regimes with no corresponding specific acquisition procedures;
		  - Lack of provisions for avoiding or minimising involuntary resettlement or ensuring that it occurs prior to displacement or restriction of access;
		  - Lack of clear eligibility criteria for compensation and social support;
		  - Prevalence of cash compensation, with no clear provisions for other forms of compensation (relocation assistance, transitional support or civic infrastructure…);
		  - Failure to pay compensation at full replacement cost;

	PARTIAL (in practice)	

[19] Ibid.

[20] 2016 Diagnostic Assessment Report of Uganda's Environmental and Social Safeguards Management Systems.

		- Budget shortfalls, leading to delays, negative social impacts, and non-payment of compensation - Inadequate and ineffective stakeholder engagement, community participation, and social accountability, GRM, and monitoring and evaluation; - Lack of systematic engagement with civil society or private sector actors (thereby foregoing the benefits of third-party monitoring and guidance); and - Inadequate inclusion of women and vulnerable groups.
Improve living conditions of poor or vulnerable persons who are physically displaced, through provision of adequate housing, access to services and facilities, and security of tenure.	PARTIAL	See 5 ii
To conceive and execute resettlement activities as sustainable development programs, providing sufficient investment resources to enable displaced persons to benefit directly from the project, as the nature of the project may warrant.	PARTIAL	See 5 ii
v. Ensure resettlement planned and implemented with appropriate disclosure of information, meaningful consultation, and informed participation of I&APs	PARTIAL	See 5 ii
Standard 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources		
i. To protect and conserve biodiversity and habitats.	YES	- The Constitution (1995) requires GOU to ensure environmental protection & provides Ugandans a right to clean & healthy environment. - Section 4(1) of the NEA (2019), proclaims the "nature has the right to exist, persist, maintain and regenerate its vital cycles, structure, functions and its processes in evolution". Section 4(2) provides that "a person has a right to bring an action before a competent court for any infringement of rights of nature - Wildlife Act Cap 200 provides for sustainable management of wildlife, to consolidate laws relating to wildlife management, establishes the Uganda Wildlife Authority, requires developers doing projects which may affect wildlife to undertake EIAs - Wildlife Policy, 2014 aims at conserving wildlife in a manner that contributes to SD and wellbeing of people. Includes management of wildlife protected areas. - Forestry and Tree Planting Act (2003) provides for the conservation, sustainable management and development, and use of forests for the benefit

		of the people. It provides that the forests shall be developed and managed so as to conserve natural resources, especially soil, air and water quality - Forestry Policy 2001 seeks to establish an integrated forestry sector that achieves sustainable increases in the economic, social and environmental benefits from forests and trees by the people of Uganda, especially the poor and vulnerable. One of the strategies is to promote the rehabilitation and conservation of forests that will protect the soil and water in the country's key watersheds and river systems.
Where biodiversity impacts likely, apply mitigation hierarchy and precautionary approach in project design & implementation	YES (in theory) PARTIAL (in practice)	*IN THEORY* - Mitigation hierarchy is explicitly required by the NEA (2019) (section 5.2(j) and further elaborated (section 115) - (avoid, minimize, restore, offsets), but maximizing benefits is not emphasized. Implementation is variable (see later). *IN PRACTICE* - implementation is variable – good in the case of donor or Bank funded projects, but modest to poor otherwise. - Even though screening of projects is undertaken by NEMA at an early stage to identify potential biodiverse areas, political interference puts certain natural habitats at risk especially wetlands and forests.[21] - According to NEMA, members of the district land boards are a significant contributor to environmental degradation especially of wetlands where local governments have been issuing land titles in designated wetlands in contravention of conservation laws[22].
Promote sustainable management of living natural resources.	YES (in theory) PARTIAL (in practice)	*IN THEORY* - See 6 i - Policy for the Conservation & Management of Wetlands, 1995: seeks to maintain diversity of uses and users when using wetland resources. Include maintaining biodiversity of natural or semi-natural wetlands. - Fisheries Policy, 2004 aims at developing cooperation with neighbours on management of shared water bodies, and stocking to improve fisheries diversity and productivity. *IN PRACTICE* See 4 vi
Support livelihoods of local communities, including Indigenous Peoples	YES (in theory) PARTIAL (in practice)	*IN THEORY* - See 7 regarding IPs - National Land Policy 2013 is aimed at ensuring efficient, equitable and optimal and sustainable utilization and management of land resources for poverty reduction, wealth creation and socioeconomic development. *IN PRACTICE* See 4 vi
v. Seek inclusive economic development that integrates conservation needs and development priorities.	PARTIAL	- Local Government Act Cap 243 defines roles for different levels of governance for water related services and activities. Especially the provision of water services and maintenance of facilities is the responsibility of local councils in districts and urban centres with the support and guidance of relevant central government agencies.

[21] 2017 ESSA unpublished report (compiled for the World Bank by Cutler and Srivastava).
[22] Ibid.

CHAPTER 3

3.0 BIOPHYSICAL AND SOCIO-ECONOMIC BASELINE

3.1 Introduction

Although the project will be implemented in some specific areas along the park boundary, the environment and social baseline of the whole Murchison Falls Protected Area has been considered in order to give a general picture of the project site.

3.2 Fauna

MFNP has a total of 109 mammal species. 54 of them are of large mammal species (excluding rats, bats, shrews and nocturnal primates) among which there is one near-endemic species, five threatened species (Critically endangered, Endangered, Vulnerable) and 21 IUCN Red-listed species requiring conservation measures and/or surveys/studies to further understand their status (Plumptre et al., 2010). Based on various census results, animal populations in MFNP are steadily increasing. Elephants, Uganda kobs, giraffe, warthogs, hartebeest and waterbucks among others all show a positive recovery trend.

The larger mammals have the largest impact on the ecosystem yet form the main attraction for tourists. They are *Loxodonta africana* (Elephant), *Hippopotamus amphibius* (Hippopotamus), *Syncerus caffer* (Buffalo), *Giraffa camelopardalis rothschildii* (Giraffe), *Kobus kob* (Uganda kob) *Kobus ellipsiprymnus* (Waterbuck) and *Alcelaphus buselaphus* (Hartebeest). Other larger mammals include *Redunca redunca* (Bohor reed buck), *Tragelaphus scriptus* (Bushbuck), *Tragelaphus spekii* (Sitatunga), *Phacochoerus aethiopicus* (Warthog) and *Potamochoerus porcus* (Bushpig). The large carnivores are *Panthera leo* (Lion), *Panthera pardus* (Leopard) and *Crocuta crocuta* (spotted hyena).

The PA harbors six species of primates including *Colobus guereza* (black-and-white colobus) and *Pan troglodytes* (chimpanzee). Most of these with exception of vervet monkey and Olive Baboon live in dense woodlands and forests.

There are 476 identified bird species in the MFNP, 7 of which are threatened and 10 are included in the IUCN Red list (MFNP GMP, 2012). Some of these species are migratory, rare, threatened and endangered. The birds are categorized into aquatic and terrestrial species with specially adapted physiology suiting those areas. The parleatic birds (transcontinental) e.g. Yellow wag tail, Horse prey (Finland tagged leg) and Swift come around December to roost in MFNP during inclement winter weather in Europe and fly back in March. The rare *Balaeniceps rex* (Shoebill stock) and the *Ephippiorhynchus senegalensis* (Saddle billed stork) both breed within the park. The rarely observed *Scotopelia peli* (Pel's fishing owl) is found around the placid waters below the falls. Characteristic birds of the savannas are the gregarious *Ciconia abdimii* (Abdimin's stork) and the *Bucorvus abyssinicus* (Abyssinian ground hornbill) (MFNP GMP, 2012). The area where the electric fence will be constructed is visited by most of the wildlife and these disperse to the neighboring areas outside the park.

3.3 Flora

The tropical high forest of Budongo, dominated by *Cynometra alexandri* and *Celtis wightii,* extends down into the protected area in a few patches in Bugungu Wildlife Reserve, and in

Kaniyo-Pabidi Forest within Karuma Wildlife Reserve and Rabongo Forest in MFNP. In the earlier part of this century, fingers of the forest extended as far as the Nile, but under the influence of elephants and fire, these were destroyed by the 1960s. The 'mixed tree and shrub savanna', covering an extensive area south of the Nile, has undergone great transformation over the last half-century. Once dominated by *Terminalia glaucescens* and *Combretum collinum*, this vegetation type was completely eradicated by elephants and fire to create huge tracts of grassland (Laws et al., 1975).

Following the near elimination of elephants from the ecosystem, woodlands and thickets regenerated throughout the southern part of the PA, and are characterized by *Philenoptera laxiflora* (Syn: *Lonchocarpus laxiflorus*), a preferred elephant food that has become the dominant species in the absence of browsing. Most woodlands south of River Nile are now *Terminalia-Combretum-Piliostigma* dominated with *Philenoptera* in the mid-storey (Kalema, 2003; Namaganda & Kalema, 2003; Kalema 2005) *Kigelia africana* and *Balanites aethiopum* are notable tree species still thinly scattered over the savanna areas.

Throughout the wetter eastern and southern parts of the PA, the grass layer is dominated by *Hyperrhenia dissoluta, Hyparrhenia filipendula* and *Loudetia arundinacea*, plus other fire climax grass species which grow to 1-3 m in the wet season, forming fuel for the hot fires which sweep through the park during the driest season. The grasslands in the Buligi circuit are dominated by *Hyperthelia dissoluta*, *Sporobolus pyramidalis* and *Ctenium newtonii*. *Chloris gayana, Chamaecrista mimosoides, Brachiaria brizantha* and *Andropogon schirensis* are also abundant. Here, woody vegetation is characterized by thickets of *Harissonia abyssinica, Combretum aculeatum* and *Acacia senegal*. *Cadaba farinosa* is usually frequent. *Marsdenia rubicunda* is the most frequently occurring climber while species of *Capparis* are common scrambling species. Succulent *Sansevieria* spp. are a common occurrence under the shade conditions of the tangle. *Chloris gayana*, *Brachiaria* spp. and *Hyperthelia dissoluta* are usual species in the grass layer (Kalema, 2011).

In Uganda, the largest stands of *Borassus aethiopum* palms occur in the northern part of MFNP. This species is very slow regenerating because of long dormancy periods, and younger trees need a period free of fires to survive and form a stem. Elephants are very fond of the fruits and could have played a major role in dispersing it across the savannas. Also, in the north is the Pandero woodland, a unique relict community comprised of *Terminalia glaucescens, Prosopis africana* and *Combretum adenogonium* (Syn. *Combretum ghasalense*). However, following years of elephant and fire damage, most of the older trees are dead and are being replaced by *Philenoptera*. Given adequate protection from fire, the woodland may yet recover.
In these various vegetation types, a number of plant taxa rare in Uganda and even beyond have been recorded, e.g. *Chasmopodium caudatum*, *Panicum phragmitoides*, (Kalema 2003, 2006; Namaganda & Kalema 2003, Kalema 2005).

The 20 kilometers proposed in Nwoya district will be constructed in an area which is mostly grassland. However, in some areas it will be crossing some streams, wetlands and woodlands.

3.4 Geology and Landscapes

Murchison Falls Protected Area lies at the northern end of the Albertine Rift Valley, and takes in part of the valley floor, and part of the eastern escarpment. The valley bottom is composed of sandy alluvial sediments which are easily eroded, as is seen along the banks of the Nile below the Falls. In the southern part of the protected area, in Bugungu WR, the Western Rift

Valley escarpment rises 100 meters over the valley floor to provide spectacular views of Lake Albert.

Above the escarpment, extending over the eastern part of the Park is the original basement complex of gneisses and granites. These ancient rocks are deeply weathered, forming red loamy soil of low to medium fertility. Nearer the Rift, much of this weathered rock has been stripped away and the soils are shallow and poor. Many of the soils in the park are lateritic, rich in iron deposits either in the form of gravel or as solid ironstone.

3.5 Socio-economic Environment

3.5.1 Tourism

Tourism is an important generator of foreign exchange, employment and investment. In recent times, there has been increased investment in tourism, particularly in travel, accommodation, and related facilities which has enhanced tourists' experience in the country. MFNP is currently the most visited national park in Uganda with an average 65,000 annual visitors (UWA, 2019).

3.6 Baseline information for specific sections to be fenced

The following section highlights the baseline conditions of the 4 sections to be fenced. This includes the physical challenges that may be faced while the project is being constructed. Mitigations to minimize these challenges are covered in the subsequent chapters.

The proposed sites for electric fence were identified based on the frequency of crop raids and other HWC incidences reported in those locations. Consequently, a feasibility assessment was carried out in 2022 and no major challenges were identified.

Table 6: Site specific assessment of areas to be fenced

DISTRICT	**KIRYANDONGO**			
Site Name	Rwamudopio- Chopelwo			
Date of assessment	20th July 2022			
Length	30kms			
FEATURE TYPE	**DESCRIPTION (e.g. Frequency, status, etc.)**	**Possible Risk**	**RECOMMENDED MITIGATION (If required)**	**SUITABILITY SCORE (1 = poor, 5 = excellent)**
Vegetation cover	The vegetation are shrubs interspersed with emergent trees.	The risks are limited to minimal disturbance of the vegetation along the fence line	• Limit clearing to only a few meters from thefence line • Cut only trees that will affectthe fence line.	4
Relief (e.g. erosion risks, storm runoff, etc.)	The area is generally flat with a few rivers draining into the reserve namely Wambabya and Titi Rivers	There is no risk of erosion and storm water. However, along the rivers the areas may flood during the rainy season that	• Construction shall be done during the dry season. • Composite poles will be cast on top of a concrete base raised above the	3

DISTRICT	KIRYANDONGO			
		would affect the fence	water level and dangle (suspend) the wires	
Soil Type & Composition (stability, minerals, salt content etc.)	The soils are red ferraritic and stony There are three valleys with clay and sand in some section	Limited risk during fence construction except in swampy areas of Titi, Wambabya, and Kibyama where soils are soft	• Concrete foundation for every pole will be put in swampy areas	3
Natural Barriers (e.g. valleys, gorges, rocky areas etc.)	The proposed fence section starts form River Wambabia through Rivers Lomodopio and Kibyama There are some points that are stony e.g Kiroko and Lomodopio	Fence construction in stony areas and river crossings	• Construction shall be done during the dry season. • Composite poles will be cast on top of a concrete base raised above the water level and dangle (suspend) the wires	
Flood Prone Areas (e.g. swamps, marshes, boggy areas, dams etc.)	The banks of the rivers widen during the rainy season. River Titi is about 200 metres wide and Rivers Lomodopio and Kibyama are about 50 - 100 meters wide	Water may affect the live wires	• Construction shall be done during the dry season. • Composite poles will be cast on top of a concrete base raised above the water level and dangle (suspend) the wires • Cut out switches and flood gate controllers will be used to regulate power	3
Evidence of Fire	No evidence was noted. However, the high tall vegetation seen is susceptible to wildfires	Destruction of the fence line	• Composite fire-resistant poles will be used • Insulators resistant to fire will be used. • The fence line will be maintained to avoid combustible biomass	3

DISTRICT	**KIRYANDONGO**			
Accessibility by Vehicle	The community road is in a distance of about 100m-1 km from the proposed fence.	Accessing the site through community land	• Accessibility can be secured through engaging the community and community leaders • Materials can be stored at Kiroko outpost close to the fence site which is easily accessed by existing public road	3

DISTRICT	BULIISA			
SITE NAME	MUBAKO - BUGANA			
ASSESSMENT DATE	15/February/2023			
LENGTH OF SITE	Approximately 20Kms			
FEATURE TYPE	**DESCRIPTION (e.g. Frequency, status, etc.)**	**POSSIBLE RISKS**	**RECOMMENDED MITIGATION (If required)**	**SUITABILITY SCORE (1 = poor, 5 = excellent)**
Overall Alignment Shape	The proposed fence line is to a large extent a straight line starting from River Nile up to Bugana ranger outpost.	• No risks	• NA	3
Vegetation Cover	Open grassland and shrubs with few wetlands e.g. Waiga.	The risks are limited to minimal disturbance of the vegetation along the fence line	• Clearing of vegetation to only a few meters from the fence line shall be undertaken • Only trees that will affectthe fence line will be cut.	4
Relief (e.g. erosion risks, storm runoff, etc.)	The area is generally a plateau sloping land. Low laying areas usually have wetlands.	Flooding in the wetlands and making it difficult for fence maintenance	• Construction shall be done during the dry season. Composite poles will be cast on top of a concrete base raised above the water level and dangle (suspend) the wires	4

Soil Type & Composition (stability, minerals, salt content etc.)	In the first 1 km stony soils were noted. Other types of soils i.e. black cotton soils, clay, sand and ferallitic red soils were observed	• Difficult to compact poles in stony and sandy areas. • Poor earthing in the sandy sections	• Proper ramming of the soil shall be done. • Number of earth pegs per km shall be increased from the current 2.5 galvanized pipes to 5 pipes per km	4
Natural Barriers (e.g. valleys, gorges, rocky areas etc.)	The fence will not cross River Waiga and the associated wetland	No risk		4
Road Crossings	The fence crosses Mubako-Ngwedo, paraa junction-Buliisa road main road 250m	Increased cost as the grid is a bit expensive.	• Construction of ground grid at Bugungu gate-Buliisa will be done while for Mubako-Ngwedo road, dangling wires will be used	4
Evidence of Fire	Evidence of wildfires was seen during the assessment	Threat of destroying the fence	• Composite fire-resistant poles will be used • Insulators resistant to fire will be used • The fence line will be maintained to avoid combustible biomass	3
Accessibility by Vehicle	There is an existing community road running parallel to the boundary for 10km	Some sections do not have access roads	• Accessibility can be secured through engaging the community and community leaders	5
OVERALL SCORE 81.66% overall score. Fence is possible with implementation of proposed mitigation measures				49/60

DISTRICT	NWOYA			
SITE NAME	Ogelo - Tangi gate			
ASSESSMENT DATE	26th January, 2022			
LENGTH OF SITE	31 kms			
FEATURE TYPE	**DESCRIPTION (e.g. Frequency, status, etc.)**	**POSSIBLE RISKS**	**RECOMMENDED MITIGATION (If required)**	**SUITABILITY SCORE (1 = poor, 5 = excellent)**
Overall Alignment Shape	• The park boundary runs along River Ayago, R. Adibuk and R.Modo, R. Tangi	• Increased cost of construction because of civil works involved to cross the rivers	• Construction shall be done during the dry season. Composite poles will be cast on top of a concrete base raised above the water level and dangle (suspend) the wires • Cut out switches and flood gate controllers will be used to regulate power.	4
Vegetation Cover	• Over 80% of the proposed fence line between Ogello and Agung is wooded. • The section from Latoro to Tangi bridge is mainly open grassland with some thickets.	• Loss of vegetation especially in wooded areas	• Clearing of vegetation to only a few meters from the fence-line shall be undertaken • Only trees that will affectthe fence line will be cut. • Cut trees will be given to adjacent communities as firewood and construction poles.	5
Relief (e.g. erosion risks, storm runoff, etc.)	• The area between Ogello and Agung is gently sloping to U shape valleys and the area is poorly drained due to clay soils. • For the rest of the section, the area is flat	• In rainy season delivery of materials to some points along the proposed fence would be difficult • Pitted holes will be filled with water if this done during the rainy season	• Construction works will be undertaken during the dry season when most areas are accessible • Composite poles will be used	4

Soil Type & Composition (stability, minerals, salt content etc.)	• Three soil types were seen. Clay soils predominant towards valleys, sandy loams and black cotton	• Areas where clay soils were found indicated poor drainage. Much as at the time of assessment the areas were dry.	• Composite poles will be cast on top of a concrete base.	3
Natural Barriers (e.g., valleys, gorges, rocky areas etc.)	• ⅔ of the proposed fence line is characterized by dry valleys and hills at short intervals. Some of the valleys have gorges. There are three dry craters adjoining the river valley.	• Ferrying materials to the proposed fence line will be a challenge	• UWA shall increase the number of community members to carry the materials	
River Crossings	• The fence shall cross River Ayago, R. Adibuk and R.Modo, R. Tangi	• N/A	• Dangles shall be put across the river	5
Road/Railway Crossings	• No road or railway crossing were noted	• NA	• N/A	5
Flood Prone Areas (e.g. swamps, marshes, boggy areas, dams etc.)	• Boggy areas were noted in some sections	• The water may affect wires	• Composite poles in boggy area will be cast in concrete and raised above water levels	3
Evidence of Fire	• Burnt areas were seen along the stretch of the proposed fence line. The grass has the ability of growing to more than 1.5 m high.	• Some porcelain insulators used in the construction may be affected by fire	• Composite fire-resistant poles shall be used • Fire resistant insulators will be used • The fence line shall be maintained regularly to remove accumulated combustible biomass	2
Accessibility by Vehicle	• Poor accessibility close to the fence line. • There is a poorly maintained community road	• Delay fence construction due to constraints of delivery	• UWA shall negotiate with communities to access areas far away from existing access roads	3

	about 1 km away from the proposed fence line.	of materials to site • Increased cost of delivery of materials to construction site		

DISTRICT	**MASINDI**			
Site Name	Wambabya River to Kichumbanyobo gate			
Date of assessment	20th July 2022			
Length	20km			
FEATURE TYPE	**DESCRIPTION (e.g. Frequency, status, etc.)**	**Possible Risk**	**RECOMMENDED MITIGATION (If required)**	**SUITABILITY SCORE (1 = poor, 5 = excellent)**
Vegetation cover	Vegetation is a combination of thick shrubs and woodland emerging into forested section towards Kichumbanyobo	Limited vegetation loss	• Clearing of vegetation to only a few meters from the fence line shall be undertaken • Only trees that will affectthe fence line will be cut • Communities shall be engaged to cut and take the trees	4
Relief (e.g. erosion risks, storm runoff, etc.)	The area is generally flat with a few rivers draining into the reserve namely Wambabya River and Tantara River	There is no risk of erosion and storm water. However, along the rivers the areas may flood during the rainy season that would affect the fence	• Construction shall be done during the dry season for swampy area • Composite poles will be cast on top of a concrete base raised above the water level and dangle (suspend) the wires	3
Soil Type & Composition (stability, minerals, salt content etc.)	The soils are red ferraritic and stony There are three valleys with clay and sand in some section	Limited risk during fence construction except in swampy areas of Wambabya, where soils are soft	• Concrete foundation for every pole will be put in swampy areas	3
Natural Barriers (e.g. valleys, gorges, rocky areas etc.)	The proposed fence section starts from River Wambabya There are some points that are rocky	Continuity of the fence through these rivers. It also makes it difficult for the	• Where possible establish foot crossings • Provide hand operated drill for piping	2

		fence management team to do maintenance Pitting to right depth maybe difficult		
River crossing	Two rivers have to be crossed i.e., Wambabya River and Tantara River	Increased cost of fence construction and maintenance	• Construction shall be done during the dry season • Composite poles will be cast on top of a concrete base raised above the water level and dangle (suspend) the wires • Cut out switches and flood gate controllers will be used to regulate power	1
Evidence of Fire	No evidence was noted. However, the high tall vegetation seen is susceptible to wildfires.	Threat of burning fence	• Composite fire-resistant poles will be used • Insulators resistant to fire will be used • The fence line will be maintained to avoid combustible biomass	3
Accessibility kitengure [kimina to kasenyi villages by vehicles.	The community road is in a distance of about 1 km from the proposed fence.	Challenge of ferrying fencing materials	• Accessibility will be secured through engaging the community and community leaders	3

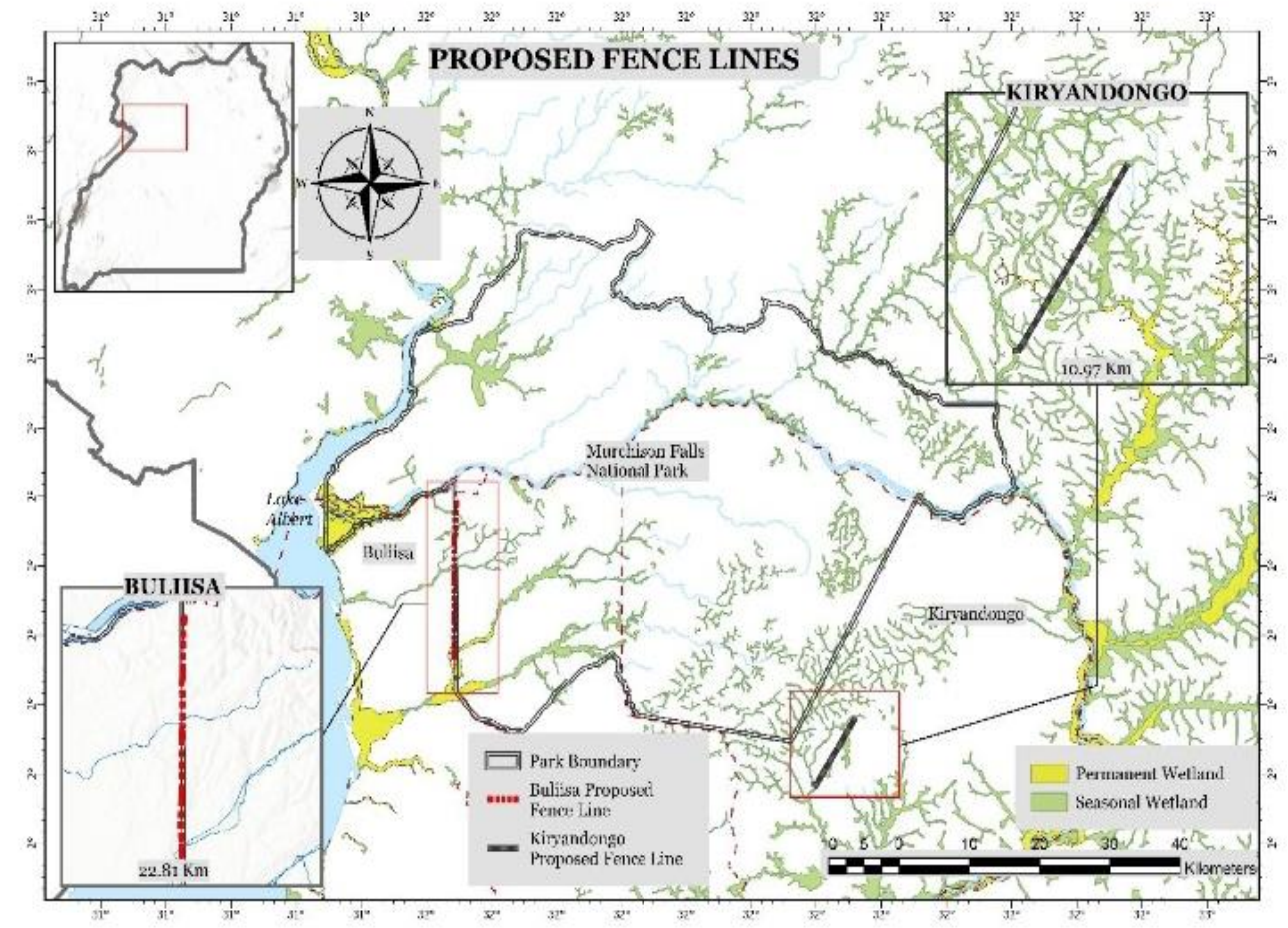


Plate 4: Proposed area to be fenced

CHAPTER 4

4.0 PROJECT ALTERNATIVES

In executing this mandate, UWA has implemented numerous interventions including excavation of trenches, placement of beehives along the protected area boundaries, red chili growing and application, stone wall construction, hippo deterrent fences, planting of Mauritius thorn trees, promotion of unpalatable cash crops such as tea, scare shooting, direct capture and translocation, sport hunting and construction of crocodile cages and education and awareness among others.

4.1 HWC Alternatives in MFCA

MFNP has had a number of initiatives to control human wildlife conflict. Over 60 km of trench has been excavated in the districts of Nwoya, Oyam, Kiryandongo and Masindi, to stop elephants from crossing to community land. 16 km of boundary trench have been excavated in Lii and Kochgoma sub-county in Nwoya District, 17.1Km in Kamdini, 6.4km Myene in Oyam district, 12km Mutunda, 8km Kiryandongo, and 8.2km, Kigumba in Kiryandongo district.

15km Maurituis thorn Fence has been planted along the park boundary in Oyam and Kiryandongo district to keep away Olive baboons and Elephants.

4,217 bee hives exist around the park and these have been placed in the resource use areas and are a strategy used against the problem animal especially elephants. Most of these have been procured from revenue sharing funds. E.g Oyam district has supplied 800 hives to Myene sub county out of revenue sharing funds. 200 in Purongo, 200 in Got apwoya, East Madi- 25 and Ajai – 30. However, all these have not been very effective in addressing HEC. The electric fence will complement these different initiatives.

4.2 Reason for Electric Fence Option

Overall, the pilot electric fence has had a significant impact on the severity of elephant crop raiding activities. Prior to the fence over 90% of all HWC cases received in MFNP were due to crop-raiding by elephants. Since the pilot fence was completed, this has reduced to less than 80%.

This result is backed up by the fact that Human Elephant Conflict incidents collated by UWA rangers indicate a decreasing trend (Table 7 below). Communities claimed that their crop yields had increased to some degree; attributing this to the presence of the fence.

Table 7: Human-elephant cases in Murchison Falls

Year	Total HWC Cases in MFCA	Total HEC cases	% HEC in MFCA
2015	542	537	99.07
2016	1120	1,084	96.79
2014	886	846	95.49
2018	933	874	93.68
2019	532	436	81.95

Year	Total HWC Cases in MFCA	Total HEC cases	% HEC in MFCA
2020	750	663	88.40
2021	972	761	78.29
TOTAL	**5735**	**5201**	**90.07**

4.3 The No-Project Alternative

This aims at maintaining the status quo of the situation. This will mean there will be no electric fence constructed as proposed and therefore, all the efforts by UWA and other stakeholders will be rendered fruitless. This implies communities adjacent to MFPA will continue suffering from wildlife destroying their crops, property and endangering their lives. This makes the 'no project alternative' *expensive* and *unacceptable.*

Some of the major demerits of this alternative include:

a) Continued destruction of crops by elephants;
b) Continued food insecurity in areas adjacent to MFPA;
c) Disruption of social order as community members stay up all night to guard their crops against elephants;
d) Disruption of social order which in turn leads to low productivity;
e) Insecurity as community members in areas adjacent to MFPA cannot freely move around at night for fear of being attacked by wild animals;
f) Continued degeneration of community relations with UWA and wildlife; and
g) The negative impacts associated with human-wildlife conflicts affect the living standards of the communities as they make the communities poor and perpetuate them in poverty.

It is therefore evident from the above, that the 'no project' alternative, if pursued would have huge social costs. Human wildlife conflicts would persist with resultant crop destruction; food insecurity; disruption of social order; lack of productivity; insecurity etc.

4.4 Other Project Alternatives

UWA has over the years implemented numerous mitigation measures including; excavation of trenches, placement of beehives, red chili, buffalo stone walls, chain link fencing, planting of mauritius thorn trees, promotion of unpalatable cash crops such as tea, scare shooting, direct capture and translocation, sport hunting of problem animals and construction of crocodile cages.

Over 200 community scouts have been trained and equipped to complement UWA staff, report cases and or attend to problem animal cases around affected villages. Taking an example of elephant trenches, the factors that affect the trenches include poor soils which collapse in some areas, rocky areas where excavation of the trench would be difficult, weltands/swamps and rivers where water would fill the trench making streams to fill the trenches.

Despite all the above various HWC intervention measures implemented by UWA over the years and in various PAs, communities continue to suffer from problem animals. UWA continues to get blame from all corners. Compared with the now tested electric fence intervention where almost no conflict has been reported since construction of the fence, it remains the only viable alternative for solving HWC.

CHAPTER 5

5.0 PROJECT DESCRIPTION

The project is broken down into three key phases:

5.1 Scoping/Planning Phase

This phase has been completed to find out the suitability of constructing anelectric fence in different section of the park. The results are presented in chapter 3 above. During this phase, it was realized that gum poles have so far posed challenges in terms of durability.

5.2 Fence Design and specifications

UWA is proposing to change from using wooden poles to composite plastic poles to ensure fence longevity. Since project inception, UWA has been monitoring the quality of tree poles sourced and suitability; the provided quality is undermining the integrity of the fence. Some of the poles are rotting within 2 years, others are being attacked by termites. In both instances these require replacement which weakens the fence over times (due to wires needing to be cut and rejoined repeatedly).

There are numerous possible reasons for the poor performance of poles but the most likely are:

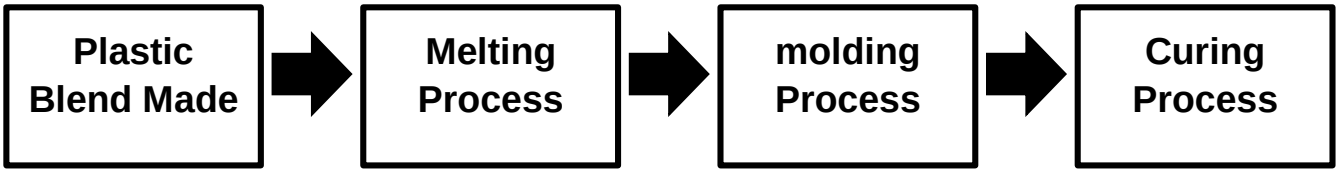
- Inadequate Treatment: Poles are not subjected to the correct pressure and duration required to ensure penetration of the CCA chemical into the pole. Rogue suppliers have a habit of dipping the poles in chemicals to give thema tint but once cut open it becomes apparent that the poles were never treated. This saves the supplier significant funds.
- Moisture Content of Poles: Gum fence poles need to be allowed adequate time to dry out entirely before attempting to treat them with chemicals. If they are treated while "wet" the chemical will not be able to penetrate sufficiently. This means once they do dry out over time, they will be more susceptible to rotting etc. It is advised that poles are air dried for at least 2 months to allow moisture content to reduce below 30%. Suppliers usually skip this process when they are asked to fill large orders in limited time.
- Cost- Although the gum poles are cheaper, the synthetic poles become cheaper in the long run since they are more durable

A total of 23 poles have so far been replaced in the first 10 km of the fence line at Murchison Falls Conservation Area. The oldest poles were placed in November 2018 with most less than 2 years in the ground.

Plate 5: Examples of gum fence poles being replaced at MFCA at the moment

Description of Reinforced Heavy Duty Plastic Poles

Specifications - Manufacturing Process



Key Advantages of Plastic Poles

a) Rust, rot and insect/termite proof
b) Does not absorb water
c) No value for scrap metal industry
d) Fire Resistant
e) Can be drilled, painted, colored, nailed as necessary
f) Ability to make flexible shapes and sizes
g) Cleans up the environment
h) Durability for decades
i) Low electrical conductivity

Sourcing of Heavy-Duty Plastic Poles

Space for Giants has identified a suitable company in Kenya that have both the expertise and necessary equipment to manufacture high quality plastic poles. This company no longer manufactures the poles in Kenya due to the absence of necessary raw materials (specifically plastic polythene bags) as a result of the ban introduced by the Government of Kenya.
Space for Giants organized for a number of these samples to be transported to Kampala to allow for the construction of a small demonstration fence that was presented to UWA Management (Conservation Unit) to provide proof of concept.


Plate 6 & 7: The molding process of plastic poles using recycled plastics

Plastic Pole Applications

Plastic poles are increasingly being used in Kenya as a more environmentally friendly alternative. The images below are from the Mt. Kenya Perimeter Fence being constructed by Rhino Ark utilizing recycled plastic poles. The quality, shape and dimensions of the poles differ but the basic goal is the same.


Plate 8 & 9: Plastic poles being used at Mt. Kenya National Park, Kenya

Potential cost implication

The current cost of a wooden pole is UGX 48,000. On average, the pole's durability or longevity is 5 years. UWA would therefore pay UGX 96,000 every 10 years translating into a considerable amount of funds lost through constant procurement of gum/wooden poles. Therefore, unless UWA explores alternative options management will continue to lose an average of UGX 19,200,000 per km per every 10 year(s). That implies that the fence will be highly expensive to manage and maintain and hence affect its sustainability in medium and long term. Below is a detailed illustration and comparison of the cost implication.

Plastic Pole	**Wooden Gum Poles**
Corner Straining Post: 150mm x 150mm x 5ft: USD 15.75 + VAT UGX 56,775 + VAT	Corner Straining Post: 125mm diameter x 6ft: USD 19.40 (incl. VAT) UGX 70,000 +VAT

Plastic Pole	Wooden Gum Poles
Standard Line Post: 100mm x 125mm x 5ft: USD 13.25 + VAT UGX 47,750 + VAT	Standard Line Post: 125mm diameter x 5ft: USD 13.30 (incl. VAT) UGX 48,000 +VAT

Conditions

a) Minimum Quantity for above pricing regime - 14,000 units (+- 70km)
b) Production at or near one of UWA's CAs - Provided by contractor
c) Basic Production Facility (e.g. warehouse) - Provided by contractor
d) Availability of fine construction sand close to site - Sourced by contractor
e) Availability of recycled plastic in Kampala - Sourced and delivered to site by contractor
f) 3 month set up period from agreement signing
g) Machines, equipment and ops moved to site - Transport & import met by contractor
h) Upfront Deposit of USD 50,000 - Provided by client
i) Monthly draw for production at USD 23,000 - Payments to ensure ongoing production
j) Transport to fence sites - Provided by contractor

Technical Specifications

- Product Density: 1,860 kg/m^3
- Water Absorption: 1.6%
- Failing Load (3m 150mm x 150mm post): 3,025 KN
- Flexural Strength: 10.57 N/m^3

Plate 10: Demonstration of electric fence constructed using composite poles

5.3 Construction Phase

During this phase of the project, the fence will be constructed to the provided specifications including all preparation of the site, delivery of material to site and project management.

Specific Activities:

i. Delivery of materials to site (either to be stored at MFNP or at an alternative approved secure location);
ii. Recruitment of casual labour including contracts, supervision & payment agreements;
iii. Preparation of the field site (e.g. clearing of vegetation);
iv. Where possible a road will be constructed along the proposed alignment (this is critical for maintenance and security);
v. Construction of the fence (including digging of holes, placement of poles, stringing of wire, installation of the energizer house and electrification of the fence line.

The key construction steps are summarized below:

a) Vegetation clearance

Clearing of vegetation along the proposed alignment will be done mostly using hand tools e.g. slashers, pangas, hoes and where necessary machinery including tractors shall be used. Vegetation will be completely cleared on 3-5m on either side of the proposed fence alignment. This work shall be done by 15-20 contracted casual laborers from nearby communities with each individual being assigned a specific portion in exchange for a fair remuneration. The individuals will be assigned work by the fence supervisor in collaboration with UWA Management. A team of 3-4 UWA employees will be trained during the project in fence construction tasks to build up the internal capacity of UWA to conduct fence construction independently in future.

b) Hole excavation

Once the site is cleared of vegetation, ranging rods shall be used to sight as straight a line as possible. Pegs will be placed along the proposed alignment indicating where the holes will be dug. Holes shall be dug to a depth of 60-90cm (depending on the size of the poles in use). The holes are dug at intervals of exactly 5m. The holes will be dug with a diameter of no more than 30cm. Holes will be dug using iron bars and spades.

c) Pole placement

Once the holes have been dug, the poles will be placed into the ground with careful attention being placed to the height of the pole above the ground. Each pole will be exactly 90cm above the ground to ensure a consistent fence height. Strainer Assemblies are constructed (these are the structures that take up the strain of the fence) by concreting them into the ground and leaving them to cure for 3-5 days depending on the weather and soil conditions. This work may require cutting poles to size using a chainsaw and nailing poles together. Heavy duty plastic insulators are secured to the strainer poles with high tensile wire. These are responsible for catching the strain of the wire.

d) Fence Wiring

Wire will then be strung between the strainer assemblies by feeding the wire through the holes in the poles. Heavy duty wire strainers are used for this activity. It is critical that the wires are strung to a high enough tension to prevent the wires from drooping. Outriggers are fitted onto the top wire and supported on the second wire. It is critical that each of these outriggers is

between 4-5ft in length and that they are spaced at a consistent distance of 2ft from the next one. The outriggers should be angled at 45 degrees away from the fence. A 5 ft earth rod (using either copper or galvanized iron) shall be installed at each strainer assembly to ensure proper earthing of the fence. These earth rods will be hammered into the ground using a large hammer. A double insulated underground cable will be used to attach the earth rod to the fence and secured to the earth wire of the fence for proper earthing.

e) Energizer station

Once the wiring is complete, the energizer station shall be configured. The first step is to choose an appropriate location for the station close to the fence, ideally in the middle of the fence. Next the earth rods are installed into the ground next to the station in a radial pattern. Another earth rod shall be installed 10m away to be attached to the earth monitor of the energizer. Then the solar panels are installed (on a movable frame to be able to follow sunlight or where they are able to capture maximum sunlight), wired up to the battery via the charge controller. The energizer is wired to the battery and a fence alarm/light combination may be installed if deemed useful. Underground insulated cable is used to wire the live and earth wires respectively onto the fence.

The diagrams below show the installation of the energizer station and associated fence design.

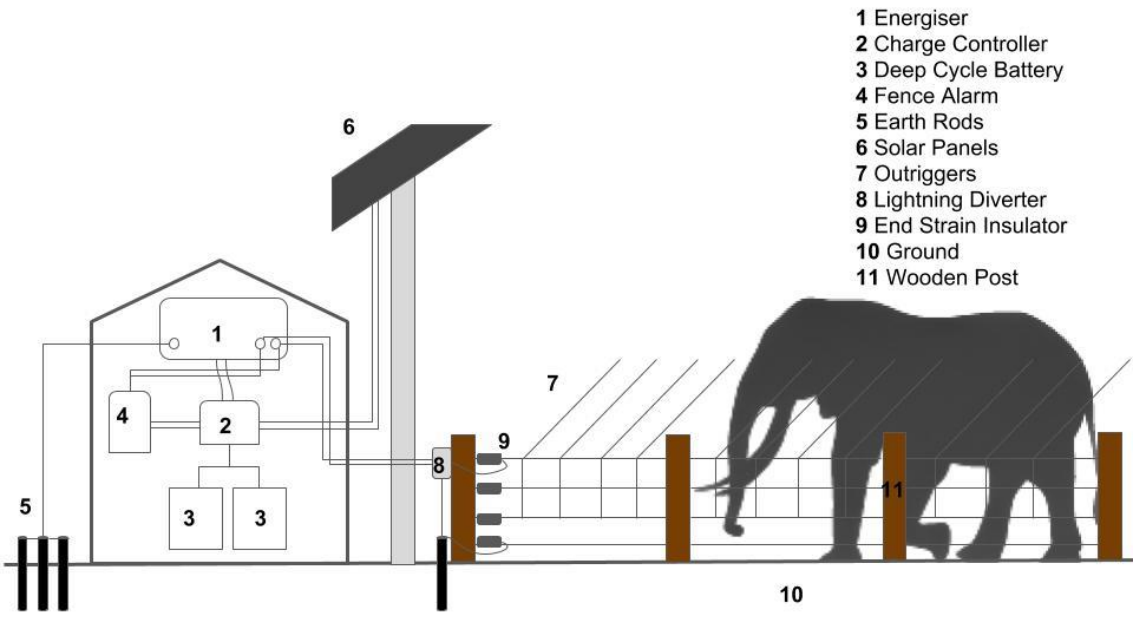


Plate 11: Shows the installation of the energizer station and associated fence design

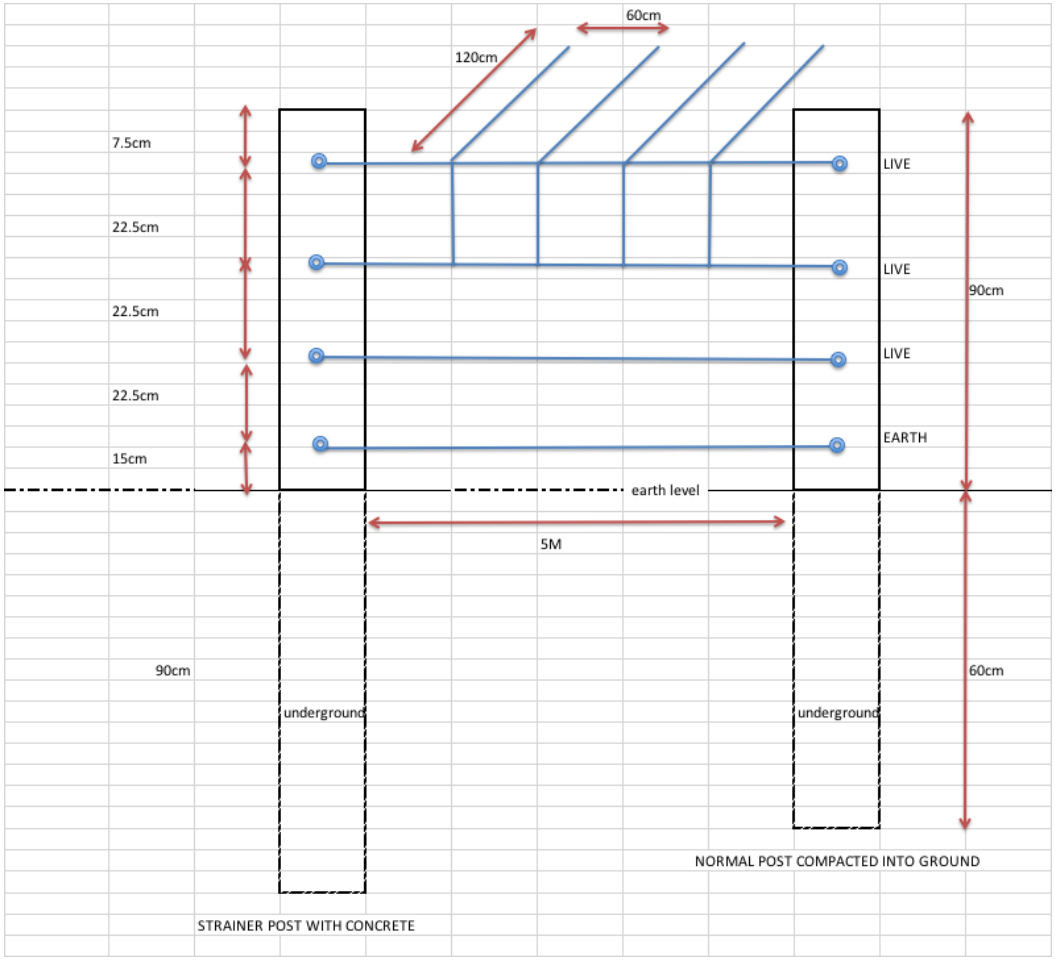


Plate 12: Exact Measurement of Fence Design

Plate 13: Fence Design

Plate 14: Fence Design

(**Plate 13&14: Fence Design)**

5.4 Maintenance/Operation Phase

During this phase of the project, all construction activities will have been successfully completed and the remaining tasks are related to ongoing maintenance to ensure that the fence stays operational.

Specific Activities:

i. Vegetation clearance to prevent grass growing onto the wire;
ii. Daily patrolling to measure fence voltage to ensure optimal performance;
iii. Documenting any fence breakage incidents;
iv. Stakeholder meetings to discuss fence performance; and
v. Monitoring and evaluation activities (e.g., redo the baseline survey etc.).

Staff Requirements

A fencer will be required for 6km of completed fence line. This individual will be adequately trained in fence maintenance activities.

Roles of fencers and fence supervisors

Fencer

A fencer will be required for 5km of completed fence line. This individual will be adequately trained in fence maintenance activities.

The *Tasks of the Fencer shall Include*:

- Patrol designated sections of the fence on a daily basis ensuring that the fence is in good working order and standards are adhered to by carrying out tasks including but not limited to:
  - Vegetation clearing (cutting grass, removing stumps, etc.) to avoid fence shorting;
  - Repairing any fence breakages or electrical shorts (e.g., caused by people or wildlife);
  - Aligning outriggers to ensure they face away from the fence at consistent angles;
  - Checking the batteries, solar panels, energizer etc. in good working order.
- Informing the *Fence Supervisor* of any breakage on the fence, filling out the appropriate breakage forms (with GPS locations) and ensuring this data is securely stored and made available to the *Fence Supervisor*;
- Conducting monthly fence assessments of your respective section of the fence with your *Fence Supervisor*;
- Responsible for maintaining assigned tools in good working order (e.g., GPS Unit, Voltmeter, wire strainers, Pliers etc.);
- Immediately reporting any security incidents (e.g., fence vandalism, wildlife carcasses, people crossing etc.) to the *Fence Supervisor*;
- Checking fence voltages every morning and evening, ensuring all fences are active at all times and capturing fence voltage data in the provided forms;
- Communicate clearly to the *Fence Supervisor* in a timely fashion any material or equipment needs;
- Support any fence construction work as assigned by the *Fence Supervisor*; and
- Carry out any other duties as may be reasonably required to carry out by the management.

Fence supervisor

Primary Responsibility:
Responsible for the day-to-day management of fences, including supervising the activities of all fencers, at (Insert Location) to the required standards while upholding the values of UWA.

Tasks Include:
- Patrol assigned fence sections on a daily basis conducting rigorous inspections along the way (making notes to assign work to fencers where necessary);
- Conducting daily meetings with fencers to agree on work to be completed and assigning tasks, recommendations and warnings as necessary;
- Supervise the fencers in their daily activities making sure that the fences are in good working conditions and the working standards are followed and adhered to;
- Stimulates staff discipline and initiate and recommend corrective action;
- Determines the voltage of all the fences every morning and evening and ensures all fences are active at all times;

- Ensure prompt repairs of the fences in case of any breakage and clearance of any vegetation along the fences that may cause short circuits;
- Completes and submits monthly reports to the Warden Problem Animal Unit capturing information but not limited to fence performance, security incidents, material/equipment needs, fencer performance etc. (fence voltages and breakages filled in on the *Google Drive*); and
- Conduct regular assessments of electrical materials (solar panels, energizers, etc.).

Role of Uganda Wildlife Authority

Fence construction and maintenance oversight

- Monitoring and evaluation oversight;
- Coordinating monthly feedback meetings on fence activities and performance
- Conducting regular site visits;
- Ensure timely construction and maintenance standards are maintained;
- Design and support the implementation of all baseline and impact assessments to evaluate fence performance;
- Ensure fence performance data is being collected, stored and analyzed in the appropriate format; and
- Provide timely GIS Mapping support to ensure all monthly reports are furnished with a corresponding map of activities taken place, challenges encountered and proposals developed.

CHAPTER 6

6.0 STAKEHOLDER CONSULTATIONS

The National Environmental Act, 2019 provides that stakeholders who possess vested interest in the proposed project be consulted at all stages of the environmental and social assessment. Consultations were carried out at different levels i.e., village, Sub County, district and national. The aim of these consultations was to identify and take note of environmental and social concerns and views of all the stakeholders at a fairly early stage so that appropriate mitigations are incorporated in the implementation. All the issues that were raised during consultations have been addressed in the impact and mitigation section.

6.1 Outcomes of the Meetings

This section summarizes what transpired in each of the consultative meetings held. Focus was put on risks associated with construction and maintaining the electricfence; potential positive and negative impacts, mitigation measures and any lessons learnt from similar previous works on the completed section. Meetings were held between 29th July and 3rd August 2022.

6.2 General Comments

i. People are supporting the fence. They are ready to defend and protect it;
ii. Community is tired of elephants attacking them;
iii. Need to continue sensitizing;
iv. People are positively attracted to the completion of the fence;
v. Anaka should be considered as a priority because the people there are eagerly waiting for the fence;
vi. The current fence has been positively effective;
vii. Fence will contribute to restoration of livelihood;
viii. Human – wildlife relations will improve;
ix. There are misconceptions and stereotypes about the fence; and
x. The fence is looked at as a solution to human – wildlife conflict.

Table 8: Stakeholder Consultations

Place	Date	Location	Issues Raised	Response / Mitigation
Gonchogo	29/07/22	Nwoya district Lii sub county Lutak parish Gochongo village	*Committee members* Where will the fence start from? Will it be close to the road? Will it follow the trench or boundary? Will the line be powered throughout the day? How will people use River Ayayo for irrigation? How will you handle the animals that are outside the fence? Source of power the fence will use Will there be access to get firewood How long will the electric fence last?	The fence will be in different sections. For Nwoya it will start from where the previous one stopped. The fence construction will observe the road reserve and UNRA has been consulted on this The fence will follow the trench. Where there is no trench it will as much as possible follow the boundary People will be allowed to get resources from the park with proper guidance The fence will last a life time People vandalizing the fence will be handled by community
Gwotapwoyo	29/07/22	Nwoya district Gwotapwoyo Sub County sub county Tegop parish Latoro central 31.647689 E, 2.565012 N	Human – wildlife conflict with elephants Fence is taking too long to come There are poachers who cut the fence People of Gwotapwoyo want to work on the fence and get some money People from Lango are gotten to work on the fence and not people from Gwotapwoyo People are fearing to have kids because of poverty and animal attacks Poachers keep entering from the gap in the fence Why use wood and not metal.	The fence is coming and it won't take long but it is a systematic process The people should be employed from Gwotapwoyo itself not lango. If those of lango come around then they should not be allowed Population has to be controlled so people of Gwotapwoyo should keep up the culture of not over populating People should get busy to avoid having many children New poles are going to be introduced since wood rots and metal gets rusted so use of plastic composite poles is to be used.

Place	Date	Location	Issues Raised	Response / Mitigation
Anaka District Hall	29/07/22	Nwoya district Anaka Town Council Ceke Ward	*CDO* How much of the fence will be in the district? Monitoring by the local leaders is not catered for Local leaders do not have good relationship with the fence Will it bring employment for local people? *Commercial officer* There is need for constant awareness to communities How did you arrive to 31km^2 choice of these areas? What is the experience with areas covered? There is poor relationship with UWA Quick response is needed in case of an attack What is the unit cost of the fence?	There are 433 km^2 of the park perimeter 101 km^2 have been given by WB and 34 have already been constructed around Nwoya Need to work on mindset so that people are part of the project UWA should promote land use planning and growing unpalatable crops like tea Skilling of youth Plan for community meeting We are using surveillance cameras to catch poachers A corridor shall be left after Kololo towards the Pakwach bridge The fence costs about 35 – 50 million par km
Anaka sub county	29/07/22	Nwoya district Anaka sub county Lapono village	*LC1* Where will the fence start from? How much more distance will be remaining after 31km Boundary not clear e.g., in Wangalai Why don't you give these kilometers per village? Why do you start Anaka yet there are issues from every village? When is the compensations for gardens being destroyed coming Dongolem needs to be on board	The fence will start from where it has stopped Nwoya has 109Km^2 of the park, 30 have been done, 31 to be done and remaining with about 49Km^2 Every district will benefit Project Anaka and Purongo to have 24 Km and 7 Km to go to Lii For the compensation, UWA is waiting for regulations to operationalize the wildlife Act Need for survey reports to see the hot spots
Kamdin	30/07/22	Oyam district Kamdin Sub County Juma parish	*RANGER* Unstable poles Leave gates for people to access park resources Improve Park relations	Composite plastic poles are to be introduced Gates will be left every after 5 km for people to access resources Sensitization to be done to allay fears of communities

Place	Date	Location	Issues Raised	Response / Mitigation
		Akuridia village 417193.4 E, 249615.2 N	Places where the fence hasn't been constructed are calling UWA for a helping hand Construction of dams inside the park so that animals can stay in	UWA is planning to have dams where it is necessary in the near future
Kigumba 1	30/07/22	Kiryandongo district Kigumba and Kiryandongo Sub Counties Kigumba 1 parish	Electrocuting the community people Can people have access within the park after the fence is constructed for economic activity purpose Community is not sensitized about the fence so some people may destroy it Trees should be planted along the electric fence Does the fence use real electricity or alternative sources. Poachers may get in when power is off and animals can come out. Where will the fence be facing? There are other projects like be rearing and there is a request for a gate so that people can keep up with this activity	The fence shocks but doesn't kill. Only kills if the individual persists holding the fence Community will be allowed to get firewood from the park after fencing. A day will be given to collect firewood and will be monitored Communities will be engaged with and sensitized about the fence Trees can be put along the fence but a bit further so that they don't affect the fence electricity Fence uses solar, not hydroelectricity Poaching should be stopped and the penalty is high People will be sensitized about the fence and how to get into the park to get firewood. Fence will be starting soon Fence will be inside the park and the boundary side Bee hives are okay and UWA will support the communities
Kisweka	30/07/22	Kiryandongo district	Fear of being eliminated from accessing firewood, water, herbal medicine and fruits	People should request first and go through the right channels in order to get firewood from the park

Place	Date	Location	Issues Raised	Response / Mitigation
Mubako	31/07/22	Buliisa district Ngwedo Sub County Mubako Parish 31.529856 E, 2.256522 N	Some animals will be fenced out Reduced access to the park Migratory corridoes will be fenced out Loss of vegetation during construction and maintenance Some Access areas are un-fence able and vulnerable to hippos Rotting of poles used for fencing	Alternative routes will be created to get back the animals locked outside Gates shall be left for authorized entry into the park corridors shall remain open Provision of water near the fence Drive cars and push animals back into the park Minimize clearing of the vegetation There will be camera traps put in place at these areas to monitor the hippo population Use of composite poles
Kiruli Sub County	01/08/22	Masindi district Kiruli sub county (36N) 371487.2 E, 204984.8 N	Electrocuting the community people Reduced access to park resources Community is not sensitized about the fence so some people may destroy it does the fence use real electricity or alternative sources?	People can get shocked but not electrocuted unless they persist Access gates will be left for authorized community Community sensitization by UWA The fence uses solar to be powered not hydropower
Pakanyi Sub County	01/08/22	Masindi district Pakanyi Sub County Kyankamese Parish Waiga village (36N) 365105.3 E, 202011.5 N	Electrocutions Unemployment Animals already outside the park that will be locked out after fence construction	Response as above

Place	Date	Location	Issues Raised	Response / Mitigation
Kiryandongo Headquarter	01/08/22	Kiryandongo district Kiryandongo Town Council Northern Ward Kiryandongo 1 village 32.063942 E, 1.877492 N	Will there be outside workers Will there be pathways for women to pick firewood from the park Sensitizing to the public about the electric fence Vandalization of the fence by poachers and charcoal burners There should be a committee responsible for keeping the fence safe. The committee would also sensitize the community Will the Beehives within the fence be affected or relocated? For areas which won't be covered by the fence, will the trench still be effective and used	People working on maintaining the fence will be local people Technical workers will be from UWA officialshere will be limited and controlled access to the park Community sensitization will be undertaken Camera traps will be put in place to catch poachers There will be power houses every 5 m with gates for people to access park resources Use of community scouts in the committee to ensure safety of the fence Trench digging will still be carried out until the whole fence is brought
Masindi district local government	01/08/22	Masindi district 31.722302 E, 1.687229 N	20 km is a small stretch Human beings and animas may touch the fence What is the relationship between the fence and the trench? How will you control labor from becoming poachers? What is the source of power	More areas will be fenced as funds become available The fence shocks but doesn't kill The trench shall eventually be replaced with the fence Workers shall work with rangers to prevent any illegal activity The fence uses solar to be powered not hydropower
Buliisa district local government	02/08/22	Buliisa district (36N) 323988 E, 232690.5 N	What is the employment distribution for the fence? How will you keep the solar panels safe? Resource sharing limitation	
Buliisa sub-County	02/08/22	Buliisa district Buliisa sub county Bugana parish	Will the fence have effect on the cows? How will the fence affect resource access? When will the fence start Targeted species for the fence. Baboons will jump over People who have lost their lives and crops, what's the plan for them	The fence is not supposed to kill but to shock the animals Some gates will remain for resource access under MOUs The fence shall start as soon as the procurement process is complete Big mammals like elephants are the targeted species Wildlife At 2019 provides for compensation

Plate 15: Consultations at Ngwedo Sub-County, Buliisa District

Plate 16: Consultations at Buliisa DLG Headquarters

Plate 17: Consultations at Kiruli Sub-County, Masindi District

Plate 18: Consultations at Masindi District Council Chambers

Plate 19: Consultations at Waiga C.O.U, Pakanyi Sub-County, Masindi District

NATIONAL STAKEHOLDERS		
Stakeholders	**Comments**	**Response**
Uganda National Roads Authority	This is a very good project & we hope it solves the human-wildlife conflicts in the mentioned areas. A few points that you might consider: 1. The road should avoid the road reserve for future expansion of the road 2. Crossing the National Road Network requires that an adequate vertical clearance of at least 6m & horizontal clearance of 50m is considered. For other roads, the vertical clearance remains 6m & horizontal clearance varies between 15&30m. This will help to avoid & or minimize any potential impacts on the roads during project implementation or on the fence project during maintenance & upgrading of the roads. 3. This is probably a good opportunity to provide for solar powered cameras along the hotspots. Cameras could enable UWA collect the much-needed data to guide on suitable interventions against different wildlife conservation challenges. May be, the effectiveness of the proposal to have cameras installed in Murchison Falls National Park can be piloted here. 4. Low current deters the animals but might not deter community members from accessing the Park without authorization. However, high current is fetal to most animals, including humans. You may consider an appropriate management regime to regulate the current such that it does not result into more conflicts and loss of life. 5. Additionally, in case there are any savings made or more funding provided, you may consider a combination of the electric fence together with trenches along the hotspots. 6. In case the plan is to use solar as the only energy source, you may consider an alternative backup power to ensure constant supply.	1. The fence will be established about 20m from the road reserve 2. The fence will be crossing Bugungu –Paraa main tarmac road and comments raised will be taken into consideration during construction of the fence and appropriate technology e,g access grid suspension gates will be provided 3. Camera traps to be installed at every 5km for monitoring the effectiveness of the fence and animal movement. additionally, the cameras will monitor illegal access/vandalism 4. The fence carries 700vol which is safe for humans and wildlife. Community members have been sensitized to avoid any accidents 5. The fence serves the purpose and therefore no need for trench
INTERNATIONAL CONSULTATIONS		
Wildlife Conservation Society (WCS)	1. Most of the areas to be fenced are sights with direct contact with the communities. This will hopefully reduce the human-wildlife conflict in these areas. Some of these may, however, be historical corridors or areas of access for food for some of the animals during food scarcity for specific species in the park. A study should be constituted to monitor the different species	

	attempts to cross from some of the animals even in the presence of the fence vis-à-vis the food availability in the park 2. WCS is currently undertaking a study on animal movement in the park together with UWA. A number of animals e.g., elephants, Uganda kobs are collared. It would be interesting to analyze the data to see how the fence will impact on animal movement 3. The lions depend on the kobs and other smaller animals that occur in the park. Studies should be carried out to access how the abundance and diversity of these species is affected by the fence. This should include studies on frequency of animal-fence accidents during their escape when being pursued by other species and other threats in the park e.g. fire, which may block other potential areas of exit from the threat 4. Also studies should be carried out on the effectiveness of the fence on illegal activities in the park	
Agaba Patrick African Wildlife Foundation	Electric fencing is good especially when preventing the HWC from large mammals like elephants and buffaloes. Indeed, it has demonstrated effectiveness in deterring elephants from raiding crops in areas of Rubirizi and Kasese in QECA and Wii Anaka and Purongo in MF. However, it would be advisable to fence one section of the park selected as hot sport completely, monitor or assess the impact of elephants' movement rather than scattering small sections of km in different districts. I believe the small section of 20km, 30km … fenced shall push the elephants to the end of the fence hence spreading the problem of HWC into other areas. But again, ecologically fencing is not good for ecosystems and biodiversity as it creates barriers to species interaction/movements with the environment within and outside of protected areas. Fencing is key, especially on the sides of the park that seem to have both ecological stress due to ineffective compliance with land use plans, and community failed uptake and upholding of community-led conservation. I believe that each location should be dealt with individually preferably with an assessment conducted.	

David Ochanda - Total Energies	The fence is certainly a very good mechanism for mitigating HWC and improving on relationships with neighboring communities. To some extent it may also deter poachers in some locations. The main challenge foreseen is the maintenance of the fence. It requires high maintenance and its only useful if well maintained. There is also a risk of the fence being used as a source of wires for making snares. If well maintained and is effectively working, it has the ability of contributing to improving animal populations within the park. The pilot needs to be scaled to the appropriate extent otherwise animals like elephants may learn of areas not fenced and re-orient themselves in using those locations.	

CHAPTER 7

7.0 EVALUATION OF POTENTIAL ENVIRONMENTAL AND SOCIAL IMPACTS AND PROPOSED MITIGATION MEASURES

7.1 Positive Impacts

7.1.1 Improved Livelihoods

Severe HEC has resulted in a decline in agricultural productivity due to crop damage, demoralized farmers and promoted social discord. With the fence in place, there will be increased agricultural productivity resulting in improved food security and income. As such the fence will contribute to social unity and poverty alleviation.

Additionally, many farmers spending their nights actively guarding their crops are exposed to the elements at night. This has resulted in increased risk of pulmonary diseases such as pneumonia. The fence will ensure that farmers are able to stay in their homes at night.

7.1.2 Improved Social Order

Currently, the majority of farmers spend their evenings in make-shift shacks guarding along the boundary of the park to discourage crop raiding by elephants. This has disrupted social order because farmers are getting little sleep and risking their lives trying to protect their crops. The fence will prevent the need for farmers to spend their nights actively guarding their crops. This will have a positive impact on family cohesion.

7.1.3 Reduced Human Wildlife Conflict

Communities living on the boundary of the park experience severe crop losses as a result of HEC. The proposed fence aims to reduce HEC by 90% by preventing elephants' access to community farms. The fence will also reduce the incidents of conflict with other problematic species.

7.1.4 Creation of employment opportunities

Many local community members will be employed by the project thus creating employment opportunities.

7.1.5 Positive Community Attitudes

With the reduction of conflict with animals the fence is likely to promote positive attitudes towards MFNP and an overall acceptance of wildlife. It will also help promote positive dialogue between the park and local communities living on its boundaries.

7.1.6 Improved Park Security

The fence will help to secure the boundary of the park and will help to formalize access rights for communities. There are existing MoUs in place but the fence will help to streamline this process and protect the park from illegal activities such as resource extraction, illegal grazing etc. In addition, the fence will help to demarcate the park boundary in areas where beacons are missing or in the absence of a boundary road.

7.1.7 Improved Conservation

Fencing the park will enhance the conservation activities that are taking place within the park by reducing activities such as poaching, illegal resource extraction, illegal grazing, etc. It is envisaged that the fence will have a positive impact on local communities who in turn will report illegal activities to the authorities.

This will help the park regenerate in areas where it has been degraded especially;

i. Reduced illegal resource harvesting;
ii. Reduced expenditure since a lot of money is spent in restraining animals from going out; and
iii. Clear Park boundary and therefore reduced incidences of encroachment.

7.2 Negative Impacts

Although the electric fence has a lot of benefits both to communities and UWA, stakeholders raised a number of negative impacts that will be associated with it. This section outlines these impacts that have been identified as the assessment was being carried out.

Basing on experiences from other sections where the electric fence has been piloted, mitigation measures have been proposed which will eliminate or reduce the impacts to minimum and address concerns from the community. UWA will undertake comprehensive sensitization programs in the communities to ensure that people understand how the fence works and how they can avoid danger. Signage will be installed at appropriate locations

7.2.1 Construction Phase

7.2.1.1 Occupational health and safety of Workers

Project workers including contractors and casual laborers may be affected during construction of the project. Issues of concern will potentially be injuries, poor working conditions and welfare, among others.

These impacts may arise as result of air pollution, harsh weather conditions (hot weather and rainfall), and accidents with handheld or mechanized tools, physical hazards including slips, trips and falls and in some instances poor housekeeping practices. Physical hazards also represent potential for accident or injury or illness due to repetitive exposure to mechanical action or work activity. Poor sanitation and hygiene condition may expose workers to disease outbreaks like cholera and others.

Over-exertion, and ergonomic injuries and illnesses, such as repetitive motion, over-exertion, and manual handling, can also cause injuries to workers. There is also likelihood of biological hazards from snake bites or venomous animals and poisonous plants. Biological agents that can cause severe human disease, are a serious hazard to workers for example mosquitoes.

Fence construction work will take place on the boundary of MFNP. As such, workers may also be at risk from wild animals especially in the early morning and late afternoons when wildlife is most active.

The Occupational Safety and Health of workers shall be addressed by the OHS Protocols and Labour Management Procedures prepared under the IFPA-CD project.

Mitigation measures

UWA will make sure that the project Occupational Health and Safety Protocols as well as the Labour Management Procedures are followed to address workers' issues. This shall also be in accordance with the occupational Health and Safety Policy and action plan, the Occupational Health and Safety Act and attendant regulations as well as UWA's guidelines.

The WBG EHS General Guidelines will also be followed to address the OHS issues identified. Workers will be provided with PPEs including safety boots, gloves, goggles, coveralls etc. and PPE usage shall be enforced. A first Aid Box will be availed to address emergency health related issues. Regular safety toolbox meetings and emergency drills will be conducted to enable workers understand and avoid incidences as much as possible.

During the fence construction process, there will be a minimum of 2-armed guards present (especially where labourers are spread out) to watch over workers and to disperse any wildlife where necessary. In addition, a vehicle will be present for emergencies when it is deemed that labourers should quickly be removed from the site for their safety and taken to the nearest medical facility or health centre in case the injured worker requires emergency medical treatment.

Workers will be sensitized before start of work about dangers expected while working in the park including the park rules, dos and don'ts (for example no illegal hunting, poaching etc.) that must be complied with. Reports on animal encounters will be given to the supervisors every morning to devise more measures of how to manage these wild animals.

Workers will be trained in lifting and materials handling techniques in construction including the placement of weight limits above which mechanical assists or two-person lifts are necessary. There will also be planning of work site layout to minimize the need for manual transfer of heavy loads and administrative controls into work processes, such as job rotations and rest or stretch breaks will be implemented.

7.2.1.2 Vegetation Clearing & Soil Erosion

In order to construct the fence, a considerable part of the boundary vegetation must be cleared. This will require the removal of tall grass and including some possibly large bushes and trees along the fence line. The fence requires a 3-5m wide vegetation clear zone on either side of the fence.

The clearance of vegetation along the fence line may make the area prone to soil and wind erosion, especially in areas of heavy rainfall on steep terrain.

Mitigation measures

Vegetation clearance will be carefully overseen by the fence construction manager to ensure that only the required amount of vegetation is cleared as per the approved electric fence route plan and that is strictly necessary for optimal performance of the fence. Given that the vegetation is not completely removed, the roots will keep the soil intact. In areas where there is a likely risk of soil erosion the area will be reinforced with stones, proper drainage or the fence alignment may be diverted. This will be treated on a case-by-case basis.

The vegetation cleared during construction will be given to the neighboring community as firewood and where the vegetation like grass cannot be reused, it will be left to decompose on site.

7.2.1.3 Pollution

During the construction process of the fence, there will be varying degree of noise pollution (e.g., the use of chainsaws & drills), air pollution (vehicles and/or tractors moving up and down the fence line transporting materials) human waste (casual laborers defecating along the fence line in the absence of hygiene facilities).

Mitigation measures
Noise pollution will be mitigated by using the chainsaws and other heavy machinery only during the day. All construction activities will take place during the day (between 7:00 AM and 6:00 PM) to avoid disrupting the nights. Noise reduction and control strategies that will be considered in areas close to community areas include planning activities in consultation with local communities so that activities with the greatest potential to generate noise are planned during periods of the day that will result in least disturbance and avoiding or minimizing project transportation through community areas.

No employee shall be exposed to a noise level greater than 85 dB(A) for a duration of more than 8 hours per day without hearing protection. In addition, no unprotected ear should be exposed to a peak sound pressure level (instantaneous) of more than 140 dB(C).

The use of hearing protection shall be enforced actively when the equivalent sound level over 8 hours reaches 85 dB(A), the peak sound levels reach 140 dB(C), or the average maximum sound level reaches 110dB(A). Hearing protective devices provided should be capable of reducing sound levels at the ear to at least 85 dB(A).

Air pollution will be kept to a minimum by only using vehicles which are in good mechanical condition where strictly necessary.

Dust suppression techniques will be implemented such as applying water to minimize dust from vehicle movements and PPE such as dust masks will be used where dust levels are excessive.

Human waste will be mitigated by use of mobile toilets during the entire construction phase. No waste shall be disposed of in the park, UWA shall contract a NEMA certified hazardous waste company to collect and dispose of the sanitary waste generated during the construction phase of the project.

7.2.1.4 Waste management

There will be waste generated in the course of fence construction. The waste will include food remains, plastic bottles and polythene bags, and the remains of construction of the fence e.g., wires and poles, excavation spoils, concrete and concrete washing, non-ferrous scrap associated with fencing etc. In addition, human waste needs to be managed given that they will be working in a wild area without sanitary facilities.

Mitigation measures

Adequate waste collection bins will be provided during the entire construction phase and all waste generated during the day will be collected and transported outside the park. Only wires and poles to be used that specific day will be brought on site. Mobile toilets will be provided in areas which are far from the community settlements along the boundaries.

Ensuring proper waste management by adhering to the hierarchy of waste management practices which includes prevention, reduction at source, re-use, recycling, recovery and disposal and designating areas provided for temporary waste storage on site.

Waste shall also be segregated from source in waste bins that shall have covers to avoid littering and a licensed waste handler shall be contracted for offsite disposal and no waste shall be disposed in a manner that the waste would find its way into the community.

All workers will be inducted on proper waste management prior to construction that includes waste prevention, reduction, re-use, recycling and recovery.

7.2.1.5 Animals that will be fenced outside the park

Animal movement from the park to neighboring lands is barely controlled at the moment. It is therefore anticipated that during the implementation of the project, some of the animals that will be already outside the demarcated fence line will be fenced out. This could put such animals at risk of being killed by communities or vice versa.

Mitigation measures
The park guards with the help of community members will ensure that they patrol all accessible areas close to the park boundary so that any animals outside the demarcated fence line are brought back within the boundaries of MFNP.

The communities will be sensitized on reporting of cases where they encounter animals that will be fenced out during and after the fence construction phase.

7.2.1.6 Stealing of equipment e.g., energizers

With construction activities on going at the site, various construction materials including energizers will be required and if not properly handled could attract wrong elements who steal some of these items. Project component may be subject to the same situation if not properly guarded. If this is not adequately addressed, it could sabotage the smooth running of construction activities.

Mitigation measures
A containerized storage facility for some of the construction materials (energizers, wires and timber) will be set up at the site with secure locking and manned with a store keeper. Screening will be done on some casual workers recruited locally with the help of the local council leaders. Guards will be provided during the construction times along the fence lines to closely watch over the workers for both safety and security reasons. This will help scare those with wrong intentions.

7.2.1.7 Impacts on cultural heritage

There are no known cultural resources near the project site. However, it is possible that, given the long period of habitation of communities near the project site, there are undetected cultural or archaeological resources that could fall within the footprints of the project site.

Mitigation Measures
In order to minimize the potential for impact to sub-surface cultural archaeological material, UWA will establish and implement a Chance Find Procedure (Attached as Annex 1).

7.2.1.8 Interference from fence construction on animal numbers and animal behavior

There may be interference from fence construction on animal numbers, animal behavior (breeding and feeding patterns) through obstruction of migration routes, alteration of migration patterns etc.

Mitigation Measures
There will be provision of wildlife migration corridors during construction.

7.2.2 Operational and Maintenance Phase

7.2.2.1 Risk of electrocution for wildlife

Electric fences by design are not made to be lethal to wildlife but it does occur (infrequently) that wild animals may get entangled in the fence wires e.g., a buffalo getting its horns stuck in the wire and be electrocuted. In this event, it may result in the death of the animal. Additionally, if the live wires are placed too close to the ground, crawling animals like snakes may be killed.

Mitigation measures
Electrocution for wildlife is extremely rare since it would need constant contact with the wires for this to happen. For this particular electric fence, the maximum allowed voltage is 10 kvolts. Nevertheless, because this fence is electric with a monitor to measure fence voltage an alarm will go off the voltage drops in case any incident happens. If the voltage drop is permanent, it means that either the fence has been broken and needs to be fixed or something is caught in the fence. In both scenarios the fence must be switched off and inspected. If care is taken with this process no animals should be electrocuted. In addition, the design from the outriggers should prevent most animals from approaching the fence. The fence will be constantly patrolled to minimize such incidences. Cameras will be installed at specified locations to capture such incidences and solutions will be devised accordingly. Additionally, electric wires will be placed at least 20 cm above the ground to allow for easy movement of crawling animals.

7.2.2.2 Restriction of Wildlife Movement

Wildlife always move in and out of the park. There are dispersal areas up to Aswa Lolim. The fence may block these routes and this may affect their search for any other resources like water and salt licks which may be fenced off. Additionally, there will be interference from fence construction on animal numbers, animal behaviour (breeding and feeding patterns) through obstruction of migration routes, alteration of migration patterns etc.

Mitigation measures
Where historical wildlife corridors have been previously identified that are critical for the maintenance of connectivity, these will remain unfenced or where deemed necessary, the wildlife corridor will be fenced to prevent wildlife exploiting the corridors to crop raid farms. Nevertheless, the fence is intended to curb the movement of large mammals onto farmers' lands and no corridors are expected to be blocked.

7.2.2.3 Increased human activity close to park boundary

By constructing a fence, which is essentially a hard boundary, it may result in community members intensifying their activities up to the park boundary. In some cases, the fence may not be able to be constructed on the exact boundary line e.g., swamps, existing trenches, difficult terrain and may need to be diverted into the park. It is likely that cultivation may

spread up to the exact boundary alignment over time resulting in to possible encroachment and loss of park land.

Mitigation measures
It may not be possible to construct the fence on the exact park boundary throughout. In this event the park will work with the relevant authorities to place additional beacons to clearly demarcate the boundary. Through regular patrols UWA will ensure that park boundary is not encroached upon. In addition, community sensitization activities will ensure that park boundaries are clearly understood and respected.

7.2.2.4 Access limitations for park resources

The construction of the fence will reduce un-managed access to MFNP. While user rights exist for communities it may now result in all access to MFNP taking place through a limited number of strategically placed access gates, mutually agreed with the communities. However, this may result in community members having to commute longer distances to access key resources that they would normally access by directly entering the park next to their homes.

Mitigation measures
This will be mitigated through involving the community in the placement of gates for access. In addition, communities will be briefed on access rights and how fence access will be managed and enforcement. Through community engagements, communities shall be informed of the dangers associated with trespassing instead of using the allocated access points into the park.

7.2.2.5 Electrocution & Accidents

Fences are non-lethal to humans but it is not uncommon for people living next to fences to receive strong shocks. For the case of the electric fence for MFNP, the voltage will be between 8-10 kv. This kind of voltage is strong enough to give a jolt or light shock but is not designed to be strong enough to be lethal to humans and animals. The most likely events are children playing close to fences with a poor understanding of the dangers or when people illegally try to gain access to MFNP and are shocked in the process. It is also possible for community livestock to get tangled in the fences by accident which could result in their deaths with the associated economic impacts.

Mitigation measures
All electric fences will be fitted with warning signs (hazard signs) spaced every 250m along the fence line to warn community members not to touch or tamper with the fence. In addition, community members will be carefully sensitized about how the fence works and the risks posed by fences to community members including children themselves and their livestock to minimize accidents. However, as already noted, such kind of electric fences send pulses of low amperage and pulsating current. As thus, they cannot kill or cause permanent damage to people.

7.2.2.6 Loss of livelihood

There are communities who have put bee hives along the boundary as a form of measures to prevent elephants passing such areas but also as a source of livelihood. In addition, there are signed MOUs to access some resources by the communities.

Mitigation measures
Gates or regular access points will be put in place in consultation with communities and depending on where resource access is currently happening. Schedules will be agreed upon to allow communities enter the park for access to these resources. For the bee hives, communities

have already been requested to shift their bee hives outside the demarcated areas for the fence line. These new locations for the bee hives shall not be within fenced MFNP.

7.2.2.7 Laxity in developing other intervention

There are a number of interventions that UWA has been developing and implementing over a long time to curb human wildlife conflicts. Some have worked while others are not very effective and the organization continues to try many others. Construction of the fence may kill this innovation and more initiatives to try other interventions.

Mitigation measures
The fence will work alongside other interventions that UWA has been implementing. In some areas where the fence may not be constructed due to terrain or other challenges, other interventions will be applied. UWA will be open to any other new interventions after assessing their viability.

7.2.2.8 Occupational Health and Safety risks and impacts

There may be loss of life due to animal attacks, injuries due to cuts, snake bites and other biological hazards during routine maintenance of the electric fence. There may also be physical hazards, slips and falls and injuries from tools and equipment.

Mitigation Measures
Adherence to safety requirements and standards, awareness creation on possible accidents, training of technicians on maintenance of the fence, installing warning signs. Provision of PPE and first aid boxes etc.

7.2.2.9 Disposal of batteries and solar panels

During maintenance phase, there will be waste generated in form of used solar panels and batteries that can contaminate the receiving environment.

Mitigation Measures
The waste batteries and solar panels shall be segregated and stored in a designated waste management area. Additionally, recovery and re-use shall be explored and where it is not feasible, the waste will be delivered to licensed waste handlers for final disposal.

7.2.2.10Aesthetic Impacts

Electric fences are likely to damage the natural beauty of MFNP. Fences are artificial structures that can be seen from far in the distance and may not be pleasant on the eyes. While likely to be limited in impact, fences may damage some of the tourism potential in specific areas. Given that the fence is along the boundary where a considerable number of hotels are located this impact is high.

Mitigation measures
In order to mitigate any visual impacts, the fence poles used will be natural in color so that they do not stand out from their environment. In addition, since the alignment of fences is strictly on the boundary of the park, they will not be very conspicuous to tourists. In some areas the fence will be where electricity transmission poles already exist so the area is already impacted upon.

7.2.2.11Fire hazards

There may be fire hazards that can lead to destruction of fence infrastructure, destruction of vegetation and habitats

Mitigation Measures
Firefighting equipment will be purchased and installed at strategic points; fire drills will be undertaken at periodic intervals, emergency routes will be created to enable easy access in case of fire; Install warning and preventive signs along access routes, engage stakeholders in fire management exercises.

7.2.2.12Maintenance activities

Monitoring the performance of the electric fence (operation and maintenance requirements of the fence to ensure it remains functional, voltage requirements, clearing the fence alignment, replacing damaged poles and wires, ensuring the fence is not vandalized).

Mitigation Measures
Involve and equip the local community with the equipment and skills necessary for the maintenance of the fence.

7.2.2.13Interference from fence operation on animal numbers and behavior

The operation of the fence may interfere and have impact on animal numbers, animal behavior (breeding and feeding patterns) through obstruction of migration routes, alteration of migration patterns etc.

Mitigation Measures
During fence construction, wildlife migration corridors will be provided for or maintained.

CHAPTER 8

8.0 ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP)

8.1 Introduction

The Environmental and Social Management Plan is a key tool used to ensure that environmental aspects are appropriately managed and that the recommendations of the ESIA are complied with during the construction and operation of the project in a manner compliant with the environmental regulatory requirements. This ESMP comprises of mitigation measures, management actions, monitoring indicators, timeframes for implementation and resources needed for the smooth implementation of the plan.

8.2 Purpose of the ESMP

The ESMP specifies the actions required to mitigate and manage environmental and social impacts and guides the implementation of these actions. The ESMP also details the monitoring and record keeping required to ensure that mitigation measures are effective and, that where they are not effective, the necessary corrective actions are promptly put in place. Finally, the ESMP provides a tool for auditing the implementation of the mitigation and monitoring commitments of the project and communicating the results to stakeholders.

8.3 Implementation of the ESMP

8.3.1 Responsible Parties

The overall responsibility of this ESMP is under UWA; which will ensure that the mitigation measures and recommendations are implemented and monitored in a sufficient manner. Other key stakeholders like Space for Giants, NEMA, community workers during construction and maintenance, surrounding communities and the District Local Governments will be very instrumental during the implementation of the ESMP.

Table 9: Roles and Responsibilities of Stakeholders

Stakeholder	Roles and Responsibilities
UWA	UWA will have the ultimate responsibility for ensuring that the mitigation measures are implemented. Consequently, UWA will review and approve strategies for delivery of the actions contained in the ESMP and subsequently to ensure that all proposed mitigation measures are implemented.
NEMA	NEMA is the regulatory authority responsible for coordinating, monitoring and supervision of environmental and social protection activities in Uganda.
Community workers during construction and operation/maintenance	The community workers, under the supervision of UWA, will be responsible for implementing the identified mitigation measures.

Stakeholder	Roles and Responsibilities
Communities	The communities are the ultimate beneficiaries of the ESMP. They will play a role in validating the reports, monitoring, reporting environmental and social safeguards issues, offer materials and labour resources in implementation of ESMP. The civil society part of the community will play a role in monitoring, reporting and advocacy for the timely implementation of ESMP. Civil society organizations especially those involved in environmental conservation and human rights will be involved in monitoring the implementation of the ESMP and the project as a whole. Ultimately, NGOs are envisaged to make UWA accountable during the implementation phase.
Local Governments	The District Local Governments have the major role of direct supervision and enforcement of ESMP.

8.3.2 Capacity Building for the implementation of ESMP

All workers and UWA staff involved in the project will be trained on effective construction, operation and maintenance of the fence and the implementation of the Environment and Social Management Plan.

8.4 Monitoring

The overall objectives of monitoring are to:

i. Ensure regulatory requirements and World Bank requirements are met;
ii. Verify that mitigation measures are implemented and effective; and
iii. Provide early warning of potential unplanned for or unmitigated impacts.

8.4.1 Monitoring Approach

Monitoring will be done by UWA to ascertain whether the project is being implemented in line with the approved procedures and legal requirements. NEMA may also take part in the monitoring of the project as it may require.

8.4.1.1 Inspection

Inspections will be planned and conducted on a monthly basis to ensure that mitigation measures and commitments are properly maintained and implemented, and that specific management procedures are being followed.

8.4.1.2 Auditing

Auditing will be done to assess compliance of the project activities to both regulatory and site management system requirements.

Table 10: Environmental and Social Management Plan

S/N	Potential Impact	Location	Mitigation/ Enhancement Measures	Monitoring Indicators	Responsibility	Timing/ Frequency	Cost
A: POSITIVE IMPACTS							
1	Improved livelihood as a result of increased agricultural productivity; improved food security and income.	Surrounding Communities	Creating awareness about the benefits of an electric fence Sharing of park revenues with neighboring communities	Seasonal yields Number of people employed on the project	UWA Community Conservation & District Local Government (DLG)	Annually; During operation stage.	N/A
2	Improved social order due to increased family bonding time for farmers	Surrounding Communities	Creating awareness about the benefits of an electric fence	Number of reported community grievances Number of farmers spending nights protecting their farms from elephants	UWA Community Conservation & DLG	Quarterly during operation stage	N/A
3	Reduced human wildlife conflict	Surrounding Communities	Employing other complementary initiatives for controlling HWC	Number of farms attacked by wildlife Number of reported community grievances	UWA Community Conservation & DLG	Quarterly during operation stage	N/A
4	Creation of employment opportunities	Surrounding Communities	Employing workers from the project vicinity	Number of local people employed; wages	UWA Community Conservation	Monthly during project construction and operation phase	N/A
5	Positive community attitudes	Surrounding Communities	Sharing of park revenues with communities	Number of community grievances recorded	UWA Community Conservation & DLG	During operation stage	N/A

S/N	Potential Impact	Location	Mitigation/ Enhancement Measures	Monitoring Indicators	Responsibility	Timing/ Frequency	Cost
6	Improved Park security	MFNP boundaries	Formalized Park access rights for the communities Clear demarcation of the park boundaries	Reduced or registered illegal activities in the park	UWA, Community Conservation & DLG	During operation stage.	N/A
7	Improved conservation	MFNP	Formalized Park demarcations and increased park access security	Reduced illegal activities such as poaching, grazing and resource extraction in the park	UWA	During operation stage	N/A
B. NEGATIVE IMPACTS DURING THE CONSTRUCTION PHASE							
8	Occupational health and safety impacts as result of air pollution, harsh weather conditions, physical hazards, poor sanitation and hygiene, over-exertion and ergonomic injuries and illness, biological hazards, risks from wild animals etc.	Project working areas	Implementation of the OHS Protocols to address workers issues Implementation of the WBG EHS General Guidelines to address OHS issues Provision of PPE to workers Provision of first aid boxes Regular safety toolbox meetings and emergency drills Provision of armed guards to protect workers Induction of workers	Number of induction trainings undertaken Presence of first aid boxes Presence of PPE Number of toolbox meetings undertaken Presence of armed guards Records of trainings undertaken	UWA	All through the construction	30,000,000

S/N	Potential Impact	Location	Mitigation/ Enhancement Measures	Monitoring Indicators	Responsibility	Timing/ Frequency	Cost
			Training of workers in lifting and materials handling techniques				
9	Vegetation clearing and soil erosion making the area prone to soil and wind erosion especially in areas of heavy rainfall on steep terrain	3-5m wide vegetation clear zones either side of the fence and under the fence	Only the required amount of vegetation, that is strictly necessary for construction and optimal performance of the fence, shall be cleared. In areas where there is a likely risk of soil erosion, the area will be reinforced with stones and proper drainage.	Incidences of haphazard vegetation clearing Non backfilled excavations Reports on the amount and type of vegetation cleared. Amount of area reinforced with stones.	UWA	All through the construction and maintenance period	10,000,000
10	Pollution in terms of noise pollution, air pollution and poor human waste management	Working areas	To reduce on noise pollution, chainsaws and other heavy machinery shall be used only during the day All construction activities will take place during the day to avoid disrupting the nights Air pollution will be kept to a minimum by only using vehicles which are in good mechanical condition Human waste will be mitigated by use of mobile toilets during the entire construction phase	Visible smoke emitted by equipment in use Mobile toilets installed at working areas Waste segregation/collection bins Ensuring all wastes are properly disposed Presence of PPE	Contractor	All through construction phase	20,000,000

S/N	Potential Impact	Location	Mitigation/ Enhancement Measures	Monitoring Indicators	Responsibility	Timing/ Frequency	Cost
			For noise pollution, hearing protection will be used Employees will not be exposed to noise levels greater than 85 Db (A) for a duration of more than 8 hours per day Dust suppression techniques will be implemented such as applying water Use of PPE such as masks				
11	Waste management including food remains, plastic bottles and polyethene bags and the remains of construction of the fence e.g., wires and poles	Working areas	Adequate waste collection bags will be provided All waste generated during the day will be collected and transported outside the park Only wires and poles to be used that specific day will be brought on site Ensuring proper waste management by adhering to the hierarchy of waste management Waste segregation will be undertaken	Number of waste collection bags provided Incidents of environmental degradation due to littering Number of proper waste management trainings conducted Amount and type of waste generated and method of disposal Number and records of induction trainings	UWA	During the entire construction phase	40,000,000

S/N	Potential Impact	Location	Mitigation/ Enhancement Measures	Monitoring Indicators	Responsibility	Timing/ Frequency	Cost
			Workers will be inducted on proper waste management				
12	Animals might be fenced outside the park putting them at risk of being killed by communities or vice versa	Along the fenced off boundaries	The park guards with the help of community members will ensure that they patrol all accessible areas close to the park boundary so that any animals outside the demarcated fence line are brought back within the boundaries of MFNP The communities will be sensitized on reporting of cases where they encounter animals that will be fenced out during and after the fence construction phase	Number of reported cases of animals found outside MFNP fence	UWA, MFNP Management	Throughout the project cycle	10,000,000
13	Stealing of equipment e.g., energizers	Storage areas, transportation and working sites	A containerized storage facility for some of the construction materials (energizers, wires and timber) will be set up at the site with secure locking and manned with a store keeper Screening will be done on some casual workers recruited locally with the help of the local council leaders	Number of thefts reported incidents Storage facility provided	UWA	Throughout the construction phase	15,000,000

S/N	Potential Impact	Location	Mitigation/ Enhancement Measures	Monitoring Indicators	Responsibility	Timing/ Frequency	Cost
			Guards will be provided during the construction times along the fence lines to closely watch over the workers for both safety and security reasons				
14	Interference from fence construction on animal numbers, animal behavior (breeding and feeding patterns) through obstruction of migration routes, alteration of migration patterns etc.	Park area	Provision of wildlife migration corridors	Evidence of migration corridors	UWA, MFNP	Throughout the project cycle	10,000,000
C: NEGATIVE IMPACTS DURING THE OPERATIONAL AND MAINTENANCE PHASE							
15	Risk of electrocution for wildlife	Park boundary/ Fence line	Provision of an alarm to go off and the voltage to drop in case of any incident Constant patrols along the fence line Installed cameras to capture such incidents and electric wires to be installed 20cm above the ground level to allow easy movement of crawling animals	Number of wildlife electrocution incidents reported Number of fence line patrols conducted	UWA, QNEP management	During the operation stage of the project.	20,000,000
16	Restriction of wildlife movement	Park boundaries	Wildlife corridors will remain unfenced	Presence of wildlife corridors	UWA	During operation stage	10,000,000

S/N	Potential Impact	Location	Mitigation/ Enhancement Measures	Monitoring Indicators	Responsibility	Timing/ Frequency	Cost
17	Increased human activity close to park boundary	Community–park boundaries	The park will work with the relevant authorities to place additional beacons to clearly demarcate the boundary Through regular patrols UWA will ensure that park boundary is not encroached upon In addition, community sensitization activities will ensure that park boundaries are clearly understood and respected.	Scope of land that has been encroached on.	UWA	Quarterly	10,000,000
18	Access limitations for park resources by the communities thus commuting longer distances to access the resources	Surrounding communities.	Involve the communities in the placement of gates for access Communities will be briefed on access rights and how fence access will be managed and enforcement Through community engagements, communities shall be informed of the dangers associated with trespassing instead of using the allocated access points into the park	Number of access gates provided Number of related community grievances registered	DLGs	During operation stage	10,000,000
19	Electrocution & Accidents	Along the fence lines/	All electric fences will be fitted with warning signs	Number of related incidents recorded;	UWA	During operation stage	20,000,000

S/N	Potential Impact	Location	Mitigation/ Enhancement Measures	Monitoring Indicators	Responsibility	Timing/ Frequency	Cost
		community boundaries.	spaced every 250m along the fence line to warn community members not to touch or tamper with the fence Community members will be carefully sensitized about how the fence works and the risks posed by fences to themselves and their livestock to minimize accidents Routine maintenance of the fence to ensure it remains in good working condition.	Number of warning signs installed and community sensitization campaigns conducted .			
20	Loss of livelihood to communities who have put bee hives along the boundary as a form of measures to prevent elephants passing such areas.	Surrounding communities	Gates will be put in consultation with communities and depending on where resource access is currently happening Schedules will be agreed upon to allow communities enter for access to these resources For the bee hives, communities have already been requested to shift their bee hives outside the demarcated areas for the	Number of access gates provided Visible new locations of the bee hives outside the demarcated fence boundaries .	DLG, UWA	During operation stage	20,000,000

S/N	Potential Impact	Location	Mitigation/ Enhancement Measures	Monitoring Indicators	Responsibility	Timing/ Frequency	Cost
			fence line and these new locations for the bee hives shall not be within fenced MFNP				
21	Laxity in developing other interventions	Project area	The fence will work alongside other interventions that UWA has been implementing. In some areas where the fence may not be constructed due to terrain or other challenges, other interventions will be applied. UWA will be open to any other new interventions after assessing their viability.	Number of new interventions implemented by UWA	UWA, MFNP	Throughout the project cycle	N/A
22	Occupational health and safety impacts for example from attacks from wild animals, snake bites and other biological hazards, physical hazards, injuries from tools and equipment during routine maintenance activities.	Project area	Adherence to safety requirements and standards Training of the workers on maintenance of the fence Installation of warning signs Provision of PPE Awareness creation on possible accidents Provision of First Aid Kits	Records of trainings Number of first aid kits Presence of PPE Presence of warning signs	UWA, MFNP	Operation and Maintenance	30,000,000
23	Potential contamination of the environment through disposal of solar panels and batteries after use	Along the fenced off boundaries	Segregate and store in a designated waste management area	Recruitment of NEMA licensed waste handler	UWA, MFNP	Entire operation and decommissioning periods	20,000,000

S/N	Potential Impact	Location	Mitigation/ Enhancement Measures	Monitoring Indicators	Responsibility	Timing/ Frequency	Cost
		and receiving environment	Recovery and re-use to be explored and where it is not feasible, they should be disposed off by a NEMA Certified waste handler				
24	Aesthetic Impacts	Along the park boundary/ fence line.	The fence poles used will be natural in color so that they do not stand out from their environment; in some areas the fence will be where electricity transmission poles already exist	Number of complaints registered from communities, tourists and tour operators	UWA	Operation	
25	Fire hazards, major storms of flooding that can lead to destruction of fence infrastructure, destruction of vegetation and habitats	Along the fence line and adjacent areas	Firefighting equipment will be purchased and installed at strategic points Fire drills will be undertaken at periodic intervals Emergency routes will be created to enable easy access in case of fire Install warning and preventive signs along access routes, Engage stakeholders in fire management exercises	Number of fire-fighting equipment Records of fire drills	UWA, MFNP	Throughout the project cycle	40,000,000
26	Maintenance activities/ Monitoring the performance of the electric fence (operation and	Along the fence line	Involve and equip the local community with the equipment and skills	Continued functioning of the fence	UWA/MFNP Management Local Community	Daily/Weekly	20,000,000

S/N	Potential Impact	Location	Mitigation/ Enhancement Measures	Monitoring Indicators	Responsibility	Timing/ Frequency	Cost
	maintenance requirements of the fence to ensure it remains functional, voltage requirements, clearing the fence alignment, replacing damaged poles and wires, ensuring the fence is not vandalized)		necessary for the maintenance of the fence				
27	Interference from fence operation on animal numbers, animal behavior (breeding and feeding patterns) through obstruction of migration routes, alteration of migration patterns etc.	Park area	Provision of wildlife migration corridors during construction	Evidence of migration corridors	UWA, MFNP	Throughout the project cycle	20,000,000

CHAPTER 9

9.0 CONCLUSION AND RECOMMENDATIONS

9.1 Conclusion

This proposed project is set to transform the lives of Ugandan farmers living on the boundaries of MFNP. Through the construction of this electric fence, human elephant conflict will be reduced to manageable levels resulting in increased crop harvests, reduced retaliatory killings and improved relationships between the community and MFNP/UWA.

9.2 Recommendations

In order for this project to come to fruition and yield a positive impact, UWA shall conduct regular stakeholder meetings during the construction phase and during the maintenance phase to identify problems that may undermine the operational capacity of the fence. In addition, UWA shall create a dedicated fence committee along the proposed fence that meets on a quarterly basis to discuss fence performance and access needs. A boundary road shall be created along the fence line as it is being constructed to improve the capacity for patrolling the line. An armed presence along the line, especially in the initial phase, is advised to deter fence vandalism. UWA shall also create a dedicated "Fencing Unit" that either falls under the Warden Community, Logistics or Security. This team will be responsible for fence performance, monitoring and reporting.

The electric fencing in MFNP has numerous positive impacts both socially and economically. From the consultations, communities are eagerly waiting for the start of this project and many said it has been long overdue. Despite the positive impacts, there are a number of negative impacts and as outlined above, these will be minimized and some eliminated completely. It is therefore UWA's recommendation that this project brief be approved to allow the project commence.

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Annex 1: Chance Finds Procedures

Overview

Cultural resources are important as sources of valuable historical and scientific information, as Assets for economic and social development, and as integral parts of people's cultural identity and practices. The loss of such resources is irreversible, but fortunately, it is often avoidable.

The World Bank ESS8; Cultural heritage requires the Identification of stakeholders and carrying out of meaningful consultations with local or national authorities for cultural heritage. It further stipulates the need to attend to the chance finds and identify mitigation measures thereafter. Its objective is to 1) Protect cultural heritage from the adverse impacts of project activities and support its preservation, 2) Address cultural heritage as an integral aspect of sustainable development, 3) Promote meaningful consultation with stakeholders regarding cultural heritage. 4) Promote the equitable sharing of benefits from the use of cultural heritage.

Protection of Cultural Heritage

Cultural heritage in the project context includes cultural sites within and outside the forests, sites of significance points of view, and other defined assets and structures having archaeological, historical, architectural, or religious significance, and natural sites with cultural values. This also includes cemeteries, graveyards and graves.

A systematic procedure for protection and treatment of discovered artefacts during project implementation will be taken according to the Ugandan cultural and national requirements, and an adequate provision for handling of chance finds will be included in all contracts for civil works Workers will be instructed to remain vigilant during excavation works, identify chance finds immediately and alert the site foreman.

If the chance finds occur, they will be handled according to the Historical Monuments Act, Cap 46. Under the Act, any chance finds should be reported to the Department of Museums and Monuments (DoMM) of the Ministry of Tourism, Wildlife and Antiquities and the Chief Administrative Officer. If the finds are not of interest to the DoMM, they should be reburied on a site set aside for such purpose. If they are unknown human remains, police need to be alerted and remains will be handled according to their instructions. All relocation and reburial costs shall be borne by the contractor.

Chance Find Procedures

Chance find procedures will be used as follows:

a. Stop the project 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 deployed until the responsible local authorities and the DoMM take over;

d. Notify the project supervisor who in turn will notify the responsible local authorities and the National Museum immediately (within 24 hours or less);

e. The local authorities and the National Museum will take charge of protecting and preserving the site in case the finds are of interest to the Department

i. This would require a preliminary evaluation of the findings to be performed by the archaeologists of the National Museum (within 72 hours). The significance and importance of the findings should be assessed according to the various criteria relevant to cultural heritage; those include the aesthetic, historic, scientific or research, social and economic values;

ii. Decisions on how to handle the finding shall be taken by the responsible authorities and the National Museum. This could include changes in the layout (such as when finding an irremovable remain of cultural or archaeological importance) conservation, preservation, restoration and salvage;

iii. The local authority/ National Museum decision concerning the management of the finding shall be communicated in writing by the National Museum; and

iv. Findings will be recorded in World Bank Implementation Supervision Reports (ISRs), and Implementation Completion Reports (ICRs) will assess the overall effectiveness of the project's cultural property mitigation, management, and activities, as appropriate.

v. Project works could resume after permission is given from the responsible local authorities and the National Museum concerning safeguard of the heritage;

f. The above procedure when applicable must be referred to as standard provisions during the project activities and therefore site supervisors shall monitor the procedure for any chance find encountered during project activities
g. If the finds are not of interest to the Department of Museums and Monuments, they should be reburied on a site set aside for such purpose and project works continue

In case of Chance finds, the Implementing partners for the project will ensure that the chance finds procedure is adequately utilized and monitored.