ENVRONMENTAL AND SOCIAL IMPACTS ASSESSMENT STUDY REPORT FOR THE PROPOSED KAKAMEGA STAFF HOUSING PROJECT AT MUDIRI ESTATE, IN KAKAMEGA TOWN KAKAMEGA COUNTY

Cover photo: Mudiri project site taken during site survey. Co-ordinates: N 00 30' 32.042172", E 350 17' 29.79319"

PROPONENT

COUNTY GOVERNMENT OF KAKAMEGA
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AUGUST 2021

CERTIFICATION

This Environmental and social impact assessment study report on environmental impacts has been prepared by Clarence Machoka Bigogo (NEMA Reg. No 6819) and the list of environmental experts shown in the table below. The report has been done with reasonable skills, care and diligence in accordance with the Environmental Management and Co-ordination Act, 1999, the Environmental Impact Assessment and Audit Regulations, 2003 and as per Legal Notice No. 31, on amendment of the second schedule dated 30.04.2019. We certify that the particulars given in this report are correct to the best of our knowledge.

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Signature……Date…22/08/2021

ACRONYMS

CPP	Consultation and Public Participation
EA	Environmental Audit
EHS	Environmental Health and Safety

EIA	Environmental Impact Assessment
EMCA	Environmental Management and Co-ordination Act
EMP	Environmental Management/Monitoring Plan
KBS	Kenya Bureau of Standards
ESIA	Environmental and social impact assessment study report
SPR	Summary Project Report
LPDP	Local Physical Development Plan
NEC	National Environmental Council
NEMA	National Environment Management Authority
NW&SC	Nairobi Water and Sewerage Company
OSHA	Occupational Safety and Health Act
PPG (E)	Personal Protective Gear (Equipment)
RC	Reinforced Concrete
RHS	Right Hand Side
SHE	Safety Health and Environment
SWM	Solid Waste Management
TOR	Terms of Reference
VOC	Volatile Organic Compounds
WRMA	Water Resources Management Authority

CONTENTS

EXECUTIVE SUMMARY

This Environmental and social impact assessment study report (ESIA) is prepared on behalf of the County Government of Kakamega, herein referred to as the proponent. The proponent intends to carry out a Staff Housing Project at Mudiri Estate, Kakamega town. The housing project will consist of six one bedroomed appartments,seven two bedroomed apartments and four three one bedroomed appartments,shopping complex,car parking,drive ways/paths, land scaped gardens,connection to electricity and septic.The units are as follows; One bedroomed units are 16 ,Two bedroomed units are 816, Three bedroomed units are 272 bringing the total num,ber of units to 272.All the apprtment blocks are 16 floors/17 storeys.

The Kenya Government policy on projects of such nature and scale, programmes or activities requires that a Environmental and social impact assessment study report on Environmental Impacts be carried out at the planning stages of the proposed undertaking to ensure that significant impacts on the environment are taken into consideration during the design, construction, operation and decommissioning of such projects, programmes.

The scope of this Environmental and social impact assessment study report (ESIA), therefore, covered the following:

- The baseline environmental conditions of the area
- Description of the proposed project,
- Provisions of the relevant environmental laws
- Identification and discussion of any adverse negative impacts to the environment anticipated from the proposed project,
- Appropriate mitigation measures,
- Provision of an environmental management plan outline.

Objectives, Scope and Criteria of the Assessment

NEMA registered experts were appointed as Consultants to conduct the Environmental and social impact assessment study report study of the proposed development project. The scope of the assessment covered the project site, surrounding and the utilities under the project. The output of this work was a Environmental and social impact assessment study report for the purposes of applying for a EIA license from NEMA.

Methodology Outline

The general steps followed during the Assessment were as follows:

- Environment screening in which the project was identified as among the developments that requires a Environmental and social impact assessment study report on environmental impacts under schedule 2 of EMCA, 1999 and EMCA Amendments Act 2015 that provides for legal and institutional framework for environmental management in Kenya and Section 58(1) of EMCA 1999 as amended by Legal Notice No. 31 dated 30.04.2019 that states: Notwithstanding any approval, permit or license granted under this Act or any other law in force in Kenya, any person, being a proponent of a project, shall before financing, commencing, proceeding with, carrying out, executing or conducting or causing to be financed, commenced, proceeded with, carried out, executed or conducted by another person any undertaking specified in the Second Schedule to this Act, shall submit a project report to the Authority, in the prescribed form, giving the prescribed information.
- Environmental scoping that provided the key environmental issues
- Desktop studies and interviews

- Physical inspection of the site and surrounding areas
- ESIA Public participation via the use of questionnaires , interviews and public meetings
- Reporting.

Description of the Project

Project site
The proposed development sites herein referred to as the project site are situated at Mudiri Estate,Kakamega town. The housing project will consist of six one bedroomed appartments,seven two bedroomed apartments and four three one bedroomed appartments,shopping complex,car parking,drive ways/paths, land scaped gardens,connection to electricity and septic.The units are as follows; One bedroomed units are 16 ,Two bedroomed units are 816, Three bedroomed units are 272 bringing the total num,ber of units to 272.All the apprtment blocks are 16 floors/17 storeys.

Several mature trees of diverse species were identified at the proposed site such as Grevillea *robusta*, *Eucalyptus spp* and several indigenous tree species. The proposed areas of construction have some houses that will be demolished later to pave way for the construction of modern permanent structures.

Project Cost
The estimated project cost for the proposed development is 3,100,000,000 Kenya Shillings

Key Environmental Issues
The key negative biophysical, health and safety, and socio-economic impacts of the project during the construction phase are as follows:-.

- Extraction and use of building materials leading to negative impacts on their availability and sustainability and degradation of the environment at the material sites.
- Generation of substantial amounts of solid waste from construction works and demolitions.
- Risks of release of hazardous materials including petroleum products (lubricating oils and greases), fuels (gasoline, kerosene), solvents, paints, batteries, and miscellaneous equipment maintenance supplies into the environment.
- Risk of exposure to hazardous materials from the demolitions.
- Dust emissions resulting from transporting trucks and construction work
- Exhaust emissions from materials transport trucks
- Noise and vibration caused by heavy trucks, and construction machinery
- Risks of accidents and injuries to construction workers
- High levels of water use

The key negative environmental impacts of the operational phase of the project will be as follows:-

- Increased traffic and associated Impacts in the area
- Possibilities of human congestion
- Solid waste generation
- Increased demand for sanitation

- Increased levels of energy consumption
- Increased levels of water use
- Increased storm water flow

Positive Impacts

Positive environmental impacts during construction activities include:-

- Creation of employment opportunities for construction crew
- Creation of market for supply of building materials
- Increased business opportunities for small-scale traders such as food vendors and transportation activities, amongst others.

Positive environmental impacts of operational phase of the project will include:-

- Availability of modern housing for Kakamega County Staff and their families
- Overall National increase of housing facilities
- Employment opportunities Contribution of revenue to the national and county governments
- Improved security around the premises, amongst others
- Improvement of the aesthetic values of the area through proper landscaping
- Provision for green areas

Summary of potential Impacts and proposed mitigation measures

Impact	Proposed Mitigation Measure
Noise and vibration	□ Formulate an inspection and maintenance program for the machines and equipment on site. □ Implement both engineering and administrative controls for machines and equipment to reduce noise pollution at the site.
Air Pollution: Dust generation.	□ Sprinkling of water at the site and access roads during dry conditions to suppress fugitive dust □ Fix a dust proof net five (5) meters high above the hoarding
Solid waste	□ Contract a licensed waste handler to manage general waste during the construction phase and operational phase □ Integrated Solid Waste Management to be encouraged □ Adhere to the provisions of the Waste Management Regulations of 2006
Soil pollution	□ Provide spill kits on site and train workers how to use them □ Provide drip trays where spills are likely to occur from machines and vehicles under repair
Air Pollution: Fumes	□ Use of low sulphur diesel for diesel powered vehicles and equipment. □ Proper maintenance of machinery and vehicles □ Prohibit open burning of any kind of waste on site
Risk of occupational accidents and diseases.	□ Set up a health and safety committee and periodic site inspections, training and annual safety audits. □ Provide appropriate PPEs to workers and visitors to the site □ Adhere to the provisions of the occupational Health and Safety Act of 2007.
Generation of waste water	□ Construction of septic tanks and a biodigester □ Identify opportunities for reuse of waste water □ Formulate and implement an inspection and maintenance program for the waste water disposal system

Increased demand for water and electricity	- Incorporate rain water harvesting in the project design - Encourage water reuse and/or recycling - Install Solar Panels for solar energy harvesting and optimize on natural lighting in the project design - Use of energy efficient machines and appliances - Provision of a standby generator
Land degradation	- Limit excavations to areas marked for development - Apply a layer of selected backfill material on the access roads
Vegetation clearance	- Ensure vegetation is only cleared in areas where Foundations are to be dug. - Trees to be protected insitu to be clearly identified on the plans and communicated to all Construction staff.
Insecurity	- Employ construction workers who possess valid certificates of good conduct - Provide screening arrangements at the gate - Formulate a comprehensive security plan and implement it by contracting a reputable security firm to be in charge of security at the site. - Liaise with the neighbors and the local administration in security management

Recommended Actions

Several measures have been suggested to prevent or minimize the negative environmental impacts and to maximize the positive ones using a comprehensive Environmental Management Plan. The measures mainly focus on the following points:-

- Use of alternative materials or products which are less damaging to the environment
- Reduction of impacts of waste through minimization of waste generation, recycling, reuse and responsible disposal
- Energy and water conservation
- Use of appropriate technologies to mitigate environmental impacts of various activities
- Ensuring compliance with relevant safety, health and environmental regulations
- Reduction of exhaust emissions through proper planning of vehicle movements and use of lead free fuel.
- Provision of adequate parking space for vehicles

1. INTRODUCTION

1.1 Background and Rationale for a Environmental and social impact assessment study report

The proposed development site herein referred to as the project site is situated at Mudiri Estate,Kakamega town.The housing project will consist of six one bedroomed appartments,seven two bedroomed apartments and four three one bedroomed appartments,shopping complex,car parking,drive ways/paths, land scaped gardens,connection to electricity and septic.The units are as follows; One bedroomed units are 16 ,Two bedroomed units are 816, Three bedroomed units are 272 bringing the total num,ber of units to 272.All the apprtment blocks are 16 floors/17 storeys.

The location of the proposed project at Mudiri Estate, Kakamega town

The Kenya Government policy on projects of such nature and scale, programmes or activities requires that a Environmental and social impact assessment study report Study be carried out at the planning stages of the proposed undertaking to ensure that significant impacts on the environment are taken into consideration during the design, construction, operation and decommissioning of such projects, programmes or activities. Therefore, in compliance with the law and to avoid unnecessary conflicts that may retard development in the country, the proponent undertook this Environmental and social impact assessment study report and incorporated environmental concerns as required.

1.2 Scope and Criteria of the Environmental and social impact assessment study report (ESIA)

1.2.1 Scope of the Report

The Kenya Government policy on all new development projects, programs or activities requires that a ESIA on environmental impacts be carried out at the design stage of the proposed undertaking to ensure that significant impacts on the environment are taken into consideration during the construction, operation and decommissioning of the facility. The scope of this ESIA, therefore, covered:

- The baseline environmental conditions of the project area
- Description of the proposed project,
- Provisions of the environmental laws pertinent to the project
- Identification and discussion of any adverse negative impacts to the environment anticipated from the proposed project,
- Appropriate mitigation measures,
- Provision of an environmental management plan (EMP) outline.

1.2.2 Terms of Reference (TOR) for the ESIA Process

NEMA registered environmental experts were appointed as consultants to conduct the ESIA Study of the proposed development. The scope of the assessment covered the project

site, area in close proximity to the proposed site and the utilities under the project. The output of this work is a Environmental and social impact assessment study report on Environmental Impacts for the purposes of applying for a NEMA EIA license.

The main objective of the assignment was to assist the proponent to prepare a study report after carrying out a ESIA of the proposed project, to ensure that the proposed development takes into consideration appropriate measures to mitigate any adverse impacts to the environment. The study identified potential environmental impacts and possible concerns that interested and/or affected parties have with the development, as well as the associated prevention and mitigation measures for the negative impacts as stipulated in the Environmental Management Plan (EMP).

The consultant on behalf of the proponent conducted the study by incorporating the following terms of reference inter alia:-

- The location of the project
- A concise description of the national and county environmental legislative and regulatory framework, baseline information, and any other relevant information related to the project.
- The objectives of the project.
- The technology, procedures and processes used, in the implementation of the project.
- The materials used in the construction and implementation of the project.
- The products, by-products and waste generated by the project.
- The environmental effects of the project including the social and cultural effects and the direct, indirect, cumulative, irreversible, short-term and long-term effects
- To recommend a specific environmentally sound and affordable waste management system.
- An environmental management plan proposing the measures for eliminating, minimizing or mitigating adverse impacts on the environment, including the cost, timeframe and responsibility to implement the measures.
- Provide an action plan for the prevention and management of accidents and hazardous activities in the cause of carrying out development activities.
- Propose measures to prevent health hazards and to ensure security in the working environment for the employees and for the management in case of emergencies.
- Identification of gaps in knowledge and uncertainties which were encountered in compiling the information.

1.2.3 Data Collection Procedures

The data collection was carried out through questionnaires/standard interview schedules, use of checklists, observations and photography, site visits and desktop environmental studies.

1.2.4 ESIA Organization and Structure

The ESIA was carried out to full completion within a period four weeks from the date of undertaking. A Consultant (Lead Expert) coordinated the day-to-day functions and any related institutional support matters. Otherwise, all formal communications were directed to NEMA through the proponent.

1.2.5 Reporting and Documentation

The ESIA drafted from the findings was compiled in accordance with the guidelines issued by NEMA for such works and was prepared and submitted by the proponent for review. The Consultant ensured constant briefing of the client during the exercise. Description plans and sketches showing various activities are part of the Appendices.

1.2.6 Responsibilities and Undertaking

The Environmental Consultants undertook to meet all logistical costs relating to the assignment, including those of production of the report and any other relevant material. The consultant arranged for own transport and travels during the exercise. On the site of the proposed development project, the proponent provided a contact person(s) to provide information required by the Consultants. The proponent also provided site plan(s) showing roads, service lines, buildings layout and the actual sizes of the sites, details of raw materials, proposed process outline and anticipated by-products, future development plans, operation permits and conditions, land-ownership documents and site history, and estimated investment costs. The output from the consultants includes the following:

- A Environmental and social impact assessment study report (ESIA) comprising of an executive summary, assessment approach, baseline conditions, anticipated impacts and proposed mitigation measures,

- An Environmental Management Plan (EMP) outline, which also forms part of the report recommendations.

1.2.7 Methodology Outline

Since the intended development and use of the facility will be in line with what exists in the surrounding areas, the ESIA Study would be seen to be adequate to draw attention to the potential positive and negative environmental impacts; provide mitigation measures for negative ones and enhance the positive impacts. The general steps followed during the assessment were as follows:

- Environment screening, in which the project was, identified as among those requiring a ESIA under schedule 2 of EMCA, 1999 that was amended as per Legal Notice No. 31 dated 30.04.2019

- Environmental scoping that identified the pertinent environmental issues

- Desk Stop studies and interviews
- Physical inspection of the site and surrounding areas
- Reporting.

Environmental Screening

This step was applied to determine whether a ESIA was required and what level of assessment was necessary. This was done in reference to requirements of the EMCA, 1999, and specifically the second schedule. Issues considered included the physical location, sensitive receptors in close proximity to the site and the nature of anticipated impacts. It was concluded that the proposed project falls within the category of projects under the second schedule of EMCA that requires a ESIA to be done before implementation.

Environmental Scoping

The Scoping process helped narrow down onto the most critical issues requiring attention during the assessment. Environmental issues were categorized into physical, natural/ecological and social, economic and cultural aspects. The site history and the facilities in close proximity to the site were considered during this stage.

Desktop Study

This included documentary review on the nature of the proposed activities, project documents, designs policy and legislative framework as well as the environmental setting of the area among others. It also included discussions with managers and design engineers as well as interviews with neighbors.

Site Assessment

Field visits meant for physical inspections of the site characteristics and the environmental status of the surrounding areas to determine the anticipated impacts were conducted. It also included further interviews with neighbors, surrounding enterprises and key stakeholders.

Reporting

In addition to constant briefing on the environmental aspects and impacts pertinent to the project, this ESIA was prepared and shared with the client. The contents were presented for submission to NEMA as required by law.

2 DESCRIPTION OF THE PROPOSED PROJECT

2.1 Project background

The Proponent, County Government of Kakamega intends to construct staff houses within Kakamega County. The houses so developed will solely be used by its own staff who will own them through check off purchase system or any other agreeable arrangement.

2.2 Project Location

The proposed site is located at Mudiri Estate,Kakamega town, Kakamega County.

2.3 Project investment cost

The estimated project cost for the proposed development is Four Billion **(3,100,000,000)** Kenya Shillings.

2.4 Project size/specifications

The proposals as put up by a team of consultants (project planners, project managers, urban planners, engineers, quantity surveyors, environmentalists, physical planners, hydro geologists and other consultants) are the most economically sound, environmentally sound and technologically savvy as envisaged by the client. The current sites have a well-developed network of existing structures (telecommunications, electricity lines, and access infrastructure and service lines), natural systems (riverine wetlands). The proposed developments will be put up in such a manner as to maximize the intended benefits.

The principles to be integrated into the public space network are the following:

- All public space will be interconnected to provide a continuous system of green and hard space, including road reserve to facilitate pedestrian movement and conservation of environment and natural habitats present at the site.
- Green spaces will be distributed to provide green relief to dense built environments as evenly as possible.
- .The housing project will consist of six one bedroomed appartments,seven two bedroomed apartments and four three one bedroomed appartments,shopping complex,car parking,drive ways/paths, land scaped gardens,connection to electricity and septic.The units are as follows; One bedroomed units are 16 ,Two bedroomed units are 816, Three bedroomed units are 272 bringing the total num,ber of units to 272.All the apprtment blocks are 16 floors/17 storeys.

2.5 Project Vision, Goal, Principles and Objectives

Reinforcing and strengthening existing population growth patterns to create a new development that will spur economic growth and improve living standards both locally and at regional level. This development will take into consideration both social and environmental aspects and create a serene environment for all.

Goal

Enhancing sustainability and quality of the built and landscaped environment capturing land value for investors and to provide modern housing facilities for Kakamega County staff.

Project Objectives

I. Creating a conducive living environment with ecological and social diversity as a development approach for Kakamega County

II. Develop new Staff housing estates and other auxiliary developments supporting with quality environment.

III. Provide a friendly pedestrian environment with quality, safe public environment for the residents and neighbors.

2.5.1 Site access and circulation

The sites are easily accessible by tarmac and murram Roads.

2.5.2 Demolitions

A number of structures will be demolished to pave way for the permanent constructions. Minimal demolitions are expected at the sites during construction as most of the development space is clear open land

2.6 The Design of the project

The designs of the proposed development will take into consideration the activities of the existing facilities in close proximity to the proposed sites. Staff housing estates will be constructed as far as possible from busy highways because of the noise that is generated by the traffic.

The accesses to the buildings will be designed to ensure no traffic congestion. Acceleration/deceleration lanes will be provided and any recommendations by the traffic expert will be incorporated into the civil access roads design. The storm water will be discharged through County drains along the roads adjacent to the development. Where necessary, the drains should be improved to cater for the expected increased storm water to ensure that no flooding into roads or neighboring properties takes place.
Foul sewage will be connected to the County sewer line and is expected to comprise of domestic waste and other types of waste.

The civil/structural materials anticipated to be used on the project are;

Structural concrete out of cement, river sand and/or rock dust and ballast with approved additives if proposed by contractors. Before a connection to a sewer line is made, the waste water will be channeled to a Biodigester system.

The development will have the following environmentally sound characteristics:-

- Power conservation e.g. enhancing natural lighting during the day and instructions on switching off lights where not needed.
- Reduced need for air conditioning by enhanced natural cross ventilation and reduction of solar glare/heat gain through natural atmosphere
- Water conservation by use of sanitary fittings, Biodigester system for recycling of waste water for irrigation and cleaning etc.
- Rain water harvesting.

2.7 Proposed sustainability features

Sustainability features proposed include the following:

Natural Ventilation
The buildings are being designed to encourage and maximize the use of natural ventilation by providing good internal comfort conditions throughout the year. Even where supplementary comfort cooling is installed in some areas, to save energy the buildings will be designed for 'mixed-mode' so that the cooling can be implemented only under very warm external conditions with natural ventilation for the remainder of the year.

Water Services

The potable water service will be provided from bulk storage tank that will be mounted on site. The tank will be fed with main County water and water from an onsite borehole. Potable water will be boosted to serve potable water outlets throughout the buildings. Hose reels will be provided for the use of occupants in event of fire. Various protection systems including oil leak detection, local water leak detection, major water leak protection, water supply protection and high temperature alarms will be installed where necessary.

Lighting Systems

The proponent proposes to maximize the use of natural light in the general design of the rooms and install energy saving lights in all rooms. Instructions to switch off lights in unoccupied rooms will be issued to the occupants and enforced.

Back-up Power Supply

Whereas the proponent proposes to get electricity supply from the KPL, provisions will be made for a standby generator to supply power when there are power outages. Separate space has been provided for fuel storage and generator installation. All buildings will have solar panels.

2.8 Infrastructure Strategy

Portable Water

Normally more than one day consumption will be required as storage on site. The proponent proposes to construct a water tower for mounting of water storage tanks.

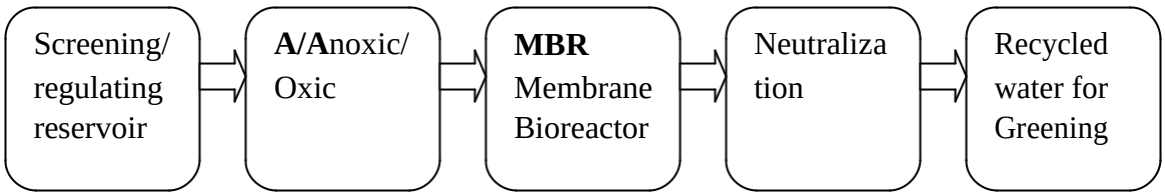
To ensure continuous supply of water, the proponent plans to have the Kakamega County Water Services Company (KACWASCO) connection and at least one borehole.

A preliminary design of the water reticulation has been undertaken. It will consist of PE pipes ranging in diameter between 50mm diameter and 125mm. Water from boreholes will be used during the construction and operation phases of the project. The proponent plans to have a water tank placed on a tower.

2.8.1 Sewerage system, treatment and recycling technology

Wastewater from the project site will be connected to Kakamega Sewerage Company line and the planned Biodigester waste water treatment. Storm water will be channeled to the open storm water drainage system. Liquid effluents may contain domestic waste, organic matter, salts and detergents, oils and fats. The effluent may also contain some pathogens. The effluent will be treated according to the provisions of the Environmental Management and Coordination (Water Quality) Regulations, 2006. This effluent will also be channeled to a Biodigester system. The estimated total volumes of sewer effluent to be generated by the development are calculated in table below.

The wastewater through Membrane Bioreactor (MBR) Landscape &Buried underground sewage processing facility using Siemens control system will be treated as follows:



Average Influent and Effluent Constituent Concentrations and Percent Reduction During the Post Acclimation Period (1)

Parameter	Feed	Effluent	% Reduction
COD, mg/l	475	89	81
BOD5, mg/l	140	3.8	97
TOC, mg/l	92	8.5	91
NH3-N, mg/l	16	0.7	96

(1) This data was collected curing the period when the chiller was operating to reduce the activated sludge system temperature to below 32°C

The water Standard for greening：

COD≤50mg/l

BOD≤10mg/l

SS≤10mg/l

Oil≤10mg/l

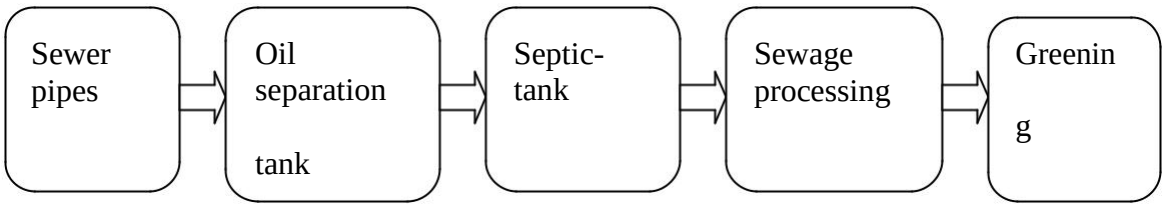
pH:6-9

TN≤10mg/l

TP≤1.0mg/l

A preliminary sewer reticulation was designed for the development and UPVC Solid Wall sewer pipes will be installed for this purpose. The proposed sewerage pipe will be of an external diameter of 315mm.

A Biodigester system will be installed to handle some of the sewage generated on the site and some will be channeled into the local County Sewerage system. The sewer reticulation will consist of 110mm and 315mm diameter pipelines. The effluent will go to the MBR Landscape &Buried underground sewage processing:



2.8.2 Storm Water Management

All storm water will be intercepted and channeled into the storm water drains and appropriate landscaping will be undertaken to check the runoff and soil erosion.

2.8.3 Roads and Traffic plan

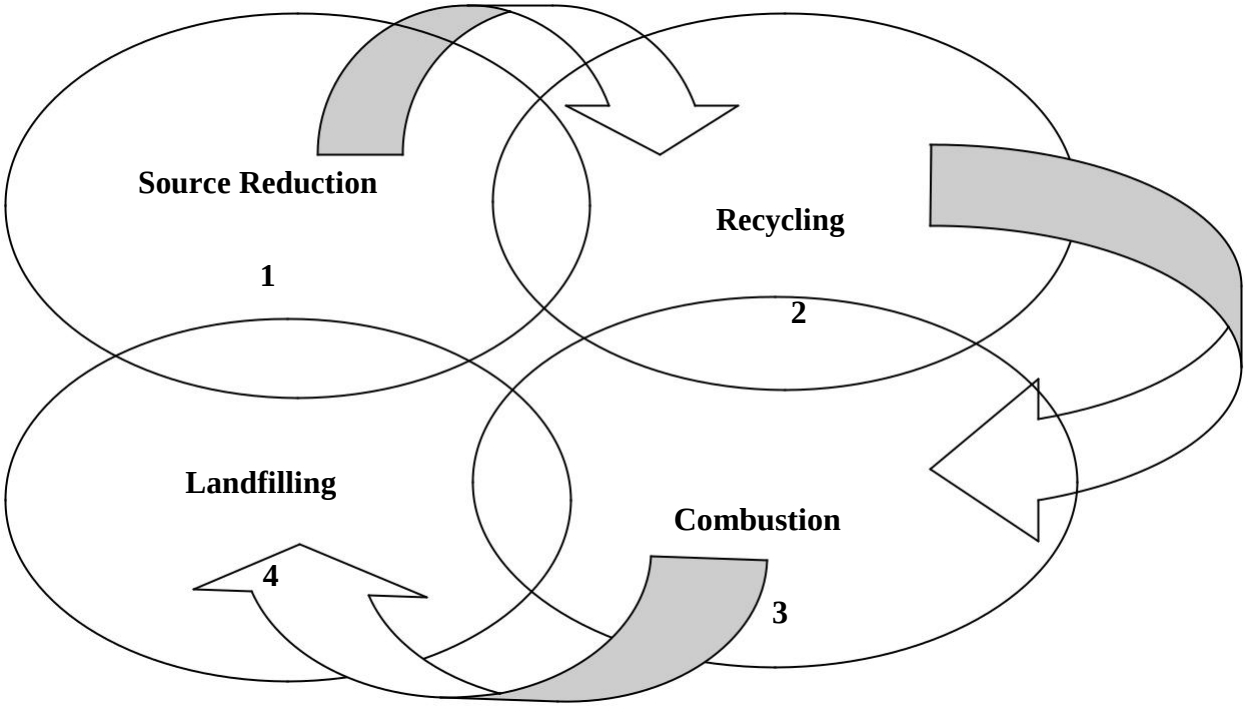
In order to protect pedestrians and cyclists, it is recommended that barrier kerbing be installed for all roads within the site. The road surfacing for the roads will be asphalt or concrete or paving slabs.

2.8.4 Solid Waste Management

The proponent takes cognizance of a significant volume of waste that will be generated during the land preparation, construction, and operation of the project.

An integrated solid waste management system will be applied at all phases of the project. First, the proponent will give priority to *Reduction at Source* of the waste materials. Under this option, the proponent will implement a solid waste management awareness programme for the management and all the residents. Secondly, *Recycling*, *Reuse and compositing* of the waste will be the second alternative in priority. Under these options the proponent plans a management system of separating waste at the source. The recyclables will be sold to waste buyers.

Finally, *sanitary land-filling* in legally designated sites will be the last option for the proponent to consider. The general approach for solid waste management take into consideraion the principles illustrated in the following figure



An integrated solid waste management approach

2.8.5 Electricity Supply

The proposed development will be connected to the nearby KPL electricity overhead line which will be used in all phases of the project. The proponent will install solar panels on all the houses to supplement KPL power.

LV distribution shall be installed by armored cable direct buried to every individual utilization buildings. LV cables shall be armored XLPE insulated 0.6/1KV copper cables. Cable bury depth shall not be lesser than 700mm as per IEC standard, and shall be protected by C20 concrete encased PVC duct bank where crossing road. The voltage drop between the origin of projected substations and the equipment should not be greater than 4 % of the nominal voltage of the installation.

To ensure security of electrical supplies, the developer intends to have his own individual dedicated standby diesel generator. This generator shall be outdoor type, equipped with silencer to minimize noise.

2.8.6 ICT Infrastructure

ICT system infrastructures will be provided by a developer within the projected area, such as PVC duct bank, hand holes, etc. The bury depth of PVC duct bank shall not be lesser than 800mm, and shall be protected by C20 concrete encased where crossing a road.

The infrastructure provision will be utilized by local communication company, local Television Company to install their cables, optic fiber, etc. in the future as per customers demand.

2.9 Description of the project's construction activities

2.9.1 Pre-construction Investigations

The implementation of the project's design and construction phase started with preliminary surveys and cost-benefit analysis to establish the needs of the proponent. Investigations also covered identification of any existing legal and regulatory requirements that may affect the project at any stage of its implementation.

The whole project area has been divided into four sites as described herein. Construction at Mudiri Estate and Airstrip sites will commence ahead of Mumias and Likuyani ones. Some existing housing facilities at the sites will be demolished to pave way for erection of modern ones.

2.9.2 Excavation and foundation works

Excavation will be carried out to prepare the site for construction of foundations, pavements and drainage systems. The excavation will involve the use of heavy earthmoving machinery such as tractors and bulldozers.

2.9.3 Storage of materials

Building materials will be stored on site. Bulky materials such as rough stones, ballast, sand and steel will be carefully piled on site. To avoid piling large quantities of materials on site, the proponent will order bulky materials such as sand, gravel and stones. Materials such as cement, paints and glasses among others will be stored in temporary storage structures built for this purpose.

2.9.4 Masonry, concrete work and related activities

The construction of the building walls, foundations, floors, pavements, drainage systems, perimeter fence landscaping among other components of the project involves a lot of masonry work and related activities. General masonry and related activities include stone

shaping, concrete mixing, plastering, slab construction, construction of foundations, and erection of building walls and curing of fresh concrete surfaces. These activities are known to be labour intensive and are supplemented by machinery such as concrete mixers.

2.9.5 Structural steel works

The buildings will be reinforced with structural steel for stability as designed by structural engineers. Structural steel works will involve steel cutting, welding and erection.

2.9.6 Roofing works

Roofing activities will include raising the roofing materials such as tiles and structural timber to the roof and fastening the roofing materials to the roof.

2.9.7 Electrical work

Outdoor LV distribution shall be installed by armored cable directly buried. LV cables shall be armored XLPE insulated 0.6/1KV copper cables. Cable bury depth shall not be lesser than 700mm, and shall be protected by C20 concrete encased PVC duct bank where crossing road.

Indoor electrical work will include installation of electrical gadgets and appliances including electrical cables, lighting apparatus, sockets etc. In addition, there will be other activities involving the use of electricity such as welding and metal cutting.

2.9.8 Plumbing

Installation of pipe-work will be done to connect sewage from the houses to a waste water treatment plant (Biodigester system). Plumbing will also be done for drainage of storm water from the roof-tops into the storm water harvesting facilities. Plumbing activities will include metal and plastic pipe cuttings, the use of adhesives, metal grinding and wall drilling among others.

2.10 Description of the project's operational activities

2.10.1 The facility users

Residential Houses

These staff houses will be occupied by the staff and their families or rented out. There will be some shops within the premises to serve the residents.

2.10.2 Solid waste and waste water management

The proponent will provide facilities for handling solid waste generated within the facility. These will include dust bins/skips for temporarily holding waste within the premises before final disposal at the designated sites. Wastes will be handled as explained above in this chapter.

2.10.3 General repairs and maintenance

The proposed development and associated facilities will be repaired and maintained regularly during the operational phase of the project. Such activities will include repair of building walls and floors, repair and maintenance of electrical gadgets, painting and replacement of worn out materials among others.

2.11 Description of the project's decommissioning activities

2.11.1 Demolition works

Upon decommissioning, the project components including buildings, pavements, drainage systems, parking areas and perimeter fence will be demolished. This will produce a lot of solid waste, which will be re-used for this or other construction works or if not re-usable, disposed of appropriately by a licensed waste disposal company. However, this phase is expected after over 100 years plus.

2.11.2 Dismantling of equipment and fixtures

All equipment including electrical installations, furniture, finishing fixtures partitions, pipe-work and sinks among others will be dismantled and removed from the site on decommissioning of the project. Priority will be given to reuse of these equipment in other projects. This will be achieved through resale of equipment to other building owners or contractors or donation of this equipment to schools, churches and charitable institutions

2.11.3 Site restoration

Once all the waste resulting from demolition and dismantling works is removed from the site, the site will be restored through replenishment of the top soil and re-vegetation using indigenous plant species.

3 ENVIRONMENTAL AND SOCIAL BASELINES

3.1 Introduction

This section describes the proposed Environmental and social impact assessment study report of the area and its environs, through looking at the socio economic activities, population, land-use patterns, transport infrastructure among others. The baseline environmental condition of the proposed project is described in terms of the existing physical, biological, and social environment. This provides a background that will inform the viability of the intended project.

3.2 History

Kakamega municipality is one of the townships within Kakamega County. It lies in the central part of the County in Lurambi sub-county, about 30 km north of the Equator. Kakamega was so named because the word "Kakamega" translates roughly to "pinch", which was used to describe how European colonists would eat the staple food, Ugali. Kakamega was the scene of the Kakamega gold rush in the early 1930s, fuelled partly by the reports of the geologist Albert Ernest Kitson.

The European colonists were attracted by Kakamega's fertile soil for agriculture and the rich cultural heritage.

3.3 Overview of Kakamega Municipality

Kakamega Municipality covers an area of approximately 49Km^2 with an estimated population of 91,768 according to 2009 Kenya Population and Housing Census. As at 2018, the projected population for core-urban and peri-urban in Kakamega municipality was 114,923. The increasing population in the town has put pressure on various facilities, including housing and transport system due to ferrying the working population and citizens seeking goods and services in the town. Most of the housing for residents is located in Kakamega town. Some of the challenges with the existing housing include, congestion due to limited space for stalls and influx of traders; limited solid waste management infrastructure among others. The dominating form of transport to these residential units includes public vehicle transport ("matatus") and "Boda- Boda" (motorcycles and bicycles).

Kakamega Municipality will be expanding its boundaries to address the current accelerating urbanization. New Kakamega Municipality is set to cover an area of approximately 209Km^2, surrounding its five neighbourhood centres: Khayega, Shisiru, Lubao, Murhanda and Ingotse (Kakamega Municipal Integrated Development Plan 2016-2021).

3.4 Physical Environment

3.4.1 Climate and physical features

The annual rainfall range is between 2214.1mm and 1280.1 mm per year. This rainfall is evenly distributed all year round, with March and July receiving heavy rains while December and February receives light rains. The temperatures range is between 18^{0}C and 29^{0}C. The

hottest months are November, December, January and February. Other months have relatively higher and similar temperatures. The county has an average humidity of 67%. Kakamega County has a natural forest covering Shinyalu and Lurambi while other farm forests have been integrated with agriculture. It has one gazetted and one non-gazetted forest which occupy 188.7ha, and 26.5ha respectively. The gazetted natural forest covers an approximate area of 188.7 km2. The non-gazetted forests cover an approximate area of 26.5 km2. Commercial forests are found in the northern parts of the county.

One of the main rivers found in the municipality is River Isiukhu, which originates from the Nandi Hills, east of Kakamega municipality. It flows westwards through Kakamega Forest and the southern part of the municipality.

3.4.2 Geology and soils

The general geology of the area consists of intrusive (mainly granites), Nyanzian Volcanics and the Kavirondian sediments. However, the granites cover most parts of the municipality.

3.4.3 Drainage and Hydrology

One of the main rivers found in the County is River Yala, which originates from the Nandi Hills, east of Kakamega County. It flows westwards through Kakamega Forest and the southern part of the County. The Nandi Escarpment forms the catchment zone for streams such as the Shitiya, Kabkalet and Nurungo, which flow westward to join the River Nzoia. The Kakamega area is drained towards Lake Victoria by River Isiukhu. The River Isiukhu is a tributary of Nzoia River. It originates from the Nandi Escarpment and flows through Kakamega Forest before reaching Kakamega Town. Several small streams form tributaries to these main rivers, exhibiting dendritic drainage patterns dissecting the peneplain surface often with steep erosional valleys. Only the northwestern part of the County to the north of Mumias is swampy due to low gradients and poor drainage. The area is well suited for sugarcane growing.

3.5 Socioeconomic Characteristics

3.5.1 Demographics

According to the 2009 Population and Housing Census, the population was 91,768 consisting of 69,502 and 22,266 in core-urban and peri-urban respectively. The population distribution consists of 50.2% males and 49.8% females. The Municipality population, in 2018 was projected to be 114,923 people. The population is also projected to reach 353,989 with a population of 261,473 in core-urban and 95,516 in peri urban by 2029 due to rural-urban migration and a high population growth rate.

3.5.2 Land-use patterns

The predominant activities in Kakamega Municipality and its environs are: agriculture, quarrying, building and construction, wholesale and retail, restaurants and hotels, transport and communications, finance, insurance, real estate and business services. The county is

predominantly a crop farming economy with livestock farming taking a small portion of the available arable land. There exist other small scale industries such as the jaggeries and bakeries. The few light industrial activity is carried out in road reserves and open spaces.

3.5.3 Business activities and employment in the area

The Kakamega municipality is largely driven by both large scale and small scale retail activities. The economic activity in the commercial nodes is by and largely service oriented (business outlets) with considerable informal proportions. The town hosts supermarket chain stores and wholesalers dealing mainly in retail items. Hardwares have increased in the recent past years due to increase in the construction industry. Within the town there are emerging satellite centers which serve as shopping centers. Informal trade activities in Kakamega town include general retail, tailors, workshops, charcoal dealers, hawkers, vegetable sellers etc. Hawkers are effective and efficient as economic agents in the distribution of goods and services found both within the CBD and peri-urban areas. The Central Business District (CBD) area of the town has been crowded with many informal commercial activities which have taken over public space.

Kakamega town currently hosts commercial banking and financial institutions' branches. These include Kenya Commercial Bank (KCB), ABSA Bank, Equity Bank, Kenya Women Finance Trust, which have taken advantage of the town's positioning as an agricultural and commercial hub. There are several finance institutions insurance services and agents are available in the town. In addition government offices, higher order services such as health and shopping areas that are located in the town attracts population from such a wide hinterland.

Other commercial activities include selling of new and second hand clothes (mitumba), education, health, recreational and social welfare. Industrial activities include motor garages, pottery, jua kali, printing, milling confectionary, bakery, tea, machining.

3.5.4 Agriculture

The town and its hinterland majorly depends on agriculture for its livelihood. The main crops grown in Kakamega County are sugarcane, maize, beans, cassava, finger millet, sweet potatoes, bananas, tomatoes, tea and sorghum. Maize meal forms the staple food for the county. Maize and sugarcane are generally grown in large scale while beans, millets and sorghum are grown on small scales and on the other hand maize, tea and sugarcane are the main cash crops grown in the County.

3.5.5 Energy Access

Only 1% of residents in Kakamega County use liquefied petroleum gas (LPG), 2% use paraffin, 87% use firewood and 9% use charcoal. Firewood is the most common cooking fuel by gender with 86% of male headed households and 89% in female headed households using it. Navakholo constituency has the highest level of firewood use in Kakamega County at 97%.This is 43 percentage points above the level in Lurambi constituency, which has the lowest share. Three wards, Khalaba, Bunyala East and Idakho North have the highest level of firewood use in Kakamega County at 98%.This is four times the level in the lowest ward, Shieywe ward. Lurambi constituency has the highest level of charcoal use in Kakamega County at 32. Shieywe ward has the highest level of charcoal use in Kakamega County at 54%. Shieywe is 45 percentage points above the county average level of charcoal use. Therefore, trade in charcoal and LPG within the proposed housing project sites could spur socioeconomic development.

3.6 Infrastructure and Services

The proposed site for the housing project is located in an area that has adequate supply of basic infrastructure and utilities. These include water, roads, electricity, and sewer system.

3.6.1 Roads and Transport

The area is well served and linked to other areas of the Kakamega town. The site is accessed through Kakamega-Kisumu road. Public transport in Kakamega municipality is the most popular mode of transport accounting for nearly 87% of mobility within Kakamega and its environs. Approximately 70% of the roads in the CBD are tarmacked. Urban sprawl is evident in the area because of the major bitumen road. Non-motorized transportation (NMT) in Kakamega municipality in general includes bicycles, wheelbarrows, handcarts, donkey-carts and pedestrian movement. This is the main transport mode for the work journeys of the poor in the area and is also critical for the economic functioning of the town. Public transport in Kakamega Town and Satellite Commercial Nodes (SCN) is dominated by “matatus” and “Boda- Boda” (motorcycles and bicycles) with no apparent framework for operation and coordination. In addition, there are private and public bus transport to facilitate movement of goods and people between the nodes.

3.6.2 Electricity

The site under consideration in Kakamega municipality has power lines running along the road of access. The proposed development will be connected to the same.

3.6.3 Water Supply

The proposed development will use water from Kakamega County Water and Sanitation Company which is already connected in neighbouring sites. Presently, Kakamega

municipality is served by a combination of surface water and groundwater systems. The primary sources of water for domestic consumption Kakamega Municipality are rivers, piped water, springs, water kiosks, boreholes and roof water catchment. Other sources include dams, water pans, shallow wells, seasonal streams and water vendors.

3.6.4 Sewer and Stormwater Management

The area is served by the Kakamega County Water and Sanitation Company sewer network; the proposed development can benefit from the sewer line. The County Government also provides exhauster services in addition to private companies providing exhauster services in the town. Kakamega town has storm water drainage system mostly which is open.

3.6.5 Solid Waste Disposal and Storm Drainage

The County Government of Kakamega, through private contractors, provide solid waste disposal services in the area with some private refuse collecting firms also operating in the neighborhood.

Most of the waste that will be generated will include, mostly organic waste from the proposed housing project.

In Kakamega Municipality, solid waste mainly consists of garbage from households, commercial enterprises, agricultural waste from markets and farmers, metal scrap from garages and fabricators, plastics from bars, hotels and restaurants, etc. The main types of solid waste generated are predominantly organic waste. Strategic receptacles and bins in strategic locations of the town help in waste collection. The town areas which are rural/agriculture in character are not provided with solid waste collection services by the Kakamega County. Waste disposal practices in those areas mainly involve feeding of livestock with the organic material or throwing waste in the farms including the inorganic components. The current Kakamega town dumpsite is located at Rosterman in Shierere Ward where open dumping is practiced.

3.6.6 Air quality and noise levels

Dust, noise and physical hazards are attributes generally associated with congested and crowded urban areas. Air pollution is due to the greater impact of motorized transport. Air and water pollution cause chronic and infectious respiratory disease, water-borne diseases such as diarrhea and intestinal worm infections, increases mortality rates particularly among children. Occasionally there is exposure to dust, noise in excessive levels in areas of quarrying. Aesthetically unpleasant sights and smells can be seen at the open dumping site in Rosterman. Control of air pollution, noise pollution, other public nuisances and outdoor advertising is done by the County Enforcement Officers within the town and market centers.

3.6.7 Security

The relationship between the police and members of the community has been cordial. Members of the community cooperated with the police and also established various community policing initiatives that have resulted to a peaceful County and above all, reduced crime rates. Also, the County has recruited and trained over 300 enforcement officers and outsourced 720 guards to supplement county enforcement, and distributed them all over the county. The number of police stations and police posts in the County is as shown in the table below. The table below indicates the distribution of police stations and posts by sub county.

S/No.	Sub-county	No. of Police stations	No. of Police posts/Patrol Base
1.	Lurambi	1	1
2.	Navakholo	1	0
3.	Lugari	1	2
4.	Malava	1	2
5.	Likuyani	1	2
6.	Ikolomani	1	2
7.	Shinyalu	0	3
8.	Khwisero	1	2
9.	Butere	1	2
10.	Mumias West	1	2
11.	Mumias East	0	2
12.	Matungu	0	1
	Total	**9**	**21**

Source: ***National Police Service, Kakamega County***

4. RELEVANT LEGISLATIVE AND REGULATORY FRAMEWORK

4.1 Introduction

There is a growing concern in Kenya and at global level that many forms of development activities cause damage to the environment. Development activities have the potential to damage the natural resources upon which the economy is based. Environmental Impact Assessment is a useful tool for protection of the environment from the negative effects of developmental activities. It is now accepted that development projects must be economically viable, socially acceptable and environmentally sound.

According to Sections 58(4) and 138 of the Environmental Management and Coordination Act (EMCA) No. 8 of 1999 and Section 3 of the Environmental (Impact Assessment and Audit) Regulations 2003 (Legal No. 101) that was amended through Legal Notice No.31 dated 30.04.2019, this project requires a Environmental and social impact assessment study report (ESIA) prepared and submitted to the National Environment Management Authority (NEMA) for review and eventual Licensing before the development commences. This was necessary as many forms of developmental activities cause damage to the environment and hence the greatest challenge today is to maintain sustainable development through sustainable use of natural resources without interfering with the environment.

4.2 Policy Paper on Environmental and Development (Sessional Paper No. 6 of 1999)

This policy was formulated on the basis of the National Environment Action Plan (NEAP) process of 1994. The policy's major objective is to harmonize environmental and developmental concerns to ensure sustainability. Furthermore, this policy ensures that environmental issues are taken into consideration before the commencement of development policies, programmes, plans and projects. The proposed project is therefore consistent with the Sessional Paper No. 6 of 1999.

4.2.1 Physical Planning Policy

The current policy governs the development and approval of all building plans as provided for in the Physical Planning Act (Cap 286). The proposed project will be subjected to the provisions of this policy and legislation. The plans for the proposed development have been approved by the County physical planner.

4.2.2 Public Health Policy

The prevailing public health policy calls upon the project proponent to ensure that buildings are adequately provided with utilities so that they are fit for human habitation. The proposed development has been designed by professional engineers and architects and as such will have all amenities/utilities that are essential for safeguarding public health for all people using the facilities during the construction, operational and decommissioning phases of the project. The proponent will adhere to the provisions of the relevant Act of parliament; Public Health Act (CAP 242).

4.3 Institutional Framework

There are 21 institutions, which deal with environmental issues in Kenya. Some of the key institutions include National Environment Management Authority (NEMA), the Department of Resource Surveys and Remote sensing (DRSRS), the Water Regulatory Management Authority (WRMA), The Kenya Forest Service (KFS), the Kenya Wildlife Service (KWS) the Kenya Forestry Research Institute (KEFRI), the National Museums of Kenya (NMK), the Kenya Marine and Fisheries Research Institute (KMFRI), among others. There are also local and international NGOs.

While implementing the project, both the proponent and the contractor will have to work in liaison with a number of these institutions when dealing with issues within the jurisdiction of the institutions.

4.3.1 National Environmental Council (NEC)

EMCA 1999 No. 8 part (iii) section 4 outlines the establishment of the National Environment Council (NEC). NEC is responsible for policy formulation and directions for purposes of EMCA; set national goals and objectives and determines policies and priorities for the protection of the environment and promote co-operation among public departments, local authorities, private sector, non-governmental organizations and such other organizations engaged in environmental protection programmes. It also performs such other functions as assigned under EMCA.

4.3.2 National Environment Management Authority (NEMA)

The objective and purpose for which NEMA is established is to exercise general supervision and co-ordinate over all matters relating to the environment and to be the principal instrument of the government in the implementation of all policies relating to the environment. A Director- General appointed by the president heads NEMA. The Authority shall:

- Co-ordinate the various environmental management activities being undertaken by the lead agencies and promote the integration of environmental considerations into development policies, plans, programmes and projects with a view to ensuring the proper management and rational utilization of the environmental resources on a sustainable yield basis for the improvement of the quality of human life in Kenya.

- Take stock of the natural resources in Kenya and their utilization and consultation, with the relevant lead agencies and use of guidelines.

- Examine land use patterns to determine their impact on the quality and quantity of the natural resources.

- Carry out surveys, which will assist in the proper management and conservation of the environment.

- Advise the government on legislative and other measures for the management of the environment or the implementation of relevant international conservation treaties and agreements in the field of environment as the case may be.

- Advise the government on regional and international environmental convention treaties and agreements to which Kenya should be a party and follow up the implementation of such agreements where Kenya is a party.

- Undertake and co-ordinate research, investigation and surveys in the field of environment and collect and disseminate information about the findings of such research, investigation or survey.

- Mobilize and monitor the use of financial and human resources for environmental management.

- Identify projects and programmes or types of projects and programmes, plans and policies for which environmental audit or environmental monitoring must be conducted under EMCA.

- Initiate and evolve procedures and safeguards for the prevention of accidents, which may cause environmental degradation and evolve remedial measures where accidents occur.

- Monitor and assess activities, including activities being carried out by relevant lead agencies in order to ensure that the environment is not degraded by such activities, environmental management objectives are adhered to and adequate early warning on impeding environmental emergencies is given.

- Undertake, in co-operation with relevant lead agencies programmes intended to enhance environmental education and public awareness about the need for sound environmental management as well as for enlisting public support and encouraging the effort made by other entities in that regard.

- Publish and disseminate manuals, codes or guidelines relating to environmental management and prevention or abatement of environmental degradation.

- Render advice and technical support, where possible to entities engaged in natural resources management and environmental protection so as to enable them to carry out their responsibilities satisfactorily.

- Prepare and issue an annual report on the state of the environment in Kenya and in this regard may direct any lead agency to prepare and submit to it a report on the state of the sector of the environment under the administration of that lead agency and,

- Perform such other functions as government may assign to the Authority or as are incidental or conducive to the exercise by the authority of any or all of the functions provided under EMCA.

However, NEMA mandate is designated to various committees.

The contractor and the client will work in liaison with NEMA in getting various permits, licenses, approvals and generally in complying with the provisions of EMCA 1999 and any other subsidiary legislation under EMCA 1999.

4.3.3 Public Complains Committee (PCC)

The Committee performs the following functions:

- Investigate any allegations or complaints against any person or against the authority in relation to the condition of the environment in Kenya and on its own motion, any suspected case of environmental degradation and to make a report of its findings together with its recommendations thereon to the Council.

- Prepare and submit to the Council periodic reports of its activities which shall form part of the annual report on the state of the environment under Section 9(3).

- To perform such other functions and excise such powers as may be assigned to it by the council.

4.3.4 National Environment Action Plan Committee

This Committee is responsible for the development of a 5-year Environment Action plan among other things. The National Environment Action Plan shall:

- Contain analysis of the Natural Resources of Kenya with an indication as to any pattern of change in their distribution and quantity over time.

- Contain analytical profile of the various uses and value of the natural resources incorporating considerations of intergenerational and intra-generational equity.

- Recommend appropriate legal and fiscal incentives that may be used to encourage the business community to incorporate environmental requirements into their Planning and operational processes.

- Recommend methods for building national awareness through environmental education on the importance of sustainable use of the environment and natural resources for national development.

- Set out operational guidelines for the planning and management of the environment and natural resources.

- Identify actual or likely problems as may affect the natural resources and the broader environment context in which they exist.

- Identify and appraise trends in the development of urban and rural settlements, their impact on the environment, and strategies for the amelioration of their negative impacts.

- Propose guidelines for the integration of standards of environmental protection into development planning and management.

- Identify and recommend policy and legislative approaches for preventing, controlling or mitigating specific as well as general diverse impacts on the environment.

- Prioritize areas of environmental research and outline methods of using such research findings.

- Without prejudice to the foregoing, be reviewed and modified from time to time to incorporate emerging knowledge and realities and;

- Be binding on all persons and all government departments, agencies, States Corporation or other organ of government upon adoption by the national assembly.

4.3.5 Standards and Enforcement Review Committee

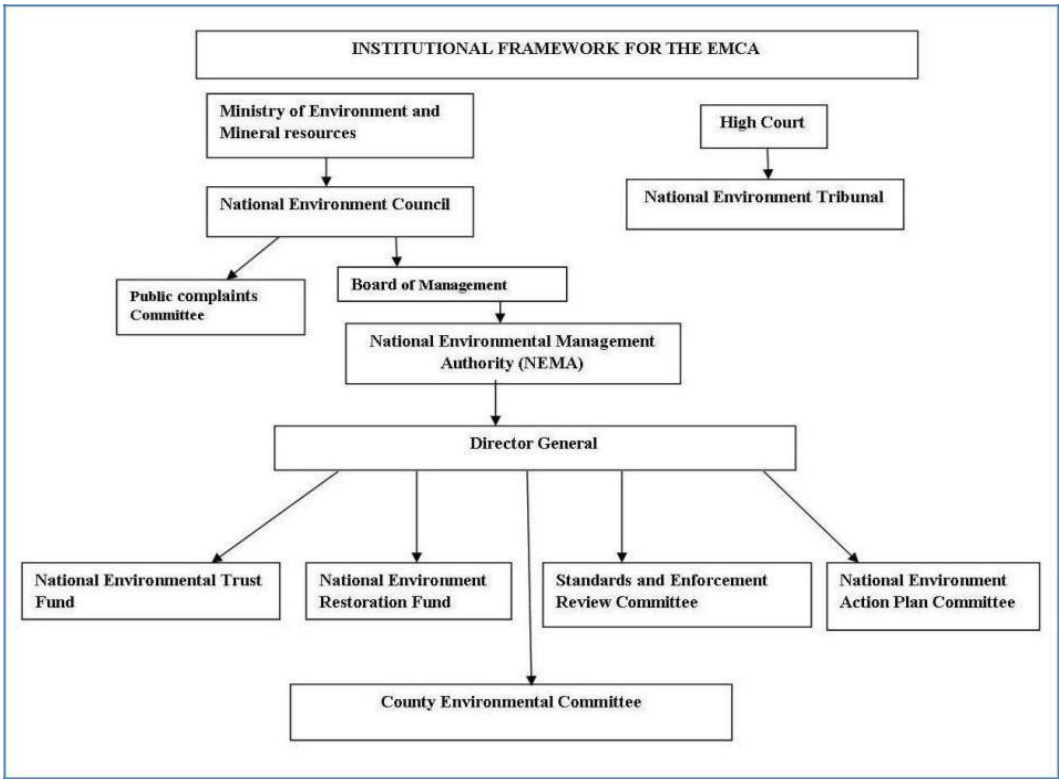
This is a technical Committee responsible for environmental standards formulation methods of analysis, inspection, monitoring and technical advice on necessary mitigation measures.

Standards and Enforcement Review Committee consists of the members set out in the third schedule to the Environmental Management and Co-ordination Act. The Principal Secretary under the Cabinet Secretary is the Chairman of the Standard and Enforcement Review Committee. The Director General appoints a Director of the Authority to be a member of the Standards and Enforcement Review Committee who is the Secretary to the committee and who provides secretarial services to the Committee. The Committee also regulates its own procedure.

The Standard and Enforcement Review Committee may co-opt any person to attend its meetings and a person so co-opted shall participate at the liberations of the committee but shall have no vote. Finally, the Committee shall meet at least once every three months for the transactions of its business.

4.3.6 National Environmental Tribunal (NET)

This tribunal guides the handling of cases related to environmental offences in the Republic of Kenya. If disputes to the proposed project arise, they are supposed to be presented here for hearing and legal direction.



The EMCA 1999, Institutional Framework

4.4. Legal Framework

Kenya has several statutes that govern environmental standards and quality. Most of these statutes are sector specific covering issues such as public health, planning, air quality, agriculture, water quality, and land use. This section seeks to bring to light statutes and legislation pertinent to the development of the proposed development herein referred to as the proposed project.

4.4.1 The Environmental Management and Coordination Act (EMCA), 1999

The Environmental Management and Coordination Act (EMCA) of 1999 provides for the legal framework for the management of the Kenyan environment. Under the EMCA, all proposed projects that are likely to have significant impact on the environment according to the Second Schedule will undergo a Summary Project Report (SPR) or a Environmental and social impact assessment study report (ESIA) while projects already in place will undertake annual Environmental Audits (EA). This Act came into force on 14th January 2000 and was amended on 30.04.2019. It aims at coordinating environmental protection activities in the country. In its preamble, the Act states that every person in Kenya has a right to a clean and healthy environment. According to section 58 of the Act (EMCA) No. 8 of 1999, second schedule 9 (i), and the environmental (Impact Assessment and Audit) Regulations, 2003 and as amended through special issue of Legal Notice No. 31 dated 30.04.2019, all new enterprises and projects must undergo Summary Project Report (SPR) or (ESIA). The SPR and

ESIA are submitted to the National Environment Management Authority (NEMA) in the prescribed form.

It is in line with this provision that the proponent appointed EIA experts to undertake a Comprehensive Project in respect of the proposed development. This addresses the requirement as the project activities are likely to have negative environmental impacts. This will ensure that the proponent observes continuous improvement on environmental, health and safety management and takes appropriate measures to mitigate any adverse impacts to the environment and the surrounding communities that the project may have during its implementation and operation.

Part VII, Section 68 of the same Act requires operators of projects or undertakings to carry out environmental audits in order to determine level of compliance with statements made during the SPR and ESIA. The audit report should be submitted to NEMA.

The proponent shall submit an Environmental Audit report in the first year of operation to confirm the efficacy and adequacy of the Environmental Management Plan (EMP)

Section 87 sub-Section 1 states that no person shall discharge or dispose of any wastes, ether generated within or outside Kenya, in such a manner as to cause pollution to: environment or ill health to any person, while Section 88 provides for acquiring of a license for generation, transporting or operating waste disposal facility. According to section 89, any person who, at the commencement of this Act, owns or operates a waste disposal site or plant or generate hazardous waste shall apply to the NEMA for a license.

Sections 90 through 100 outline more regulations on management of hazardous substances including oils, chemicals and pesticides.

The proponent will have to ensure that environmental protection facilities or measures to prevent pollution and ecological deterioration such as solid waste management plans, water reticulation maintenance and landscaping are implemented, as per the design drawings and maintained throughout the project cycle

EMCA 1999 has several subsidiary legislations that were enacted to ensure effective implementation of the Act. A few regulations that are pertinent to the proposed project are described below.

4.4.2 The Environmental Impact (Assessment and Auditing) Regulations, 2003

The Environmental Impact Assessment exercise under the Act is guided by the Environmental Impact Assessment (Assessment and Auditing) Regulations of the year 2003, which was given under legal notice no. 101. The regulations stipulate the ways in which environment impact assessment and audits should be conducted. The project falls under the second schedule of EMCA, 1999 section 58 (1), (4) as amended as per special issue of Legal Notice No. 31 dated 30.04.2019 that it requires a

Environmental and social impact assessment study report. As stipulated by the legal notice No. 101, 2003, PART V, Section 31 (3) (a) (i) and (ii) it is required that an environmental assessment be undertaken to provide baseline information upon which subsequent environmental control audit shall be based.

It is in the wake of these regulations that the proponent commissioned NEMA Experts to carry out a ESIA exercise and submit it to NEMA with an aim of being awarded a license.

Environmental Management and Coordination Controlled Substances Regulations, 2007 (Legal Notice No.73 of 2007)

The Controlled Substances Regulations defines controlled substances and provides guidance on how to handle them. This regulation mandates NEMA to monitor the activities of persons handling controlled substances, in consultation with relevant line ministries and departments, to ensure compliance with the set requirements. Under these regulations, NEMA will be publishing a list of controlled substances and the quantities of all controlled substances imported or exported within a particular area. The list will also indicate all persons holding licenses to import or export controlled substances, with their annual permitted allocations.

The regulations stipulate that controlled substances must be clearly labeled with among other words, ("Controlled Substance-Not ozone friendly') to indicate that the substance or product is harmful to the ozone layer. Advertisement of such substances must carry the words, "Warning: Contains chemical materials or substances that deplete or have the potential to deplete the ozone layer."

Producers and/or importers of controlled substances are required to include a material safety data sheet. Persons are prohibited from storing, distributing, transporting or otherwise handling a controlled substance unless the controlled substance is accompanied by a material safety data sheet. Manufacturers, exporters or importers of controlled substances must be licensed by NEMA. Further, any person wishing to dispose of a controlled substance must be authorized by NEMA. The licensee should ensure that the controlled substance is disposed of in an environmentally sound manner. These regulations also apply to any person transporting such controlled substances through Kenya. Such a person is required to obtain a Prior Informed Consent (PIC) permit from NEMA.

In case the contractor deals with substances defined as "controlled substances" by the regulations, he will be required to comply with the regulations.

4.4.3 The Public Health. Act (Cap. 242)

Section 115 of the Act states that no person/institution shall cause nuisance or, conditions likely to be injurious or dangerous to human health. Section 116 require local Authorities (currently County governments) to take lawful, necessary and reasonably practicable measures to maintain areas under

their jurisdiction clean and sanitary to prevent occurrence of nuisance or condition liable for injurious or dangerous to human health.

Such nuisance or conditions are defined under Section 118 waste pipes, sewers, drains refuse pits in such a state, situated or constructed as in the opinion of the medical officer of health to be offensive or injurious to health. Any noxious matter or waste water, discharged from any premises into a public street or into the gutter or side channel or watercourse, irrigation channel or bed not approved for discharge is also termed as a nuisance. Other nuisances are accumulation of materials or refuse which in opinion of the medical officer of health is likely to harbor rats or other vermin.

The proponent will be required to abide by these provisions throughout the project cycle.

Part XII Section 136 states that all collections of water, sewage, rubbish, refuse and fluids which permits or facilitate the breeding or multiplication of pests shall be termed nuisances and are liable to be dealt with in the manner provided by this Act.

The proponent will be required to contract a licensed solid waste collector to collect all solid waste from the site to an approved dumping site. Sewage from the site will be discharged into a Biodigester system and the nearby County Sewerage line.

4.4.4 The Physical Planning Act, 2012

The County governments are empowered under Section 29 of the Act to reserve and maintain all land planned for open spaces, parks, urban forests and green belts. The same Section, therefore, allows for prohibition or controls the use and development of land and buildings in the interest of proper and orderly development of an area.

Section 30 states that any person who carries out development without permission will be required to restore the land to its original condition. It also states that no other licensing authority shall grant license for commercial or industrial use or occupation of any building without a development permission granted by the respective local authority.

Finally, Section 36 states that if in connection with a development application, local Authority is of the opinion that the proposed development activity will have injurious impact on the environment; the applicant shall be required to submit together with the application an environmental impact assessment (EIA) report and now referred as SPR and ESIA. EMCA, 1999 echoes the same by requiring that such reports be approved by the National Environment management Authority (NEMA) and should be followed by annual environmental audits.

The proponent has complied with this provision by appointing EIA/Audit experts to prepare and submit this Environmental and social impact assessment study report to National Environment management Authority (NEMA). Formal approval of architectural and engineering drawings will be required prior to commencement of the project.

5. PUBLIC PARTICIPATION

5.1 Introduction

This chapter describes the process of the public consultation that was followed to identify the key issues and impacts of the proposed development in Mudiri Estate Kakamega town County Government of Kakamega. Views from the general public and neighbors, who in one way or another would be affected by the proposed project, were sought through interviews and administering of questionnaires as stipulated in the Environment Management and Coordination Act, 1999.

One of the key information sources used during the Environmental and social impact assessment study report on environmental impacts was public participation exercise. The exercise was conducted by a team of experienced registered environmental experts via administration of pre-designed questionnaires and by interviewing neighbors surrounding the proposed project site.

The purpose for such interviews was to identify the positive and negative impacts and subsequently promote and mitigate them respectively. It also helped in identifying any other issues which may bring conflicts in case project implementation proceeds as planned.

5.2 Objectives of the consultation and public participation

The objective of the consultation and public participation was to:

1) Disseminate and inform the stakeholders about the project with special reference to its key components and location.

2) Gather comments, suggestions and concerns of the interested and affected parties.

3) Incorporate the information collected in the ESIA study.

In addition, the process enabled,

1) The establishment of a communication channel between the general public and the team of consultants, the project proponent and the Government.

2) The concerns of the stakeholders to be known to the decision-making bodies at an early phase of project development.

5.3 Methodology used in the CPP

The Consultation and Public Participation (CPP) Process is a policy requirement by the Government of Kenya and a mandatory procedure as stipulated by EMCA 1999 section 58, on Environmental Impact Assessment for the purpose of achieving the fundamental principles of sustainable development.

In general, the following Steps were followed in carrying out the entire CPP process:-

I. Identification of institutions and individuals interested in the process-database of the interested and affected parties

II. Administration of questionnaires to the different target groups and local community members along the proposed project Site

Administration of Public participation questionnaires

During the first week of ESIA preparation, a site visit was made to the site and a number of questionnaires were administered to the public and the residents. The copies of the questionnaires were submitted with the project report to NEMA.

A total of about 100 questionnaires were administered at the proposed sites and its environs.

The questionnaires were administered at the project site and surrounding areas. The target group for this area was the residents in close proximity to the proposed project. The questionnaires are attached.

5.4 Issues Raised during public consultations

5.4.1 Positive Issues

Employment opportunities

The proposed development will consist of Staff Residential Houses that will require skilled and non-skilled staff during the construction and operational stages. The respondents were keen to state on the jobs that will be created from the project.

Business Opportunities

The respondents stated that the business opportunities will increase in two diverse ways: The construction phase: The contractors will need various materials, machines and equipment that need to be supplied from various businesses. The local businesses will be greatly improved due to the high demand of materials that will be needed.

- Operational phase: The influx of people likely to occur because of the Staff Houses occupation will mean that there will be a need for subsidiary services like health facilities and shops. Also the prices of land will increase due to the forces of demand and supply making the local land owners to capitalize on the investment hub that will be created from the proposed development.

Increase in security

The respondents complemented the proposed project in terms of increase in security around the area during operational and construction stages. There will be security guards who will safeguard the materials, machines and equipment during the construction phase and also protect the residents during the operation phase. The Staff Houses will be highly equipped with CCTV (Close Circuit Television) to offer 24-hour security to the residents.

Increased aesthetic value of the area

The residents were positive about the increase in art and beauty of structural buildings within the area. The proposed project has designs from experienced engineers and architects who have ensured that the project design is attractive to the residents. The overall landscape of the area will have beautiful scenery from the mix of vegetation and the building structures.

5.4.2 Negative Issues

Increase in traffic and congestion of the road

The proposed project is located in urban area. This means that influx of people in the area will likely cause traffic jams and congestion. The Staff Houses will host many occupants who are likely to have vehicles that are parked in the proposed parking area, making congestion of roads a likely occurrence.

Stress on sewage system

The residents were concerned about the measures that will be taken to manage the waste generated from the houses. The Staff Houses will generate a lot of human waste and commercial waste due to domestic and commercial activities. The proponent will ensure that there is an integrated waste management system. This entails structured waste collection points (dustbins), regular waste collection, connection of the sewage system to the Kakamega sewage network and regular environmental audit. The proponent is keen on ensuring sustainable environment especially to the tenants and the local people.

Noise and Vibrations

The neighbours adjacent to the project site raised the issue of noise that is likely to occur when the project is commenced. The construction phase will involve machines that are likely to emit noise that may be a disturbance to the neighbours. The construction work will involve earth moving equipment (excavators, trenchers, loaders) construction vehicles (tippers, dumpers, trailers) and material handling equipment (cranes, conveyors, hoists). However, the proponent will implement standard procedures to curb the noise effects like proper service of the machines, minimizing the recurrent transportation of the materials, personal protective equipment (PPEs) for the construction workers and regular updates to the adjacent neighbours on any changes that will directly affect them.

Air pollution

The area residents and neighbors raised concern that air pollution is likely to occur during the construction phase, the construction activities that are likely to cause air pollution include; land clearing, that is the trees that are in the site and all the vegetation cover, operation of diesel engines, demolition of the old buildings at site, burning of vegetation

cover and use of concrete, cement, wood, stone, silica which contain high levels of dust. They suggested that dust covers to be used during the transportation of materials like cement and sand, control dust through fine water sprays to dampen down the site, screen the whole site to stop dust spreading, or alternatively, place fine mesh screening close to the dust source. The proponent should also ensure that there's no burning of materials on site and the proponent will take all the appropriate measures to curb all forms of air pollution as much as possible.

Accidents during construction site

The construction workers at the site raised the concern of the likeliness of accidents during the construction period. The common causes of these accidents could arise from;

- Crane accidents
- Equipment failures
- Injuries from a falling building or construction materials
- Accidents caused by defective products or equipment
- Electrocution
- Chemical exposure
- Welding burns
- Negligence of a contractor or subcontractor
- Accidents caused by unsafe working conditions
- Poor training or incompetence on the job site
- Insufficient safety procedures or precautions
- Falls from buildings, scaffolding or ladder

They suggested that the workers should go through an Occupational Health and Safety training programme to familiarize themselves with the risks, causes of accidents and the ways to minimize fatal injuries.

Loss of vegetation cover

Even though some of the trees and vegetation cover may be cleared to pave way for the proposed development on the site, this will create a negative impact to the environment. Most of the respondents propose that a major landscaping be done in the area hence leading to the beautification of the environment.

Concerns were also raised of a high number of vehicles that will be flowing into the project site that may cause accidents to children playing along the roads.

Congestion

The participants present raised concerns on congestion that might arise after the completion of the project.

Noise pollution

Some members were concerned of the noise that might emanate from the project site especially during the construction phase.

Information on the proponent

The participants requested more information on the proponent. This was pointed out to be vital as the proponent will part of the community and would be in line with the "nyumba kumi initiative". The residents also sought to know if the development would include rental components.

Base Transceiver Station (BTS) sites/Cell towers

The members present expressed fears that the proposed development might be used to install BTS sites which they considered to be hazardous to human health. They reminded the proponent and the consultant to assure them that no such installation will be carried out on the proposed development.

Project Brief

Members present requested for a project brief to get a clear understanding of the project and have a documented evidence of the project description.

6. POTENTIAL ENVIRONMENTAL IMPACTS

6.1 Introduction

This section identifies the potential social and environmental impacts of the proposed project in terms of the nature, magnitude, extent and location, timing and duration of the anticipated impacts. These impacts may relate to the project design stage, construction stage or the project operation and decommissioning stage. Based on impact prediction methods, site visits and observations and the results of public consultations, both beneficial and adverse environmental impacts have been identified. Suitable mitigation measures to the negative impacts are discussed in chapter 7. These are then costed and responsibilities for their implementation assigned as appropriate within the Environmental and Social Management Plan (ESMP). Both potential negative and positive impacts have been considered during the Siting and Construction phase, Operational Phase and Decommissioning phase.

6.2 Siting and Construction Phase

During the siting and construction period, there is a likelihood of having the following impacts.

6.2.1 Positive Impacts

6.2.1.1 Employment opportunities

There will be job opportunities especially to casual workers. Employment opportunities are a benefit both in economic and social sense. In the economic sense it means abundant unskilled labour will be used in economic production. In the social sense these young and energetic otherwise poor people will be engaged in productive employment other than remaining idle. Remaining idle may attract them into social ills like drug abuse and other criminal activities like robberies. Several workers including casual labourers, masons, carpenters, joiners, electricians and plumbers are expected to work on the site for a period that the project will start to the end. Apart from casual labour, semi-skilled and unskilled labour, informal employees are also expected to obtain gainful employment during the construction period.

The proposed project, during construction phase will directly employ as a minimum the following groups:

- Supervising engineering team.
- Contractor’s staff (managerial, skilled and unskilled labour force).
- Suppliers of plant, machinery, materials and essential services.
- Construction monitoring personnel from the various Government agencies.

6.2.1.2 Provision of Market for Supply of Building Materials

The project will require supply of large quantities of project materials some, of which will be sourced locally.

This shall provide ready market for construction material suppliers such as quarrying companies, hardware shops and individuals with such materials.

6.2.1.3 Increased Business Opportunities

The large number of project staff required will provide ready market for various goods and services, leading to several business opportunities for small-scale traders such as food vendors around the project site. The project shall also attract more investments in the area such as recyclable material collection, catering and cleaning business as well as security service companies from the local community.

6.2.1.4 Increased revenue to suppliers of construction materials and utilities

This will be an opportunity for the suppliers of construction materials and other utility suppliers to create market and sell their goods. In turn this will boost their profit margin which is an advantage to their businesses. Companies such as Kenya Power Lighting (formerly known as KPLC), Kakamega Water and Sewerage Company, Internet service providing companies will gain revenue from supply of services for construction activities. Other small businesses will also be boosted by the construction activities such as small eating cafes that will provide meals to the local construction staff.

6.2.1.5 Economic growth

Through the use of locally available materials during the construction phase e.g. cement, steel metals and others, the project will contribute towards growth of the country's economy by contributing to the gross domestic product. The consumption of these materials, oil, fuel and others will attract taxes including VAT which will be payable to the governments hence increasing governments` revenue while the cost of these raw materials will be payable directly to the producers.

6.2.2 Potential Negative Impacts

The key negative impacts identified during the construction phase of the project include:

6.2.2.1 Soil Erosion

Stripping of the vegetation will expose the top soil to agents of erosion and the movement of vehicles and machinery in the area may aggravate the problem. Soil erosion is an important problem both at its source and downstream of the development site. Lost soil will be deposited

somewhere, and the location of the deposition could alter downstream hydrology and increase flooding. It may also pose a water quality issue directly as a result of siltation and indirectly from contaminants carried with or attached to soil particles and it may also negatively affect the soil fertility of the affected land. The eroded soil particles may also clog the drainage system and increase maintenance costs.

6.2.2.2 Waste generation (solid and liquid wastes)

Sources of this waste will be rejected materials, surplus materials, surplus spoil, excavated materials, and general waste from food vendors, etc.

Poor waste management may lead to health effects, unaesthetic appearance of the place and even increase project cost.

Generated waste should be appropriately managed through identification of the waste types, segregation into the various categories and the establishment of suitable mechanisms for collection, storage, transfer and final disposal.

6.2.2.3 Water demand for construction activities

Both the workers and the construction operations will create additional demand for water in addition to the existing demand. Water will be mostly used for domestic use by the workforce, concrete mixing, curing of concrete works inter alia.

6.2.2.4 Impacts on Vegetation (Vegetation Clearing)

During the survey period, there were no floral species of conservation concern reported at the proposed site. Nonetheless, the understory and canopy formations that describe the vegetation structure are the vital attraction and refuge for the diverse faunal species. This makes the area have local ecological importance for resident and visiting species.

The construction of the proposed development should observe minimal and selective removal of the existing vegetation covers. Selective habitat clearing reduces the risk for loss of key habitat species and nesting sites for local bird species. It also allows for regeneration. In the long run, this will ensure minimal disturbance on ecological process.

Construction earthworks for access roads (to project site) and foundation laying (for building facilities) will release dust particles into the ambient air. When a lot of dust settles on the leaves, it is bound to have negative effects on flora as it covers leaf stomata thus reducing their photosynthetic activity. In addition, dust coated leaves are less attractive and preferred by respective fauna consumers.

Limited vegetation removal and clearing will complement the efforts on screen planting and landscaping through re-vegetation, which will lead to improved visual quality of the area.

6.2.2.5 Air Quality

Emissions in forms of dust, particulate matter, fugitive emission and, exhaustion from project machines and equipment are anticipated during the project construction phases.

These emissions emanating from trucks and construction equipment are known to have adverse impact on the environment, plant and human health including effect on the upper to lower respiratory infections and silicosis condition.

- Activities likely to generate dust include speeding of vehicles on earth surface not palliated with water, excavation of earth materials in dry sections;
- Activities likely to generate particulate matter include loose material transportation, vehicle and machines exhaust emissions, operations at the batching plant, stone crushing machines, fire among others.
- Some of the particulate matter to be generated include sand, soot, cement, gravel and murram, among others; and
- Exhaust emissions likely to be generated include smoke, hydrocarbons and nitrogenous gases among others pollutants from vehicles, machinery and equipment exhausts.

6.2.2.6 Risk of Leaks and Spills

The project equipment and vehicles will use fossil fuels and thus will require protection from leaks and spillage. Fossil fuel presents both environmental and fire risks. Release of hydrocarbons to the environment has several impacts including sub-soil and groundwater contamination, air pollution, fire and effects on human health due to dermal contact, inhalation or ingestion. However, the risks of major oil spillages occurring in the project area are minimal.

6.2.2.7 Occupational Health and Safety Issues

Potential impacts during construction include: exposure to physical hazards from the improper use of equipment, trips and fall hazards, rock falls/slides at high elevations and exposure to dust and noise. The uncontrolled proximity to high vehicular traffic during transportation of construction materials and equipment may be a hazard to vehicular and non- vehicular movement in and out of the site.

Other injuries or fatalities may result from workers operating equipment without adequate training or with lack of PPE or extended exposure to outdoor weather resulting in heat related lethargy.

6.2.2.8 Excessive Noise and Vibration

Levels of noise and vibrations typical of construction works will be generated at the project site during the construction phase. This noise impact is expected to be negative in the long and short-term. The major sources of noises and vibration will be construction equipment, vehicles and workers.

Elevated noise and vibration levels within the site are adverse to the health and safety of the project workers, the residents, passers-by and other persons within the vicinity of the project site. The

major receptors exposed to the noise are expected to be at a minimum and will include mainly the construction workers.

6.2.2.9 HIV/AIDS

The project will attract new people to the project area and increase the amount of disposable cash of the construction workers. This may lead to several repercussions leading to the spread of HIV/AIDS and/or other sexually transmitted diseases (STDs). Influx of new people to the project area especially construction workers can affect the number of new cases of HIV, because they often interfere with an otherwise stable situation but the contrary can also happen where the newcomers find themselves at higher risk.

6.2.2.10 Increased Energy consumption

The project will consume fossil fuels (mainly diesel) to run transport vehicles and construction machinery. Fossil energy is non-renewable and its excessive use may have serious environmental implications on its availability, price and sustainability. The project will also use electricity supplied by Kenya Power (KP) Ltd. Electricity in Kenya is generated mainly through natural resources, namely, water and geothermal resources. In this regard, there will be need to use electricity sparingly since high consumption of electricity negatively impacts on these natural resources and their sustainability.

6.2.2.11 Surface and ground water hydrology and water quality degradation

Changes in surface hydrology alter the flow of water through the landscape. Construction of impervious surfaces such as parking lots, roads and buildings increase the volume and rate of runoff, resulting in habitat destruction, increased pollutant loads, and flooding. Built or paved areas and changes in the shape of the land also influence groundwater hydrology (i.e. recharge rates, flow, conditions).

Project related excavation could lead to surface and ground water quality degradation. Contaminated soil or ground water in the path of the project could be disturbed by excavation resulting in a potential transfer of the contamination to surface waters. The excavated area, if linear could act as a conduit to extend groundwater contamination to new areas. Spills of hazardous materials in excavated areas could introduce contaminants to ground water. Material barrowing activities as well as the spillover effects of such projects, which include increased demand for drinking water and increased water use, can impact water quality by contributing sediment, nutrients, and other pollutants to limit water supplies, increasing the temperature of the water, and increasing the rate and volume of runoff.

6.2.2.12 Food kiosks and mushrooming of informal settlement

There is a likelihood of food kiosks starting to appear more so close to the project site due to meal demands from the workers. Most of the foods sold at such places are cheap. The food Kiosk owners will be looking for shortcut means to get easy money.

The proposed project may involve mushrooming of informal settlements in the surrounding area owing to workers preference to stay near their places of work. The long- term negative impact again will be the mushrooming of informal settlements in the neighbourhood. It is common to see people camping outside the entrance of workplaces in different places in Kenya waiting to be contracted for a day's work. Such people would be attracted to settle in the neighbourhood for that purpose. Such settlements often compromise security in the neighbourhood.

6.2.2.13 Increased storm water Volume

There is a likelihood of interference with the percolation and flow of storm water from the excavations, stockpiling of both soil and construction material and the construction of access routes. The situation is made worse due to the site gradient with respect to the neighbouring plots as pointed out in 6.2.2.1 in this report.

6.3 Operational phase

Some of the impacts both positive and negative that may be as a result of the proposed project during the operation stage will include;

6.3.1 Positive Impacts

It is anticipated that the operations phase of this project will result in the following positive impacts:

Employment creation

- Employment opportunities for domestic and security personnel
- Optimal use of land
- Increased business opportunities for goods and service providers

6.3.2 Negative Impacts

The potential negative impacts likely to occur during the operations and maintenance phase of the project include:

6.3.2.1 Solid waste generation

The quantities of solid waste to be generated by the users of the housing facilities will be significant. Such waste will include foodstuffs, empty plastic containers, cartons, waste papers, plastic bags, etc. Improper management of solid waste will result to aesthetic degradation and breeding of disease vectors.

The occupants will be responsible for proper management of solid waste generated from their units during operation phase. In this regard, they are required to contract a private waste handler who is licensed by NEMA.

6.3.2.2 Occupational Health and Safety Issues

Occupation health and safety hazards during the operation and maintenance phases shall result from various sources and have adverse effects if not controlled within recommended limits.

6.3.2.3. Increase in water abstraction from underground sources for various uses

The proponent proposes to source water from Kakamega Water and Sewerage Company. The additional water sourcing from a proposed borehole would be likely to contribute to increased abstraction of ground water.

6.3.2.4 Liquid Waste Pollution

Liquid wastes from domestic waste water can result in pollution of water sources around the site, especially storm water drainage streams which passes across the proposed development plot during the wet/ rainy season.

6.3.2.5 Air pollution from vehicles

Emissions from the vehicles around the project site may increase as a result of an increase in the number of vehicles accessing the completed facilities of the proposed development. Another potential source of emissions is the proposed standby generator.

6.3.2.6 Increased traffic flow

There is potential increase in road traffic since additional vehicles for visitors and occupiers to the proposed development will be using these roads. This may aggravate the problem of traffic flow already being experienced on nearby roads.

6.3.2.7 Increased storm water flow

The increased surface area of impermeable surfaces e.g. roads, pavements and roofs will increase the volume of runoff.

The other potential negative impacts that may arise from the operational activities of the proposed development include;

- Water pollution
- Insecurity/social crime
- Increased electricity consumption

6.3.2.8 Noise pollution from the staff houses

Some members were concerned of the noise that might emanate from the project site especially during the operational phase.

6.3.2.9 Base Transceiver Station (BTS) sites/Cell towers

The members present expressed fears that the proposed development might be used to install BTS sites which they considered to be hazardous to human health. They reminded the proponent and the consultant to assure them that no such installation will be carried out on the proposed development.

6.4 Decommissioning Phase

6.4.1 Positive Impacts

In the event that the property developed will be decommissioned, the primary activity is expected to be demolition and rehabilitation of the site. The following key activities should be considered:

- Rehabilitation and restoration of the site to its original status
- Employment opportunities

6.4.2 Negative Impacts

The following are the potential negative impacts;

- Noise pollution
- Air/dust pollution
- Liquid waste
- Landscape design
- Solid waste material
- Social impacts
- Occupational health & safety hazard

6.4.2.1 Noise Pollution

Activities likely to produce noise during decommissioning include cutting and demolition of structures, machine operations.

Mitigation measures include:

- Schedule noisy activities during the day time period
- Use silencers on machines where possible
- Ensure machinery is well maintained to reduce noise emitted

6.4.2.2 Air/dust Pollution

This is expected to result from demolishing of structures at the site and the transport of demolition debris to the disposal site.

6.4.2.3 Solid Waste Material

It is expected that large amounts of solid waste material arising during demolition will include stone, wood, glass, metal, paper, plastic, equipment, vegetation, etc. The proper disposal of these materials is critical.

6.4.2.4 Occupational Health and Safety Hazards

Occupational Health and Safety hazards such as falling objects, open pits, sharp objects lying around, and dust may all be a health risk to construction workers. Risk of accidents and incidents will be heightened during the decommissioning activities as the workers will be in direct contact with heavy machinery and equipment.

Health, safety and security are important aspects through all the stages of the proposed project. Excavation activities associated with the project works may lead to health and safety hazards attributed to:

- **Unidentified or misidentified utilities:** Workers may be exposed to hazards such as electric shock, suffocation, or explosions if they unexpectedly come in contact with utility lines such as underground HV cables.
- **Hazardous atmospheres:** Workers may be exposed to hazards such as suffocation, chemical exposure, or explosions, if they enter excavations with hazardous atmospheres;
- **Structural instability:** Structures may become unstable if excavation occurs below the base of a building or equipment pad foundations, or below retaining wall footings. This may be fatal to the workers
- **Water accumulation:** Water accumulation in excavations can cause sloughing of excavation sidewalls, resulting in unsafe conditions for those entering the excavation, particularly if the use of electrical equipment is required
- **Falls:** Workers or passers-by may accidentally fall into open, unprotected excavations, or vehicles may accidentally be driven into uncovered or inadequately barricaded pits

7. MITIGATION MEASURES AND MONITORING PROGRAMMES

7.1 Introduction

The proponent of the proposed project acknowledges the fact that the proposed project activities will have some impacts on the biophysical environment, health and safety of its employees and members of the public, and socio economic wellbeing of the local residents. Thus, the main focus will be on reducing the negative impacts and maximizing the positive impacts associated with the project activities through a programme of continuous improvement.

An environmental management/monitoring plan will be developed to assist the proponent in mitigating and managing environmental impacts associated with the life cycle of the project

7.2 Proposed mitigation measures

The Proposed Mitigation measures for potential negative impacts are described below.

7.2.1 Construction and Operational Phase

7.2.1.1 Soil Erosion

Site clearing or disturbance of the natural vegetation will be planned and approved as part of project management process.

Areas cleared, excavated, or/and exposed during construction will be re-vegetated using native vegetation species, preferably of species growing in the immediate pristine environment to allow harmony with the surrounding and minimize duration for watering and care. The restoration period will require monitoring of the re-vegetated sites to assess impacts of heavy foraging, patch growth as well as gulley formation. Presence of well rooted vegetation will act as soil stabilization for the areas.

7.2.1.2 Waste generation (Solid and Liquid)

Mitigation measures for solid waste management:

- A site waste management plan should be prepared by the contractor prior to commencement of construction activities. This should include designation of appropriate waste storage areas, collection and removal schedule, identification of approved disposal site, and a system for supervision and monitoring.

- Preparation and implementation of the plan must be made the responsibility of the building contractor with the system being monitored independently.

- Special attention should be given to minimizing and reducing the quantities of solid waste produced during site preparation and construction.

- Any vegetation and combustible waste should not be burned on the site.

- Reusable inorganic waste (e.g. excavated sand/soils) should be stockpiled away from drainage features and used for filling where necessary.

- Unusable construction waste, such as damaged pipes, formwork and other construction material, must be disposed of at an approved dumpsite.

- Provide solid waste receptacles and storage containers, particularly for the disposal of plastic bags, boxes, so as not to block drainage system and to prevent littering of the site.

- Make arrangements for the daily collection of litter from the site and appoint a licensed solid waste transporter to collect and transport it for dumping at approved site.

Mitigation Measures for Liquid Waste management:

- Provide workers with appropriate sanitary facility which can be in the form of exhaustible mobile toilets or toilets connected to Biodigester system.
- Alternatively effluent from mobile toilets should be disposed by a registered NEMA wastewater handler. The waste handler should possess all the relevant waste transportation document including waste tracking documents showing the disposal site; the number of the users of the mobile toilet and distance of disposal should be considered during procurement by proponent or contractor to enable reduce secondary project impact such as exhaust emission, spillage and excessive fuel use
- Wastewater from concrete batching and aggregate screening should be discharged into nearby sedimentation pools and clean water re-used
- A specific area for washing of cement trucks and equipment should be identified and should not be near in water bodies and
- All equipment must be fuelled at properly designed fuelling stations.

7.2.1.3 Increased water demand

- The contractor should ensure that they maintain water consumption records in order to monitor their use
- The proponent should apply to Kakamega Water and Sewerage company for the connection to use the water for construction activities
- The contractor together with the proponent should put in place water storage facilities to store water in case of water shortages or rationing.

7.2.1.4 Impact on vegetation (Vegetation clearing)

- Map out ecologically sensitive areas at the site and make them known to the engineers and contractor
- Ensure there is selective clearing of the vegetation that allows future re-growth and regeneration. This will ensure minimal disruption of wild fauna's natural movement, territoriality and other ecological processes.
- It is desirable to re-vegetate disturbed areas along roads and pavements and other construction sites.

- Efforts to minimize dust effects such as water spraying roads should be deployed, while lasting solutions such as tarmac should be sought.
- The Contractor's Environmental, Health and Safety staff should monitor regeneration of natural vegetation as well as the appearance/spread of invasive or opportunistic species within the disturbed areas. Monitoring should include spotting and uprooting of unwanted germinating plants.

7.2.1.5 Air quality

The following mitigation measures are recommended to control effects of project on air quality and human health:

- Provide personnel with Personal Protective Equipment & Clothing (PPE&C) such as dust masks, boots among others. Mechanism should be put in place to ensure PPE&C are specific for the activities at hand and are always worn within the project sites;
- The stockpiles of earth generated during construction works, unpaved access roads and areas used for handling fine construction materials should be palliated with water regularly in order to suppress evolution of particles
- All machinery and equipment should be maintained in good working condition in order to minimize emissions to acceptable standards
- Train construction and delivery trucks drivers on pre-cautionary measures that enable curb emissions for example advise on techniques to reduce dust evolution especially when driving in areas of dense human settlement or nearing the project site to avoid creating dusty conditions; techniques to conserve fuel and reduce emission by switching off the engines when vehicles are idling
- Construction trucks delivering materials to site should be covered in order to minimize spread of fugitive emissions to the surrounding areas
- No burning of materials should be permitted at the project site
- Use clean energy to fuel project vehicles, equipment and machines in order to reduce air pollutants and
- Limit traffic movement within the earmarked project areas.

7.2.1.6 Risk of Leaks and Spills

The following mitigation measures are recommended to control effects of project on risk of leaks and spills:

- Conduct regular maintenance of site equipment and machinery to ensure leakages are controlled or detected early
- Project vehicles and equipment should be serviced according to manufacturer's requirements to limit release of exhaust emissions
- Investigate the possibility of fitting catalytic converters in machines with engines so as to convert harmful substance in the exhaust fumes to less harmful substances
- Safety procedures for fuel storage and re-fuelling should be well understood and implemented by site staff and oil residuals including waste oil, lubricants, used filters, should be carefully collected and stored for safe disposal, in order to prevent spillover effects of contaminant hydrocarbons into storm water or groundwater resources
- Protect project area from fire by posting warning signs in area where hydrocarbon fuels are used

- Observe the requirements of the emission control regulations.

7.2.1.7 Occupational Health and Safety Issues

The following mitigation measures are recommended to control effects of health and safety:

- Ensure all equipment are inspected before use for appropriate safe guards and that the machine operators are trained on machine safety
- Caution will have to be kept at high and strict consideration during any excavation works and work at height
- Ensure the working hours are controlled and that employees are not allowed to extend the working hours beyond an acceptable limit for purposes of gaining extra pay
- Ensure appropriate road safety signages are strategically placed and drivers adhere to the requirements of such signage
- Erect speed breaks where human and vehicular traffic has high interaction opportunities
- Provide adequate manual labour to meet the requirements of the tasks
- Comply with the provisions of the OSHA 2007 and its subsidiary legislation.

7.2.1.8 Excessive noise and Vibrations

The following mitigation measures are recommended to control effects of noise and vibrations during construction phase:

- Conduct periodic noise measuring and monitoring to determine levels and extent of harmful noise
- Clearly label the high noise areas
- Provide PPE (hearing protection) to persons operating within or visit identified high noise areas
- In order to meet noise level requirements, the works equipment should be equipped with standard noise attenuation features. Machines that exceed acceptable noise limits should be equipped with silencers or lagging materials or specially designed acoustic enclosures
- Inform local residents when construction activities are likely to generate excessive noise in order to minimize disruption to local residents
- Sensitize truck drivers to switch off engines while offloading materials to avoid revving vehicle engines or hooting especially when passing through sensitive areas such as churches, schools, residential areas and hospitals.

7.2.1.9 HIV/AIDS

Measures recommended for implementation to enable reduce the spread of the virus include the following;

- Review the construction activities to integrate with the HIV/AIDS campaigns
- Develop appropriate training and awareness materials for Information, Education and Communication (IEC) on HIV/AIDS
- Identify other players (local CBOs, NGOs and government organizations) on HIV/AIDS for enhanced collaboration

- Develop an intervention strategy compatible with the construction programme to address success of the HIV/AIDS prevention and provide peer educators for sustainability in collaboration with other stakeholders
- Integrate monitoring of HIV/AIDS preventive activities as part of the construction supervision. Basic knowledge, attitude and practices are among the parameters to be monitored, and particularly on provision of condoms, status testing and use of ARVs

7.2.1.10 Increased Energy Consumption

Proposed mitigation measures include;

- Ensure planning of transportation of materials to ensure that fossil fuels (diesel, petrol) are not consumed in excessive amounts
- Monitor energy use during the operations of the facilities within the proposed development and set targets for reduction of energy use.
- Conduct annual energy audits

7.2.1.11 Hydrology and water quality degradation

Several measures shall be put in place to mitigate the impacts that are likely to lead to hydrology and water quality degradation. The proponent will prepare a hazardous substance control and emergency response plan that will include preparations for quick and safe cleanup of accidental spills. It will prescribe hazardous-materials handling procedures to reduce the potential for a spill during project operation, and will include an emergency response programme to ensure quick and safe cleanup of accidental spills. The plan will identify areas where refueling and vehicle maintenance activities and storage of hazardous materials, if any, will be permitted.

Soil sampling and trial holes digging will be conducted before excavation for foundations begins and soil information will be provided to excavation crews to inform them about soil conditions and potential hazards. If excavation of hazardous materials is required, they will be handled in accordance with applicable regulations. If suspected contaminated groundwater is encountered in the depths of the proposed development, samples will be collected and submitted for laboratory analysis for petroleum hydrocarbons, metals, volatile organic compounds and semi-volatile organic compounds. If necessary, ground water will be collected during excavations, contained and disposed off in accordance with all applicable regulations. Appropriate personal protective equipment will be used and waste management will be done in accordance with applicable regulations. Oil absorbent material, traps and storage drums will be used to contain and control any minor releases of engine and other equipment oil.

7.2.1.12 Food kiosks and mushrooming of informal settlements

In order to alleviate the impact of mushrooming of kiosks, on-site kiosk services with adequate sanitation during operations are recommended. The workers will have designated areas for eating and resting.

7.2.1.13 Increased underground water abstraction

Mitigation measures include:

Compliance with the Water Resources Management Rules, 2007 on approval, authorization and permits for ground water abstraction, including:

- No person shall construct or begin to construct a well or abstract any water from a well if such well is situated within half a mile of another well, without first having obtained the written authority of WRMA
- Record of all water abstracted, diverted, stored or discharged, giving the date, time, quality and quantity & methods of such abstraction, diversion, storage or discharge
- A permit may, at the request of the permit holder, be varied by the Authority if the
- Authority is satisfied that the variation is not contrary to public interest or the rights of others Environmental and Social Impact Study Report
- Where the variation results in a change of the category of water use, the permit holder shall be required to re-apply for another permit
- Borehole status monitoring data – abstraction rate, water levels, water quality, etc.
- Where two or more operators have a common interest in the employment of water, a statement of the terms and objects of the association, and the rules under which the association proposes to exercise the permit
- The management should ensure that ways of recycling waste water are explored for use in the washrooms which will in turn reduce the water consumption rates
- The management should explore alternatives for harvesting rainwater which can be stored and used later, which will then reduce pressure on the borehole water
- The management should ensure that they maintain water consumption records in order to monitor their use.

7.2.2 Decommissioning Phase

7.2.2.1 Noise Pollution

Mitigation measures include:

- Schedule noisy activities during the day time period;
- Use silencers on machines where possible;
- Ensure machinery is well maintained to reduce noise emitted.

7.2.2.2 Air/dust Pollution

Mitigation measures include:

- Practice dust management techniques, including watering down dust;
- Set up dust barriers/ screens at strategic locations;
- Provide and enforce the appropriate use of Personal Protective Equipment (PPE) against dust.

7.2.2.3 Solid waste

Mitigation measures include:

- Disposal of solid waste in compliance with EMCA 2006 waste management regulations;

- Segregation of waste to encourage reuse and recycling;
- Ensuring that the contracted waste collector is registered with NEMA & County Government of Kakamega to collect and dispose wastes.

7.2.2.4 Liquid waste

These are likely to arise from cleaning activities and sanitary facilities.
Mitigation measures include:

- Prudent use of water to reduce liquid waste volumes
- Adhere to EMCA 2006 water quality regulations
- Adhere to WRMA 2007 guidelines for effluent discharge into surface water resources
- Ensure that sewage system is functional during demolition, to prevent pollution of nearby underground and surface water sources

7.2.2.5 Occupational Health and Safety Hazards

Mitigation measures include:

- The Contractor should ensure registration of all workplaces by the Director, Directorate of Occupational Health and Safety (DOHSS) forming the basis of work statistics;
- The Contractor should ensure provision of appropriate Personal Protective Equipment (PPE) for staff such as:
  - Earmuffs for ear protection;
  - Helmets for head protection;
  - Dust masks for dust protection for all project works;
  - Goggles with good visibility for eye protection;
  - Overalls and dust coats to protect the skin;
  - High-visibility retro-reflective fluorescent yellow-green, fluorescent orange/ fluorescent red jackets with 360o visibility;
  - Safety Shoes for protection of the feet;
  - Gloves of different types according to specific works in relation to: - Puncture resistance;

  - Sharps resistance; - Cut resistance;
  - Flexibility;
  - Abrasion resistance;
  - Grip
- The Project Manager should ensure that the contractor complies with all standard and legally required health and safety regulations as set out by the Occupational Safety and Health Act (Part XI: Section 96) as pertains to construction activities;
- The Contractor should provide a standard First Aid Kit on site. Recommendations for Employees exceeding fifty (50) [as per the first Aid Rules section 2 (c)] and Fourth Schedule of the Factories (Building Operations and Works of Engineering Construction) Rules 1984 part III

8. ANALYSIS OF PROJECT ALTERNATIVES

This section analyses the project alternatives in terms of site, materials and technology scale, solid waste and wastewater management options and shall involve studying design alternatives and analyzing them based the environmental costs and benefits. This shall involve studying the technology, design, capital investments, operation and maintenance requirements among others.

8.1 Relocation Option

Relocation option to a different site is an option available for the project implementation. At present the landowner/developer does not have an alternative site. This means that he has to look for the alternative land.

8.2 No Project Alternative

The No Project option in respect to the proposed project implies that the status quo is maintained. This option is the most suitable alternative from an extreme environmental perspective as it ensures non-interference with the existing conditions. This option will however, involve several losses both to the landowner and the community as a whole. The land will continue to remain idle and underutilized.

8.3 The proposed development alternative

Under the proposed development alternative, the developer of the proposed project would be issued with a NEMA License. In issuing the license, NEMA would approve the proposed project, provided all environmental measures are complied with during the construction period and occupation phases.

8.4 Analysis of Alternative Construction Materials and Technology

The proposed project will be constructed using modern, locally and internationally accepted materials to achieve public health, safety, security and environmental aesthetic requirements. Equipment that saves energy and water will be given first priority without compromising on cost or availability factors. The concrete pillars and walls will be made using locally sourced stones, cement, sand (washed and clean), metal bars and fittings that meet the Kenya Bureau of Standards requirements.

8.5 Domestic waste water management alternatives

The following locally available technologies are discussed below:-

8.5.1 Alternative One - Use of stabilization ponds/lagoons

This refers to the use of a series of ponds/lagoons which allow several biological processes to take place, before the water is released to the outside environment. The lagoons can be used

for aquaculture purposes and irrigation. However, they occupy a lot of space but are less costly. No chemicals are used/heavy metals sink and decomposition processes take place. They are usually a nuisance to the public because of smell from the lagoons/ponds. This option is not preferable in the area because the required space is not available and the area is a cosmopolitan area.

8.5.2 Alternative Two - Use of Constructed/Artificial wetland

This is one of the powerful tools/methods used in raising the quality of life and health standards of local communities in developing countries. Constructed wetland plants act as filters for toxins. The advantages of the system are the simple technology, low capital and maintenance costs required. However, they require space and a longer time to function. Long term studies on plant species on the site will also be required to avoid weed biological behavioral problems. Hence it is not the best alternative for this kind of project.

8.5.3 Alternative Four - Use of septic tanks

This involves the construction of underground concrete-made tanks to store the sludge with soak pits. It is expensive to construct and regular empting in large discharge points especially with the large projects like the proposed one in Kakamega town. Given the kind of liquid waste emanating from the proposed project this option is not preferred since it will be uneconomical.

8.5.4 Alternative Five - Waste water treatment plant

This involves the construction of a plant and use of chemicals to treat the effluents to locally/internationally accepted environmental standards before it is discharged into the river nearby. It is usually expensive to construct and maintain, but it is the most reliable, efficient and cost-effective in the long term.

8.5.5 Alternative six - Connection to the sewer line system

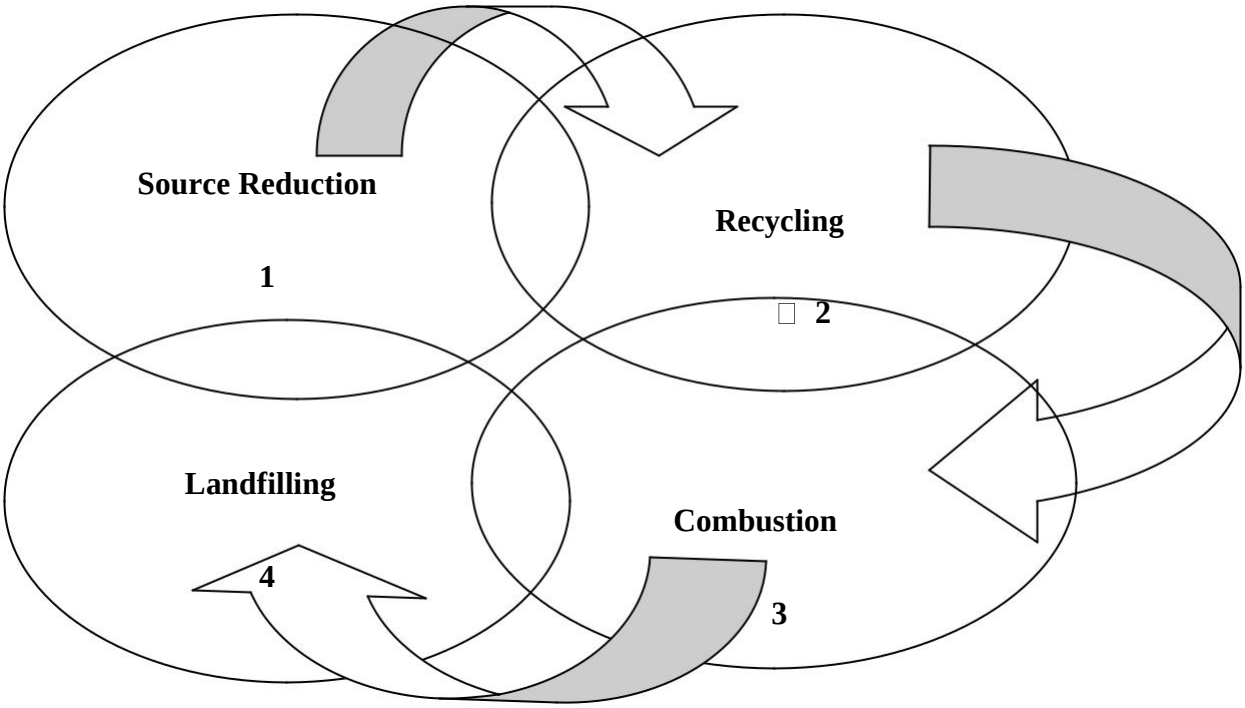
Connection to the sewer line option is a viable option since the project area is served by an existing sewer line.

8.5.6 Alternative seven: Use of Bio-digester

Bio digester is an on-site sanitation unit that utilizes anaerobic technology for the disposal of toilet (black) wastewater as well as of kitchen and bathroom (grey) water, in a closed system. This is an incredibly ethical sanitation technology which treats wastewater in an environmentally friendly manner, facilitating its use for irrigation or its return to water bodies without polluting them. The process also generates organic fertilizer and biogas (a form of fuel) by allowing naturally occurring bacteria to break down solid waste. From the analysis and economic as well as environmental; considerations use of bio digester system is a viable option for the proponent to adopt in order to supplement connection to the sewer system.

8.6 Solid waste management alternatives

A lot of solid wastes will be generated from the proposed development. An integrated solid waste management system is recommendable. First, the proponent will give priority to Reduction at source of the waste materials. This option will demand a solid waste management awareness programme in the management and the workers. Notices for proper waste management/handling may be posted at strategic places for the sake of visitors. Secondly, Recycling, Reuse and compositing of the waste will be the second alternative in priority. This will call for a source separation programme to be put in place especially in the kitchen section. The recyclables will be sold to waste buyers within Kakamega County. The third priority in the hierarchy of options is combustion of the waste that is not recyclable. Finally, sanitary land filling will be the last option for the proponent to consider.



Integrated solid Waste Management

9. ENVIRONMENTAL MANAGEMENT/MONITORING PLAN

Introduction

The proponent of the proposed project acknowledges the fact that the proposed project activities will have some impacts on the biophysical environment, health and safety of its employees and members of the public and socio-economic wellbeing of the local residents. Thus, the main focus will be on reducing the negative impacts and maximizing the positive impacts associated with the project activities through a programme of continuous improvement.

An Environmental Management/Monitoring Plan has been developed to assist the proponent in mitigating and managing environmental impacts associated with the life cycle of the project. The EMP has been developed to provide a basis for an Environmental Management System (EMS; ISO 14001 principles) for the project. It is noteworthy that key factors and processes may change through the life of the project and considerable provisions have been made for dynamism and flexibility of the EMP. As such, the EMP will be subject to a regular regime of periodic review.
The table below forms the preliminary of this EMP for the construction phase of the proposed project.

Expected Negative Impacts	Recommended Mitigation Measures	Responsible Party	Time Frame	Cost (Kshs)
1. Curb project associated conflicts and Lost Time Injuries (LTI) e.g. Disputes with neighborhood				
Project Implementation Disputes	Land transfer agreements should be formalized before the project start as per the laws of the land	Proponent/Government of Kenya	Throughout construction period	-
Sufficient planning for adequate resources required i.e. financial, personnel and equipment	Proponent &Contractor	Project Planning Phase	Throughout construction period	-
2. Minimize extraction site impacts and ensure efficient use of raw materials in construction				
High Demand of construction raw materials	Source building materials from local suppliers who use environmentally friendly processes in their operations	Project Manager & Contractor	Throughout construction period	0
Ensure accurate budgeting and estimation of actual construction material requirements to ensure that the least amount of material necessary is ordered	Project Manager & Contractor	Project Manager & Contractor	Throughout construction period	30,000
Ensure that damage or loss of materials at the construction site is kept minimal through proper storage.	Project Manager & Contractor	Throughout construction period	1 month	15,000
Use at least 5%-10% recycled, refurbished or salvaged materials to	Project Manager & Contractor	Throughout construction period	1 month	0

reduce the use of raw materials and divert material from landfills				
3. Minimize vegetation and landscaped gardens disturbance at and or around construction site				
Vegetation/biodiversity disturbance	Ensure proper demarcation and delineation of the project area to be affected by construction works.	Contractor, Civil engineer & Project Manager	1 month	200,000
	Specify locations for trailers and equipment, and areas of the site which should be kept free of traffic, equipment, and storage	Civil Engineer, Architect and Project Manager	1 month	20,000
	Designate access routes and parking within the site	Civil Engineer, Architect and Project Manager	1 month	10,000
	Introduction of vegetation (trees, shrubs and grass) on open spaces and their maintenance	Architect & Landscape specialist	Monthly to Annually	15,000
	Design and implement an appropriate landscaping programme to help in re-vegetation of part of the project area after construction	Architect & Landscape specialist	2 months	15,000
4. Reduce storm-water, runoff and soil erosion				
Increased storm water, runoff and soil erosion	A storm water management plan that minimizes impervious area infiltration by use of recharge areas and use of detention and/or retention with graduated outlet control structure will be designed	The Civil Engineer, Mechanical Engineer and Project Manager	1 month	10,000
	Apply soil erosion control measures such as leveling of the project site to reduce run-off velocity and increase	The Civil Engineer, Mechanical Engineer and Project Manager	1 months	

	infiltration of storm water into the soil.			
	Ensure that construction vehicles are restricted to existing graded roads to avoid soil compaction within the project site	The Civil Engineer, Mechanical Engineer and Project Manager	Throughout construction period	
	Ensure that any compacted areas are Ripped to reduce run-off.	The Civil Engineer, Mechanical Engineer and Project Manager	2 months	
	Open drains all interconnected will be provided on site	Civil Engineer	Throughout construction period	10,000 per unit
5. Minimize solid waste generation and ensure efficient solid waste management during construction				
Increased solid waste generation	Use of an integrated solid waste management system i.e. through a hierarchy of options: 1. Source reduction 2. Recycling 3.Composting and reuse 4. Combustion 5. Sanitary land filling	Project Manager & Contractor	Throughout construction period	10,000
	Through accurate estimation of the sizes and quantities of materials required, order materials in the sizes and quantities they will be needed rather than cutting them to size, or having large quantities of residual materials	Project Manager & Contractor	One-off	0
	Ensure that construction materials left over at the end of construction will be used in other projects rather than being disposed off.	Project Manager & Contractor	One-off	0

	Ensure that damaged or wasted construction materials including cabinets, doors, plumbing and lighting fixtures, marbles and glass will be recovered for refurbishing and use in other projects	Project Manager & Contractor	One-off	0
	Donate recyclable/reusable or residual materials to local community groups, institutions and individual local residents or homeowners.	Project Manager & Contractor	One-off	0
	Use of durable, long-lasting materials that will not need to be replaced as often, thereby reducing the amount of construction waste generated over time	Project Manager & Contractor	Throughout construction period	_
	Provide facilities for proper handling and storage of construction materials to reduce the amount of waste caused by damage or exposure to the elements	Project Manager & Contractor	One-off	10,000
	Purchase of perishable construction materials such as paints should be done incrementally to ensure reduced spoilage of unused materials	Project Manager & Contractor	Throughout construction period	0
	Use building materials that have minimal or no packaging to avoid the generation of excessive packaging waste	Project Manager & Contractor	Throughout construction period	0
	Use construction materials containing recycled content when possible and in accordance with accepted standards.	Project Manager & Contractor	Throughout construction period	0
	Reuse packaging materials such as cartons, cement bags, empty	Project Manager, Mechanical Engineer &	Throughout construction	0

	metal and plastic containers to reduce waste at the site	Contractor	period	
	Dispose waste more responsibly by dumping at designated dumping sites or landfills only.	Project Manager, Mechanical Engineer & Contractor	Throughout construction period	10,000/ month
	Waste collection bins to be provided at designated points on site	Project Manager, Mechanical Engineer & Contractor	Throughout construction period	-
	Private waste disposal company to be contracted to transport and dispose the solid waste from site	Project Manager, Mechanical Engineer & Contractor	Throughout construction period	
	Running an educational campaigns amongst employees, e.g. through use of posters, to encourage reuse or recycling of the solid waste	Project Manager, Mechanical Engineer & Contractor	Throughout construction period	
6. Reduce dust emissions				
Dust emission	Ensure strict enforcement of on-site speed limit regulations	Project Manager & Contractor	Throughout construction period	15,000
	Avoid excavation works in extremely dry weathers	Project Manager & Contractor	Throughout construction period	
	Sprinkle water on graded access routes when necessary to reduce dust generation by construction vehicles	Project Manager & Contractor	Throughout construction period	
	Personal Protective equipment to be worn	Project Manager	Throughout construction period	
7. Minimization of exhaust emissions and Traffic congestion				
Exhaust emission	Vehicle idling time shall be minimized	Project Manager & Contractor	Throughout construction period	0

	Alternatively fuelled construction equipment shall be used where feasible equipment shall be properly tuned and maintained	Project Manager & Contractor	Throughout construction period	0
	Sensitize truck drivers to avoid unnecessary revving of vehicle engines at loading/offloading points and parking areas, and to switch off vehicle engines at these points	Project Manager & Contractor	Throughout construction period	0
Traffic Congestion	Transport of materials during the traffic off peak hours to avoid possible traffic congestion, Purchasing of material according to the demand, Ensuring minimal residence period for trucks mobilizing material on site, Proper planning during construction period	Project Manager & Contractor	Throughout construction period	0
8. Minimization of noise and vibration				
Noise and vibration	Sensitize construction vehicle drivers and machinery operators to switch off engines of vehicles or machinery not being used.	Project Manager & Contractor	Throughout construction period	15,000
	Sensitize construction drivers to avoid revving of vehicle engines or hooting especially when passing through sensitive areas such as churches, residential areas and hospitals	Project Manager & Contractor	Throughout construction period	10,000
	Ensure that construction machinery are kept in good condition to reduce noise generation	Project Manager & Contractor	Throughout construction period	40,000
	Ensure that all generators and heavy-duty equipment are	Project Manager & Contractor	Throughout construction	25,000

	insulated or placed in enclosures to minimize ambient noise levels		period	
	The noisy construction works will entirely be planned to be during daytime when most of the neighbors will be at work	Project Manager & all site foremen	Throughout construction period	0
	Comply with the provisions of Environmental Management and Coordination (Noise and Excessive Vibration Pollution) (Control) Regulations, 2009 regarding noise limits at the workplace	Project Manager & all site foremen	Throughout construction period	0
9. Minimization of energy consumption				
Increased energy consumption	Ensure electrical equipment, appliances and lights are switched off when not being used	Project Manager & Contractor	Throughout construction period	0
	Install energy saving fluorescent tubes at all lighting points instead of bulbs which consume higher electric energy	Project Manager & Contractor	Throughout construction period	12,000
	materials to ensure that fossil fuels (diesel, petrol) are not consumed in excessive amounts	Project Manager & Contractor	Throughout construction period	10,000
	Monitor energy use during construction and set targets for reduction of energy use.	Project Manager & Contractor	Throughout construction period	10,000
10. Minimize water consumption and ensure more efficient and safe water use				
High water demand	Install water conserving taps that turn-off automatically when water is not being used	Project Manager & Contractor	One-off	10-40 % higher
	Promote recycling and reuse of	Project Manager & Contractor	Throughout construction	15,000

	water as much as possible		period	
	Install a discharge meter at water outlets to determine and monitor total water usage	Project Manager & Contractor	One-off	10,000
	Promptly detect and repair of water pipe and tank leaks	Project Manager & Contractor	Throughout construction period	10,000 per month
	Sensitize staff to conserve water by avoiding unnecessary water use	Project Manager & Contractor	Throughout construction period	5,000
	Ensure taps are not running when not in use	Project Manager & Contractor	Throughout construction period	5,000
11. Minimize release of liquid effluent				
Generation of wastewater	Provide means for handling sewage generated by construction workers	Mechanical Engineer & Project Manager	One-off	15,000 per Month
	Conduct regular checks for pipe blockages or damages since such vices can lead to release of the effluent into the land and water bodies	Mechanical Engineer & Project Manager	Throughout construction period	5,000/month
	Monitor effluent quality regularly to ensure that the stipulated discharge rules and standards are not violated	Mechanical Engineer & Project Manager	Throughout construction period	5,000/month
12. Minimize occupational health and safety risks				
Approval of building plans	Ensure that all building plans are approved by the Local Authority and the local Occupational Health and Safety Office	Developer	One-off	50,000
Registration of the premises	Registration of the premises under the Occupational Safety and Health Act, 2007 Laws of Kenya is mandatory	Developer	One-off	50,000

General register	A general register should be kept within the facility as stipulated in Sec 122&123 of the Occupational Safety and Health Act, 2007.	Project Manager & Contractor	One-off	3,000
Posting of abstract of OSHA 2007 Act,	There shall be displayed at prominent places within the site the prescribed abstract of the OSHA and the relevant notices as stipulated in section 121 of the OSHA, 2007.	Project Manager & Contractor	One-off	3,000
Incidents, accidents and dangerous occurrences.	Ensure that provisions for reporting incidents, accidents and dangerous occurrences during construction using prescribed forms obtainable from the local Occupational Health and Safety Office (OHSO) are in place.	Project Manager, Developer & Contractor	Continuous	6,000/month
	Enforcing adherence to safety procedures and preparing contingency plan for accident response in addition safety education and training shall be emphasized.	The Contractor, Project Manager& Site Safety Officer	Continuous	15,000
Insurance	Ensure that the premises are insured as per statutory requirements (third party and workman's compensation)	Developer	Annually	_
Safety, health and environment (SHE) policy	Develop, document and display prominently an appropriate SHE policy for construction works	Project Manager, Developer & Contractor	One-off	5,000
Health and safety committee	Provisions must be put in place for the formation of a Health and Safety Committee, in which the employer and the workers are represented. Statutory training to be offered.	Project Manager	Annually	100,000
Sanitary conveniences	Suitable, efficient, clean, well-lit and adequate sanitary conveniences should be	Project Manager	One-off	100,000

	provided for construction workers			
Medical examination	Arrangements must be in place for the medical examination of all construction employees before, during and after termination of employment	Project Manager, Developer & Contractor	Continuous	5,000 per examination
Machinery/equipment safety	Ensure that machinery, equipment, personal protective equipment, appliances and hand tools used in construction do comply with the prescribed safety and health standards and be appropriately installed maintained and safeguarded	Project Manager, Developer & Contractor	One-off	_ .
	Ensure that equipment and work tasks are adapted to fit workers and their ability including protection against mental strain	Project Manager, Developer & Contractor	Continuous	_
	All machines and other moving parts of equipment must be enclosed or guarded to protect all workers from injury	Project Manager	One-off	_
	Arrangements must be in place to train and supervise inexperienced workers regarding construction machinery use and other procedures/operations	Project Manager	Continuous	100,000 per training
	Equipment such as fire extinguishers must be examined by a government authorized person. The equipment may only be used if a certificate of examination has been issued	Project Manager	Continuous	
	Reports of such examinations must be presented in prescribed	Project Manager	Continuous	20,000 per examination

	forms, signed by the examiner and attached to the general register			
Storage of materials	Ensure that materials are stored or stacked in such manner as to ensure their stability and prevent any fall or collapse	Project Manager	Continuous	-
	Ensure that items are not stored/stacked against weak walls and partitions	Project Manager	Continuous	_
Safe means of access and safe place of employment	All floors, steps, stairs and passages of the premises must be of sound construction and properly maintained	Project Manager & Contractor	Continuous	_
	Securely fence or cover all openings in floors	Project Manager & Contractor	One-off	_
	Provide all staircases within the premises with suitable handrails on both sides	Project Manager & Contractor	One-off	
	Ensure that construction workers are not locked up such that they would not escape in case of an emergency	Project Manager & Contractor	Continuous	_
	All ladders used in construction works must be of good construction and sound material of adequate strength and be properly maintained	Project Manager & Contractor	One-off	_
Emergency preparedness and evacuation procedures	Design suitable documented emergency preparedness and evacuation procedures to be used during any emergency	Project Manager & Contractor	One-off	15,000
	Such procedures must be tested at regular intervals	Project Manager & Contractor	Every 3 months	15,000
	Ensure that adequate provisions are in place to immediately stop any operations where there in an imminent and serious danger to health and safety and	Project Manager & Contractor	One-off	20,000

	to evacuate workers			
	Ensure that the most current emergency telephone numbers posters are prominently and strategically displayed within the construction site	Project Manager & Contractor	One-off	5,000
	Provide measures to deal with emergencies and accidents including adequate first aid arrangements	Project Manager & Contractor	Continuous	-
First Aid	Well stocked first aid box which is easily available and accessible should be provided within the premises	Project Manager & Contractor	Annually	50,000
	Provision must be made for persons to be trained in first aid, with a certificate issued by a recognized body.	Project Manager & Contractor	Annually	50,000
13. Ensure the general safety and security of the site and surrounding areas				
Increased Pressure on Infrastructure	Coordinate with other planning goals and objectives for the region	Architect, Project Manager, Contactor and the Developer	Continuous	5,000
	Upgrade existing infrastructure and services, if and where feasible.	Architect, Project Manager, Contactor and the Developer	Continuous	
Insecurity	Ensure the general safety and security at all times by providing day and night security guards and adequate lighting within and around the construction site.	Security Officer, Project Manager & Police	Continuous	150,000 monthly
	Body-search the workers on entry, to avoid getting weapons on site, and leaving site to ensure nothing is stolen.	Security Officer	Continuous	-
	Ensure only authorized personnel get to the site	Security Officer	Continuous	-

	Security alarms will be installed	Security Officer	Continuous	
14. Environmental monitoring of the project				
Environmental concern during the construction phase	Due to the magnitude of the project the proponent will liaise with the environmental consultants throughout the construction phase and ensure that the conditions of approval are adhered to.	Proponent, Contractor	Throughout construction phase	-

CONCLUSION AND RECOMMENDATIONS

The Environmental and social impact assessment study report (ESIA) study has established that the proposed development is a worthy investment by the proponent and broadly, it will contribute significantly to the improvement Kakamega County Housing facilities. This will be achieved through the prior discussed positive impacts as shown in this ESIA.

The proponent of the proposed project shall be committed to putting in place several measures to mitigate the potential negative environmental, safety, health and social impacts associated with the life cycle of the proposed project. It is recommended that in addition to this commitment, the proponent shall focus on implementing the measures outlined in the EMP as well as adhering to all relevant national and international environmental, health and safety standards, policies and regulations that govern establishment and operation of such projects. It is expected that the potential positive impacts arising from the proposed development shall be maximized as much as possible. These measures will go a long way in ensuring the best possible environmental compliance and performance standards.

It is our recommendation that the project be allowed to proceed provided the mitigation measures outlined in the report are adhered to, the Environmental Management Plan (EMP) is implemented and the developer adheres to the conditions of approval of the project that will be given by NEMA.
Hence it is recommended that an EIA License may be issued by NEMA before the project development starts.

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APPENDICES

1. Practicing certificate of NEMA Lead Expert
2. Copy of land ownership documents
3. Proponent certificate of Registration
4. KRA PIN Number.
5. A sample of questionnaires used during the field study

FORM 7 (r.15(2))

nema

NATIONAL ENVIRONMENT MANAGEMENT AUTHORITY(NEMA)

THE ENVIRONMENTAL MANAGEMENT AND CO-ORDINATION ACT

ENVIRONMENTAL IMPACT ASSESSMENT/AUDIT (EIA/EA) PRACTICING LICENSE

License No: NEMA/EIA/ERPL/13830

Application Reference No: NEMA/EIA/EL/18673

M/S **Clarence Machoka Bigogo**
(individual or firm) of address

P.O. Box 55374-00200, Nairobi

is licensed to practice in the capacity of a (Lead Expert/Associate Expert/Firm of Experts) **Lead Expert** registration number **6819**

in accordance with the provision of the Environmental Management and Coordination Act Cap 387.

Issued Date: **2/3/2021**

Expiry Date: **12/31/2021**

Signature....

(Seal)

Director General
The National Environment Management Authority

P.T.O.

ISO 9001: 2008 Certified

USED ON AFFORDABLE HOUSING PROJECT AT MUDIRI ESTATE ON PLOT No. KAKAMEGA/MUNICIPALITY BLOCK IV/1163 KAKAMEGA COUNTY

SPECIAL CONDITIONS

1. No further buildings shall be erected on the land nor shall additions or external alterations be made to any buildings otherwise that in conformity with the plans and specifications previously approved in writing by the National / County Government.

   The National/County Government shall not give its approval unless it is satisfied that the proposals are such as to develop the land adequately satisfactorily.

2. The Lessee shall maintain in good and substantial repair and conditions all buildings at any time erected on the land.

3. The land and buildings shall always be used for residential purposes

4. The buildings shall not cover more than 50% of the ..... area of the land or such lesser area as may be prescribed by the National / County Government Development Control Regulations.

5. The land shall not be used for any purpose which the National / County Government considers to be dangerous or offensive.

6. The Lessee shall not subdivide, change or extend use of the land, without prior written consent and approval of the National Government or County Government.

7. The Lessee shall not sell, transfer, sublet, charge or part with possession of the land or any part thereof or any building thereon except with prior consent in writing of the National / County Government.

8. The Lessee shall from time to time pay to the National / County Government on demand such proportion of the cost of maintaining all roads and drains serving or adjoining the land as the National Government/County Government may assess.

9. The Lessee shall pay such rates, charges, duties, assessments or outgoings of whatever descriptions as may be imposed charge or assessed by the National / County Government on behalf of the National / County Government upon the land or the buildings erected thereon, including any contribution or other sum paid in lieu thereof.

10. The National Government or respective County Government or such other person or authority as may be appointed for the purpose shall have the right to enter upon the land and lay and have access to water main service pipes and drains, telephone wire, fiber optic and electric mains of all descriptions whether overhead or underground and the Lessee shall not erect any buildings in such a way as to cover or interfere with any existing alignments of main or Services pipes or fiber optic or telephone wires and electric mains.

11. The National Government/County Government may revise the annual ground rent payable Such rental shall be at a rate to be determined by the National Government / County Government of the unimproved value of the land.

Dated this 19th day February, 20 19

SIGNED BY:.....

For:CHIEF LAND REGISTRAR

F.N. Otaro 217

COMMON SEAL of the Lessee was affixed
hereto in the presence of:

SIGNED by the Lessee

IN THE PRESENCE OF:

ADVOCATE

26/03/2019

sport sized colored photographs

CHIEF OFFICER
Ministry Of Lands, Urban Areas
Housing & Physical Planning

Signature ..... DATE .....

ID/PASSPORT .....

PIN NO .....

I CERTIFY that the above-named appeared before me on the 26th day of March 20 19 and being known to me/being identified by Kenyan National Identity Card NO. 10415469 acknowledged the above signature or marks to belong to the Lessee and that the Lessee freely and voluntarily executed this instrument and understood its contents.

EVIRA WILUNDA AIANGA
ADVOCATE

26/03/2019

Signature and Designation of Person Certifying

REGISTERED this 24 day of September, 20 19

Land Registrar

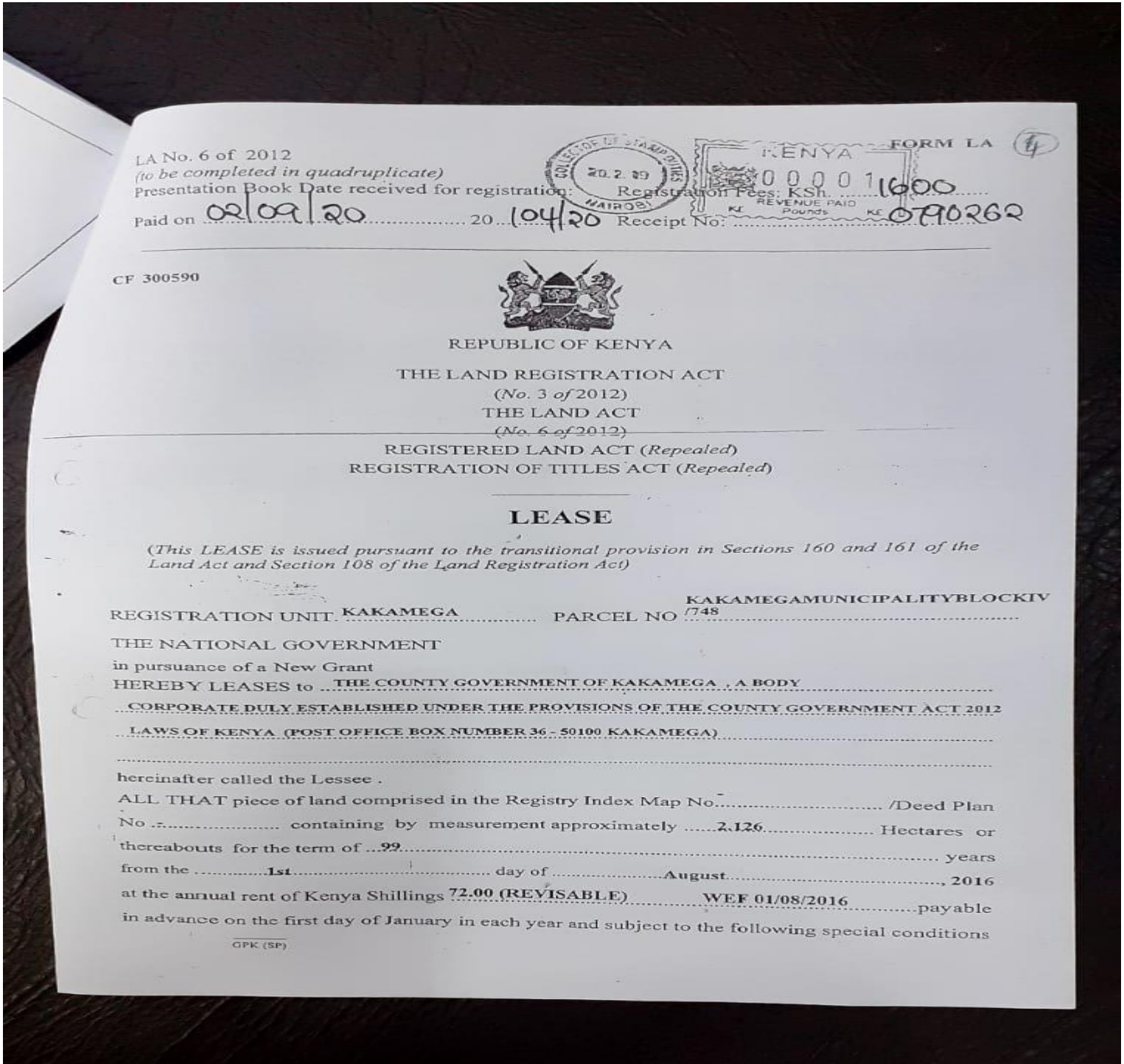
Name .....

DRAWN BY: M. J. Biwa 253

LAND REGISTRAR
P.O. BOX 30089
NAIROBI

293633907

e79257276616eeadbb83fecee20d09eb



LA No. 6 of 2012
(to be completed in quadruplicate)
Presentation Book Date received for registration: Registration Fees: KSh. 1600
Paid on 02/09/20 20 04/20 Receipt No: 0790262

FORM LA 4

CF 300590

REPUBLIC OF KENYA

THE LAND REGISTRATION ACT
(*No.* 3 *of* 2012)
THE LAND ACT
(*No.* 6 *of* 2012)
REGISTERED LAND ACT (*Repealed*)
REGISTRATION OF TITLES ACT (*Repealed*)

LEASE

(This LEASE is issued pursuant to the transitional provision in Sections 160 and 161 of the Land Act and Section 108 of the Land Registration Act)

REGISTRATION UNIT. KAKAMEGA PARCEL NO KAKAMEGAMUNICIPALITYBLOCKIV /748

THE NATIONAL GOVERNMENT
in pursuance of a New Grant
HEREBY LEASES to THE COUNTY GOVERNMENT OF KAKAMEGA , A BODY CORPORATE DULY ESTABLISHED UNDER THE PROVISIONS OF THE COUNTY GOVERNMENT ACT 2012 LAWS OF KENYA (POST OFFICE BOX NUMBER 36 - 50100 KAKAMEGA)

hereinafter called the Lessee .
ALL THAT piece of land comprised in the Registry Index Map No. /Deed Plan No .- containing by measurement approximately 2.126 Hectares or thereabouts for the term of 99 years from the 1st day of August, 2016 at the annual rent of Kenya Shillings 72.00 (REVISABLE) WEF 01/08/2016 payable in advance on the first day of January in each year and subject to the following special conditions

GPK (SP)

PUBLIC PARTICIPATION (QUESTIONAIRE)

The proponent, Kakamega County Government, intends to develop affordable Housing project at Mudiri Estatte, Kakamega Town, Kakamega County. The environmental impact assessment and audit regulations (2017) requires that all projects listed in the second schedule of the EMCA act (1999 and EMCA Ammendment 2015) must undertake an environmental impact assessment and submit the report to NEMA.

A team of experts was commissioned to carry out the environmental impact assessment. We hereby invite you to express your views and opinion on the proposed project.

1. What is your opinion regarding the proposed project?

Good houses for local residents of Kakamega

No	Questions	Response YES	NO
1	Do you think the proposed project will cause pollution of air, water and soil in the project area	✓	
2	Will the proposed project activities cause nuisance to workers and residents of the area	✓	
3	Will the proposed project create job opportunities	✓	
4	Will the proposed project cause removal of vegetation	✓	
5	Do you welcome the proposed project	✓	

2. Any other anticipated positive environmental, social economic and cultural impacts as a result of the project:

Improved Aesthics of the environment
Increase in number of affordable and sustainable housing units

if you anticipate negative impacts list them

Displacement of low income families

Any other information you would like to give

None

Name: Alfred Simiyu

Id number 20380172

Date 17.8.2021

Signature

Distance from site Mudiri Resident

PUBLIC PARTICIPATION (QUESTIONAIRE)

The proponent, Kakamega County Government, intends to develop affordable Housing project at Mudiri Estatte, Kakamega Town, Kakamega County. The environmental impact assessment and audit regulations (2017) requires that all projects listed in the second schedule of the EMCA act (1999 and EMCA Ammendment 2015) must undertake an environmental impact assessment and submit the report to NEMA.

A team of experts was commissioned to carry out the environmental impact assessment. We hereby invite you to express your views and opinion on the proposed project.

1. What is your opinion regarding the proposed project?

Good development

No	Questions	Response	
		YES	NO
1	Do you think the proposed project will cause pollution of air, water and soil in the project area	✓	
2	Will the proposed project activities cause nuisance to workers and residents of the area	✓	
3	Will the proposed project create job opportunities	✓	
4	Will the proposed project cause removal of vegetation	✓	
5	Do you welcome the proposed project	✓	

2. Any other anticipated positive environmental, social economic and cultural impacts as a result of the project;

This will boost Kakamega town Status

if you anticipate negative impacts list them

Noise pollution during construction

Any other information you would like to give

Contractor to advice Truck drivers to avoid engine revving and hooting.

Name: [illegible] Emasaro

Id number 04378192

Date 17.08.2021

Signature [signature]

Distance from site 3KM

PUBLIC PARTICIPATION (QUESTIONAIRE)

The proponent, Kakamega County Government, intends to develop affordable Housing project at Mudiri Estate, Kakamega Town, Kakamega County. The environmental impact assessment and audit regulations (2017) requires that all projects listed in the second schedule of the EMCA act (1999 and EMCA Ammendment 2015) must undertake an environmental impact assessment and submit the report to NEMA.

A team of experts was commissioned to carry out the environmental impact assessment. We hereby invite you to express your views and opinion on the proposed project.

1. What is your opinion regarding the proposed project?
   Good idea of providing decent rental rooms.

No	Questions	Response YES	NO
1	Do you think the proposed project will cause pollution of air, water and soil in the project area		✓
2	Will the proposed project activities cause nuisance to workers and residents of the area	✓	✓
3	Will the proposed project create job opportunities		NONE
4	Will the proposed project cause removal of vegetation	✓	
5	Do you welcome the proposed project		

2. Any other anticipated positive environmental, social economic and cultural impacts as a result of the project;
   Enhanced security lighting to surrounding areas.

if you anticipate negative impacts list them
Dust generation during construction

Any other information you would like to give
Contractor to sprinkle water on access road.

Name: Brian Bett
Id number 30899021
Date 17/8/2021
Signature Bett
Distance from site ...About 2km.

PUBLIC PARTICIPATION (QUESTIONAIRE)

The proponent, Kakamega County Government, intends to develop affordable Housing project at Mudiri Estatte, Kakamega Town, Kakamega County. The environmental impact assessment and audit regulations (2017) requires that all projects listed in the second schedule of the EMCA act (1999 and EMCA Ammendment 2015) must undertake an environmental impact assessment and submit the report to NEMA.

A team of experts was commissioned to carry out the environmental impact assessment. We hereby invite you to express your views and opinion on the proposed project.

1. What is your opinion regarding the proposed project?

I support the project as good housing development

No	Questions	Response	
		YES	NO
1	Do you think the proposed project will cause pollution of air, water and soil in the project area		✓
2	Will the proposed project activities cause nuisance to workers and residents of the area	✓	✓
3	Will the proposed project create job opportunities		✓
4	Will the proposed project cause removal of vegetation	✓	
5	Do you welcome the proposed project		

2. Any other anticipated positive environmental, social economic and cultural impacts as a result of the project: Creation of decent rental houses for Kakamega town residents.

if you anticipate negative impact list them Likely effluent discharge.

Any other information you would like to give NONE

Name: Simon Indeche

Id number 10387142

Date 17th August 2021

Signature

Distance from site 1KM

PUBLIC PARTICIPATION (QUESTIONAIRE)

The proponent, Kakamega County Government, intends to develop affordable Housing project at Mudiri Estatte, Kakamega Town, Kakamega County. The environmental impact assessment and audit regulations (2017) requires that all projects listed in the second schedule of the EMCA act (1999 and EMCA Ammendment 2015) must undertake an environmental impact assessment and submit the report to NEMA.

A team of experts was commissioned to carry out the environmental impact assessment. We hereby invite you to express your views and opinion on the proposed project.

1. What is your opinion regarding the proposed project?

This project is good

No	Questions	Response	
		YES	NO
1	Do you think the proposed project will cause pollution of air, water and soil in the project area	✓	
2	Will the proposed project activities cause nuisance to workers and residents of the area	✓	
3	Will the proposed project create job opportunities	✓	
4	Will the proposed project cause removal of vegetation	✓	
5	Do you welcome the proposed project	✓	

2. Any other anticipated positive environmental, social economic and cultural impacts as a result of the project:

I

if you anticipate negative impacts list them

)

Any other information you would like to give

I

Name: Thomas Matoke

Id number 27781732

Date 05/12/2021

Signature

Distance from site Mudiri

PUBLIC PARTICIPATION (QUESTIONAIRE)

The proponent, Kakamega County Government, intends to develop affordable Housing project at Mudiri Estate Kakamega Town, Kakamega County. The environmental impact assessment and audit regulations (2017) requires that all projects listed in the second schedule of the EMCA act (1999 and EMCA Ammendment 2015) must undertake an environmental impact assessment and submit the report to NEMA.

A team of experts was commissioned to carry out the environmental impact assessment. We hereby invite you express your views and opinion on the proposed project.

1. What is your opinion regarding the proposed project?

I welcome the Project

No	Questions	Response	
		YES	NO
1	Do you think the proposed project will cause pollution of air, water and soil in the project area		
2	Will the proposed project activities cause nuisance to workers and residents of the area		
3	Will the proposed project create job opportunities		
4	Will the proposed project cause removal of vegetation		
5	Do you welcome the proposed project		

2. Any other anticipated positive environmental, social economic and cultural impacts as a result of project

It will economy of the area

if you anticipate negative impacts list them

1

Any other information you would like to give

1

Name: Ruth N Bondi

Id number 42637779

Date 12/08/2021

Signature

Distance from site resident of Mudiri

PUBLIC PARTICIPATION (QUESTIONAIRE)

The proponent, Kakamega County Government, intends to develop affordable Housing project at Mudiri Estate Kakamega Town, Kakamega County. The environmental impact assessment and audit regulations (2017) requires that all projects listed in the second schedule of the EMCA act (1999 and EMCA Ammendment 2015) must undertake an environmental impact assessment and submit the report to NEMA.

A team of experts was commissioned to carry out the environmental impact assessment. We hereby invite you express your views and opinion on the proposed project.

1. What is your opinion regarding the proposed project?

I welcome the Project

No	Questions	Response	
		YES	NO
1	Do you think the proposed project will cause pollution of air, water and soil in the project area		
2	Will the proposed project activities cause nuisance to workers and residents of the area		
3	Will the proposed project create job opportunities		
4	Will the proposed project cause removal of vegetation		
5	Do you welcome the proposed project		

2. Any other anticipated positive environmental, social economic and cultural impacts as a result of project

It will economy of the area

if you anticipate negative impacts list them

1

Any other information you would like to give

1

Name: Ruth N Bondi

Id number 42637779

Date 12/08/2021

Signature

Distance from site ....resident of Mudiri....

PUBLIC PARTICIPATION (QUESTIONAIRE)

The proponent, Kakamega County Government, intends to develop affordable Housing project at Mudiri Estate, Kakamega Town, Kakamega County. The environmental impact assessment and audit regulations (2017) requires that all projects listed in the second schedule of the EMCA act (1999 and EMCA Ammendment 2015) must undertake an environmental impact assessment and submit the report to NEMA.

A team of experts was commissioned to carry out the environmental impact assessment. We hereby invite you to express your views and opinion on the proposed project.

1. What is your opinion regarding the proposed project?
Good because it will Improve the living standards of people within municipality

No	Questions	Response YES	Response NO
1	Do you think the proposed project will cause pollution of air, water and soil in the project area		✓
2	Will the proposed project activities cause nuisance to workers and residents of the area		✓
3	Will the proposed project create job opportunities	✓	
4	Will the proposed project cause removal of vegetation		✓
5	Do you welcome the proposed project	✓	

2. Any other anticipated positive environmental, social economic and cultural impacts as a result of the project:
It will Improve housing standards of the residents
- It create employment opportunities

if you anticipate negative impacts list them
NA

Any other information you would like to give
NA

Name: CCARAH AMIMO ARTIKHOLWA
Id number: 22700607
Date: 17/08/2021
Signature: [signature]
Distance from site 1Km

PUBLIC PARTICIPATION (QUESTIONAIRE)

The proponent, Kakamega County Government, intends to develop affordable Housing project at Mudin Estatte, Kakamega Town, Kakamega County. The environmental impact assessment and audit regulations (2017) requires that all projects listed in the second schedule of the EMCA act (1999 and EMCA Ammendment 2015) must undertake an environmental impact assessment and submit the report to NEMA.

A team of experts was commissioned to carry out the environmental impact assessment. We hereby invite you to express your views and opinion on the proposed project.

1. What is your opinion regarding the proposed project?

I welcome the project

No	Questions	Response	
		YES	NO
1	Do you think the proposed project will cause pollution of air, water and soil in the project area	✓	
2	Will the proposed project activities cause nuisance to workers and residents of the area	✓	
3	Will the proposed project create job opportunities	✓	
4	Will the proposed project cause removal of vegetation	✓	
5	Do you welcome the proposed project	✓	

2. Any other anticipated positive environmental, social economic and cultural impacts as a result of the project;

It will improve housing and security.

if you anticipate negative impacts list them

1

Any other information you would like to give

Name: Samuel Wetungu

Id number 27631732

Date 17/08/2021

Signature

Distance from site ...resident of Mudiri...

PUBLIC PARTICIPATION (QUESTIONAIRE)

The proponent, Kakamega County Government, intends to develop affordable Housing project at Mudete Estate, Kakamega Town, Kakamega County. The environmental impact assessment and audit regulations (2017) requires that all projects listed in the second schedule of the EMCA act (1999 and EMCA Amendment 2015) must undertake an environmental impact assessment and submit the report to NEMA.

A team of experts was commissioned to carry out the environmental impact assessment. We hereby invite you to express your views and opinion on the proposed project.

1. What is your opinion regarding the proposed project?

   Good Project

No	Questions	Response	
		YES	NO
1	Do you think the proposed project will cause pollution of air, water and soil in the project area	✓	
2	Will the proposed project activities cause nuisance to workers and residents of the area	✓	
3	Will the proposed project create job opportunities	✓	
4	Will the proposed project cause removal of vegetation	✓	
5	Do you welcome the proposed project	✓	

2. Any other anticipated positive environmental, social economic and cultural impacts as a result of the project: It will creat employment

   If you anticipate negative impacts list them

   1

   Any other information you would like to give

Name: Roselyne Ambani

Id number 41736219

Date 17/05/2021

Signature

Distance from site Mudete resident

PUBLIC PARTICIPATION (QUESTIONAIRE)

The proponent, Kakamega County Government, intends to develop affordable Housing project at Mudavi Estate, Kakamega Town, Kakamega County. The environmental impact assessment and audit regulations (2017) requires that all projects listed in the second schedule of the EMCA act (1999 and EMCA Amendment 2015) must undertake an environmental impact assessment and submit the report to NEMA.

A team of experts was commissioned to carry out the environmental impact assessment. We hereby invite you to express your views and opinion on the proposed project.

1. What is your opinion regarding the proposed project?

   Good project

No	Questions	Response	
		YES	NO
1	Do you think the proposed project will cause pollution of air, water and soil in the project area		✓
2	Will the proposed project activities cause nuisance to workers and residents of the area		✓
3	Will the proposed project create job opportunities	YES	
4	Will the proposed project cause removal of vegetation	YES	
5	Do you welcome the proposed project	YES	

2. Any other anticipated positive environmental, social economic and cultural impacts as a result of the project.

   Improve Town status

   If you anticipate negative impacts list them

   NO

   Any other information you would like to give

   NO

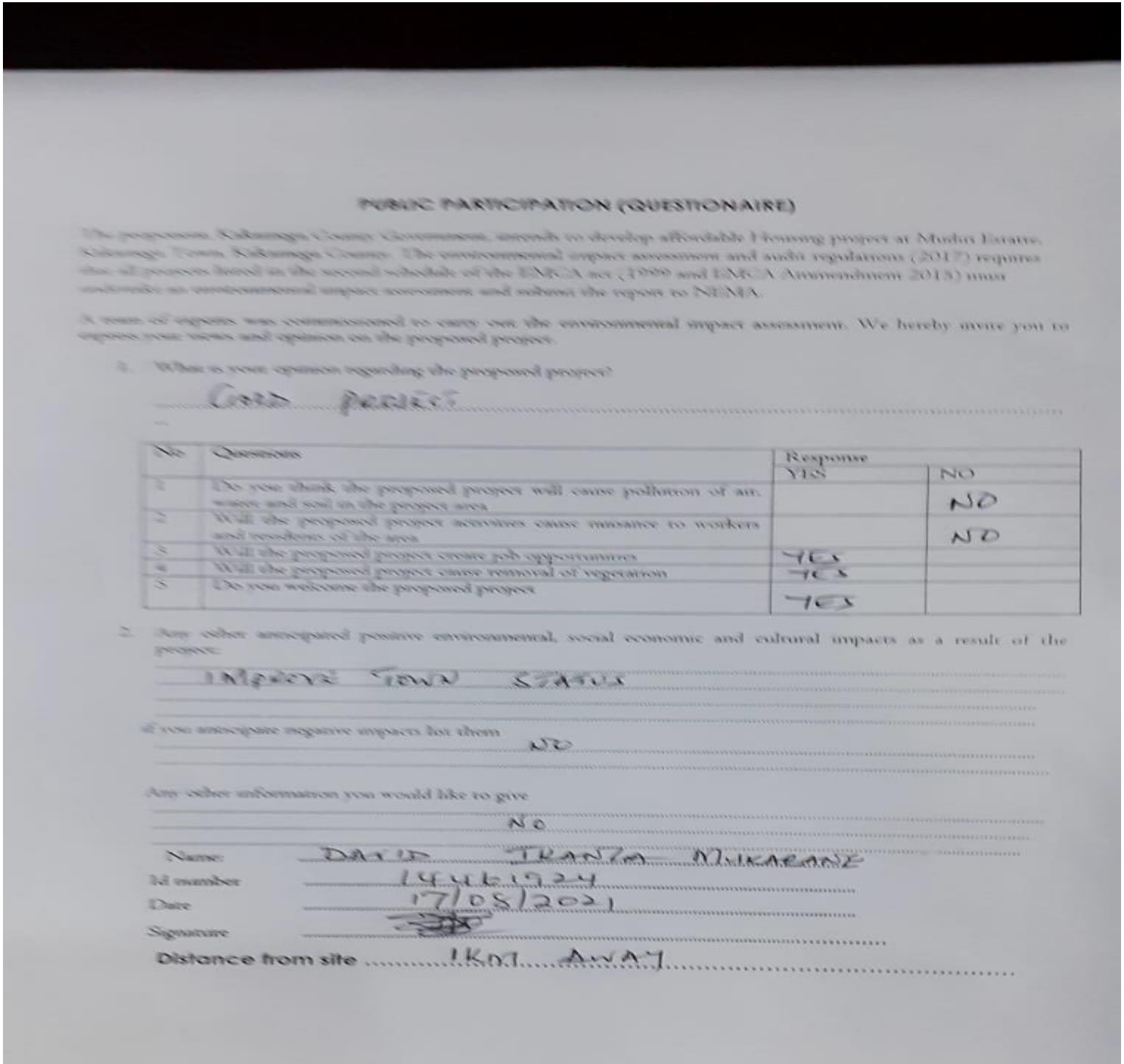
Name: REBECCA K. NYANDO

Id number: 9523165

Date: 17/8/2021

Signature:

Distance from site: 1.5 KM away



PUBLIC PARTICIPATION (QUESTIONAIRE)

The proponent, Kakamega County Government, intends to develop affordable Housing project at Mudiri Estate, Kakamega Town, Kakamega County. The environmental impact assessment and audit regulations (2017) requires that all projects listed in the second schedule of the EMCA act (1999 and EMCA Ammendment 2015) must undertake an environmental impact assessment and submit the report to NEMA.

A team of experts was commissioned to carry out the environmental impact assessment. We hereby invite you to express your views and opinion on the proposed project.

1. What is your opinion regarding the proposed project?

   Good project

No	Questions	Response YES	NO
1	Do you think the proposed project will cause pollution of air, water and soil in the project area		NO
2	Will the proposed project activities cause nuisance to workers and residents of the area		NO
3	Will the proposed project create job opportunities	YES	
4	Will the proposed project cause removal of vegetation	YES	
5	Do you welcome the proposed project	YES	

2. Any other anticipated positive environmental, social economic and cultural impacts as a result of the project

   IMPROVE TOWN STATUS

   If you anticipate negative impacts list them

   NO

   Any other information you would like to give

   NO

Name: DAVID IRANYA MUKABANE

Id number 14461924

Date 17/08/2021

Signature

Distance from site 1KM AWAY

PUBLIC PARTICIPATION (QUESTIONAIRE)

The proponent, Kakamega County Government, intends to develop affordable Housing project at Madeo Estate, Kakamega Town, Kakamega County. The environmental impact assessment and audit regulations (2017) requires that all projects listed in the second schedule of the EMCA act (1999 and EMCA Ammendment 2015) must undertake an environmental impact assessment and submit the report to NEMA.

A team of experts was commissioned to carry out the environmental impact assessment. We hereby invite you to express your views and opinion on the proposed project.

1. What is your opinion regarding the proposed project?

Very Good project

No	Questions	Response	
		YES	NO
1	Do you think the proposed project will cause pollution of air, water and soil in the project area	✓	
2	Will the proposed project activities cause nuisance to workers and residents of the area		✓
3	Will the proposed project create job opportunities	✓	
4	Will the proposed project cause removal of vegetation	✓	
5	Do you welcome the proposed project	✓	

2. Any other anticipated positive environmental, social economic and cultural impacts as a result of the project:

It will improve status/standard Of Kakamega Town

if you anticipate negative impacts list them

N/A

Any other information you would like to give

N/A

Name: ERIC M. HESO

Id number: 31388174

Date: 17/8/2021

Signature: [signature]

Distance from site 200 ~~mt~~ M

PUBLIC PARTICIPATION (QUESTIONAIRE)

The proponent, Kakamega County Government, intends to develop affordable Housing project at Mudiri Estate, Kakamega Town, Kakamega County. The environmental impact assessment and audit regulations (2017) requires that all projects listed in the second schedule of the EMCA act (1999 and EMCA Ammendment 2015) must undertake an environmental impact assessment and submit the report to NEMA.

A team of experts was commissioned to carry out the environmental impact assessment. We hereby invite you to express your views and opinion on the proposed project.

1. What is your opinion regarding the proposed project?

wanderful project.

No	Questions	Response YES	NO
1	Do you think the proposed project will cause pollution of air, water and soil in the project area	✓	
2	Will the proposed project activities cause nuisance to workers and residents of the area		No
3	Will the proposed project create job opportunities	✓	
4	Will the proposed project cause removal of vegetation	✓	
5	Do you welcome the proposed project	✓	

2. Any other anticipated positive environmental, social economic and cultural impacts as a result of the project; It will bring more investors

if you anticipate negative impacts list them No

Any other information you would like to give N/A

Name: George Walela

Id number 10723212

Date 12/8/21

Signature

Distance from site ....

PUBLIC PARTICIPATION (QUESTIONAIRE)

The proponent, Kakamega County Government, intends to develop affordable Housing project at Mudiri Estatte, Kakamega Town, Kakamega County. The environmental impact assessment and audit regulations (2017) requires that all projects listed in the second schedule of the EMCA act (1999 and EMCA Ammendment 2015) must undertake an environmental impact assessment and submit the report to NEMA.

A team of experts was commissioned to carry out the environmental impact assessment. We hereby invite you to express your views and opinion on the proposed project.

1. What is your opinion regarding the proposed project?

   It is nice project.

No	Questions	Response YES	NO
1	Do you think the proposed project will cause pollution of air, water and soil in the project area		NO
2	Will the proposed project activities cause nuisance to workers and residents of the area		NO
3	Will the proposed project create job opportunities	YES	
4	Will the proposed project cause removal of vegetation	YES	
5	Do you welcome the proposed project	YES	

2. Any other anticipated positive environmental, social economic and cultural impacts as a result of the project:

   will improve status of Kakamega town, municipality and modern houses

if you anticipate negative impacts list them NO

Any other information you would like to give N/A

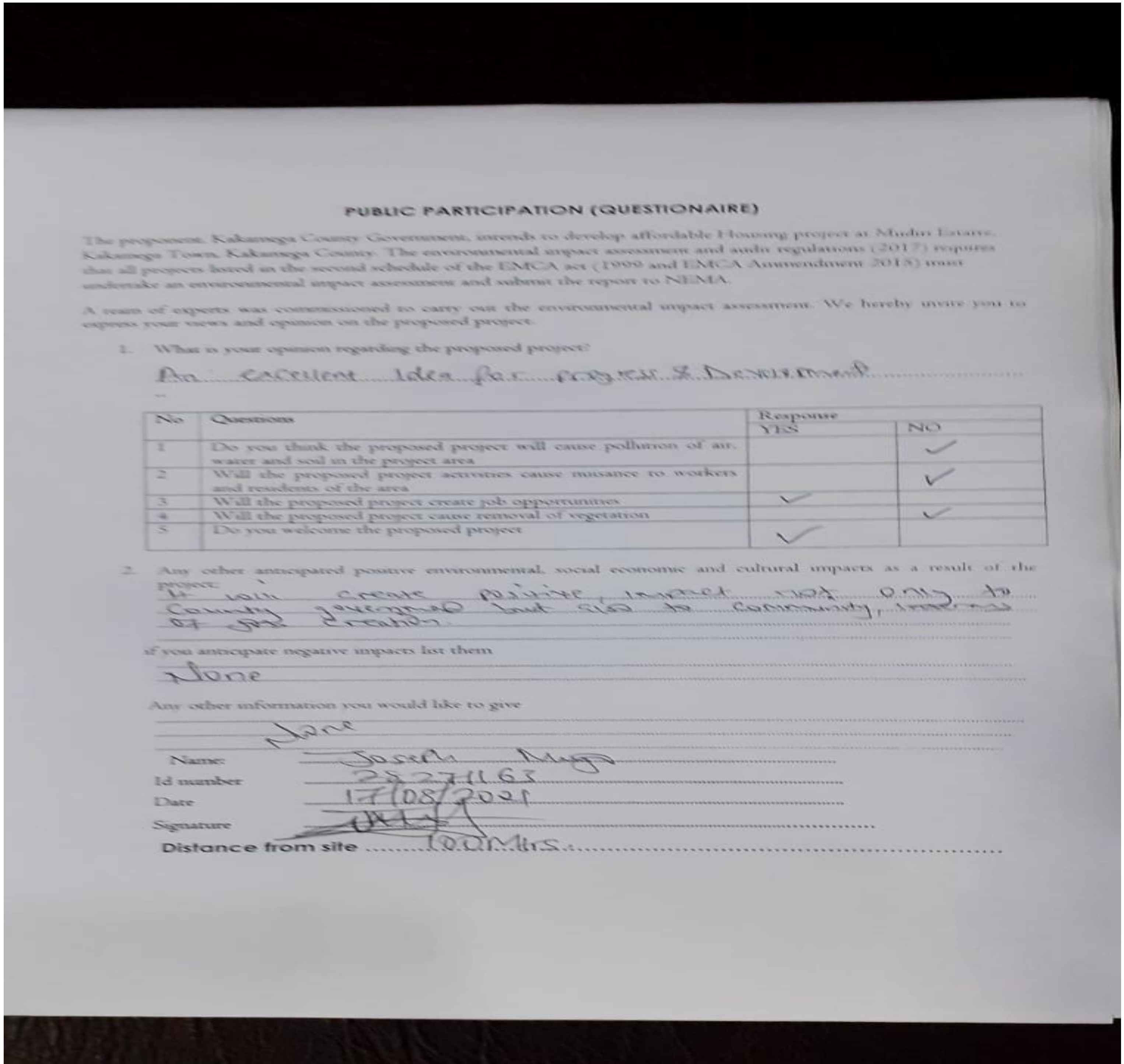
Name: Phillip wafula

Id number: 9299661

Date: 17/8/2021

Signature: [signature]

Distance from site 500ms



PUBLIC PARTICIPATION (QUESTIONAIRE)

The proponent, Kakamega County Government, intends to develop affordable Housing project at Mudiri Estate, Kakamega Town, Kakamega County. The environmental impact assessment and audit regulations (2017) requires that all projects listed in the second schedule of the EMCA act (1999 and EMCA Ammendment 2015) must undertake an environmental impact assessment and submit the report to NEMA.

A team of experts was commissioned to carry out the environmental impact assessment. We hereby invite you to express your views and opinion on the proposed project.

1. What is your opinion regarding the proposed project?

An excellent idea for progress & Development

No	Questions	Response YES	NO
1	Do you think the proposed project will cause pollution of air, water and soil in the project area		✓
2	Will the proposed project activities cause nuisance to workers and residents of the area		✓
3	Will the proposed project create job opportunities	✓	
4	Will the proposed project cause removal of vegetation		✓
5	Do you welcome the proposed project	✓	

2. Any other anticipated positive environmental, social economic and cultural impacts as a result of the project:

It will create positive impact not only to County government but also to community, in terms of job creation

If you anticipate negative impacts list them

None

Any other information you would like to give

None

Name: Joseph [illegible]

Id number: 28271163

Date: 17/08/2021

Signature: [signature]

Distance from site ……100Mtrs.……

PUBLIC PARTICIPATION (QUESTIONAIRE)

The proponent, Kakamega County Government, intends to develop affordable Housing project at Mudiri Estatte, Kakamega Town, Kakamega County. The environmental impact assessment and audit regulations (2017) requires that all projects listed in the second schedule of the EMCA act (1999 and EMCA Ammendment 2015) must undertake an environmental impact assessment and submit the report to NEMA.

A team of experts was commissioned to carry out the environmental impact assessment. We hereby invite you to express your views and opinion on the proposed project.

1. What is your opinion regarding the proposed project?

It is a good project for it will accomodate more people at an affordable price.

No	Questions	Response	
		YES	NO
1	Do you think the proposed project will cause pollution of air, water and soil in the project area		✓
2	Will the proposed project activities cause nuisance to workers and residents of the area		✓
3	Will the proposed project create job opportunities	✓	
4	Will the proposed project cause removal of vegetation	✓	
5	Do you welcome the proposed project	✓	

2. Any other anticipated positive environmental, social economic and cultural impacts as a result of the project;

a. Job creation
b. Affordable housing

if you anticipate negative impacts list them

Any other information you would like to give

a) Give the local youth some of the work to do.
b) Complete the job early to accomodate more people

Name: Kalawanga Mbah Douglas
Id number 31998716
Date 17/05/2021
Signature

Distance from site ..500M

PUBLIC PARTICIPATION (QUESTIONAIRE)

The proponent, Kakamega County Government, intends to develop affordable Housing project at Mudiri Estate, Kakamega Town, Kakamega County. The environmental impact assessment and audit regulations (2017) requires that all projects listed in the second schedule of the EMCA act (1999 and EMCA Ammendment 2015) must undertake an environmental impact assessment and submit the report to NEMA.

A team of experts was commissioned to carry out the environmental impact assessment. We hereby invite you to express your views and opinion on the proposed project.

1. What is your opinion regarding the proposed project?

Excellent Project

No	Questions	Response	
		YES	NO
1	Do you think the proposed project will cause pollution of air, water and soil in the project area		X
2	Will the proposed project activities cause nuisance to workers and residents of the area		X
3	Will the proposed project create job opportunities	✓	
4	Will the proposed project cause removal of vegetation	✓	
5	Do you welcome the proposed project	✓	

2. Any other anticipated positive environmental, social economic and cultural impacts as a result of the project:

Will improve Status of the Town

if you anticipate negative impacts list them NO

Any other information you would like to give

Name: Mark Sitoni

Id number 28112373

Date 13/8/2021

Signature

Distance from site 1KM

PUBLIC PARTICIPATION (QUESTIONAIRE)

The proponent, Kakamega County Government, intends to develop affordable Housing project at Mudiri Estate, Kakamega Town, Kakamega County. The environmental impact assessment and audit regulations (2017) requires that all projects listed in the second schedule of the EMCA act (1999 and EMCA Ammendment 2015) must undertake an environmental impact assessment and submit the report to NEMA.

A team of experts was commissioned to carry out the environmental impact assessment. We hereby invite you to express your views and opinion on the proposed project.

1. What is your opinion regarding the proposed project?

I welcome the project.

No	Questions	Response	
		YES	NO
1	Do you think the proposed project will cause pollution of air, water and soil in the project area		✓
2	Will the proposed project activities cause nuisance to workers and residents of the area		✓
3	Will the proposed project create job opportunities		✓
4	Will the proposed project cause removal of vegetation		✓
5	Do you welcome the proposed project	✓	

2. Any other anticipated positive environmental, social economic and cultural impacts as a result of the project;

It will improve the security and housing

if you anticipate negative impacts list them

I

Any other information you would like to give

/

Name: Eric Lech

Id number 21220697

Date 17/08/2021

Signature

Distance from site 15m

PUBLIC PARTICIPATION (QUESTIONAIRE)

The proponent, Kakamega County Government, intends to develop affordable Housing project at Mudiri Estatte, Kakamega Town, Kakamega County. The environmental impact assessment and audit regulations (2017) requires that all projects listed in the second schedule of the EMCA act (1999 and EMCA Ammendment 2015) must undertake an environmental impact assessment and submit the report to NEMA.

A team of experts was commissioned to carry out the environmental impact assessment. We hereby invite you to express your views and opinion on the proposed project.

1. What is your opinion regarding the proposed project?

   The R.E.project is good

No	Questions	Response	
		YES	NO
1	Do you think the proposed project will cause pollution of air, water and soil in the project area	✓	
2	Will the proposed project activities cause nuisance to workers and residents of the area	✓	
3	Will the proposed project create job opportunities	✓	
4	Will the proposed project cause removal of vegetation	✓	
5	Do you welcome the proposed project	✓	

2. Any other anticipated positive environmental, social economic and cultural impacts as a result of the project;

   It will improve housing in Kakamega town
   It will creat employment

   if you anticipate negative impacts list them

   Any other information you would like to give

Name: Kevin Otieno

Id number 27162610

Date 19/08/2021

Signature

Distance from site 15m

PUBLIC PARTICIPATION (QUESTIONAIRE)

The proponent, Kakamega County Government, intends to develop affordable Housing project at Mudiri Estatte, Kakamega Town, Kakamega County. The environmental impact assessment and audit regulations (2017) requires that all projects listed in the second schedule of the EMCA act (1999 and EMCA Ammendment 2015) must undertake an environmental impact assessment and submit the report to NEMA.

A team of experts was commissioned to carry out the environmental impact assessment. We hereby invite you to express your views and opinion on the proposed project.

1. What is your opinion regarding the proposed project?

   A good project

No	Questions	Response	
		YES	NO
1	Do you think the proposed project will cause pollution of air, water and soil in the project area	✓	
2	Will the proposed project activities cause nuisance to workers and residents of the area	✓	
3	Will the proposed project create job opportunities	✓	
4	Will the proposed project cause removal of vegetation	✓	
5	Do you welcome the proposed project	✓	

2. Any other anticipated positive environmental, social economic and cultural impacts as a result of the project;

   if you anticipate negative impacts list them

   None

Any other information you would like to give

Employ locals during construction

Name: Victor Okello

Id number 42329631

Date 19/08/2021

Signature

Distance from site 10M

PUBLIC PARTICIPATION (QUESTIONAIRE)

The proponent, Kakamega County Government, intends to develop affordable Housing project at Mudiri Estatte, Kakamega Town, Kakamega County. The environmental impact assessment and audit regulations (2017) requires that all projects listed in the second schedule of the EMCA act (1999 and EMCA Ammendment 2015) must undertake an environmental impact assessment and submit the report to NEMA.

A team of experts was commissioned to carry out the environmental impact assessment. We hereby invite you to express your views and opinion on the proposed project.

1. What is your opinion regarding the proposed project?

   It is a timely project in line with the Big 4 Agenda and Vision 2030 SDGs.

No	Questions	Response YES	NO
1	Do you think the proposed project will cause pollution of air, water and soil in the project area	✓	
2	Will the proposed project activities cause nuisance to workers and residents of the area		✓
3	Will the proposed project create job opportunities	✓	
4	Will the proposed project cause removal of vegetation	✓	
5	Do you welcome the proposed project	✓	

2. Any other anticipated positive environmental, social economic and cultural impacts as a result of the project: Job opportunities during construction

if you anticipate negative impacts list them

- Environmental pollution ie Dust from the construction site, Vegetation removal leading to environmental degradation.

Any other information you would like to give

After the completion of the project, proper landscaping need to be done to increase urban greening and to recover the lost vegetation during construction

Name: SOPHY CHEBON

Id number 30976746

Date 17/08/2021

Signature ...

Distance from site 500 M

PUBLIC PARTICIPATION (QUESTIONAIRE)

The proponent, Kakamega County Government, intends to develop affordable Housing project at Mudiri Estatte, Kakamega Town, Kakamega County. The environmental impact assessment and audit regulations (2017) requires that all projects listed in the second schedule of the EMCA act (1999 and EMCA Ammendment 2015) must undertake an environmental impact assessment and submit the report to NEMA.

A team of experts was commissioned to carry out the environmental impact assessment. We hereby invite you to express your views and opinion on the proposed project.

1. What is your opinion regarding the proposed project?

   It is a good Project

No	Questions	Response	
		YES	NO
1	Do you think the proposed project will cause pollution of air, water and soil in the project area	✓	
2	Will the proposed project activities cause nuisance to workers and residents of the area	✓	
3	Will the proposed project create job opportunities	✓	
4	Will the proposed project cause removal of vegetation	✓	
5	Do you welcome the proposed project	✓	

2. Any other anticipated positive environmental, social economic and cultural impacts as a result of the project

   This Project is going to creat employment.

   if you anticipate negative impacts list them

   /

   Any other information you would like to give

   Name: Seraph Atieno

   Id number 29871333

   Date 17/08/2021

   Signature

   Distance from site ...2 KM

PUBLIC PARTICIPATION (QUESTIONAIRE)

The proponent, Kakamega County Government, intends to develop affordable Housing project at Mudiri Estate, Kakamega Town, Kakamega County. The environmental impact assessment and audit regulations (2017) requires that all projects listed in the second schedule of the EMCA act (1999 and EMCA Amendment 2015) must undertake an environmental impact assessment and submit the report to NEMA.

A team of experts was commissioned to carry out the environmental impact assessment. We hereby invite you to express your views and opinion on the proposed project.

1. What is your opinion regarding the proposed project?

I welcome the project

No	Questions	Response	
		YES	NO
1	Do you think the proposed project will cause pollution of air, water and soil in the project area		✓
2	Will the proposed project activities cause nuisance to workers and residents of the area		✓
3	Will the proposed project create job opportunities		✓
4	Will the proposed project cause removal of vegetation		✓
5	Do you welcome the proposed project	✓	

2. Any other anticipated positive environmental, social economic and cultural impacts as a result of the project:

To improve housing

if you anticipate negative impacts list them

none

Any other information you would like to give: Purchase building materials locally.

Name: Simon Nzambisi

Id number 37621732

Date 08/2021

Signature

Distance from site .....15m.....

PUBLIC PARTICIPATION (QUESTIONAIRE)

The proponent, Kakamega County Government, intends to develop affordable Housing project at Mudiri Estatte, Kakamega Town, Kakamega County. The environmental impact assessment and audit regulations (2017) requires that all projects listed in the second schedule of the EMCA act (1999 and EMCA Amendment 2015) must undertake an environmental impact assessment and submit the report to NEMA.

A team of experts was commissioned to carry out the environmental impact assessment. We hereby invite you to express your views and opinion on the proposed project.

1. What is your opinion regarding the proposed project?

KAKAMEGA TOWN WILL IMPROVE HOUSING NEEDS AS A RESULT THE LIVING CONDITIONS WILL CHANGE TO THE BETTER FOR THE RESIDENTS

No	Questions	Response	
		YES	NO
1	Do you think the proposed project will cause pollution of air, water and soil in the project area		✓
2	Will the proposed project activities cause nuisance to workers and residents of the area		✓
3	Will the proposed project create job opportunities	✓	
4	Will the proposed project cause removal of vegetation	✓	
5	Do you welcome the proposed project	✓	

2. Any other anticipated positive environmental, social economic and cultural impacts as a result of the project:

PEOPLE WILL HAVE RESIDENCE CLOSE TO TOWN AND HENCE ACCESSIBILITY AND SAFETY

if you anticipate negative impacts list them

N/A

Any other information you would like to give

COUNTY GOVT TO BE GIVEN FIRST PRIORITY WHILE COMPLETE.

Name: DANIEL OPIYO

Id number 22289975

Date 17/08/2021

Signature

Distance from site 1 KM

PUBLIC PARTICIPATION (QUESTIONAIRE)

The proponent, Kakamega County Government, intends to develop affordable Housing project at Mudiri Estate, Kakamega Town, Kakamega County. The environmental impact assessment and audit regulations (2017) requires that all projects listed in the second schedule of the EMCA act (1999 and EMCA Ammendment 2015) must undertake an environmental impact assessment and submit the report to NEMA.

A team of experts was commissioned to carry out the environmental impact assessment. We hereby invite you to express your views and opinion on the proposed project.

1. What is your opinion regarding the proposed project?

I support the proposed project of affordable housing project at Mudiri Estate

No	Questions	Response	
		YES	NO
1	Do you think the proposed project will cause pollution of air, water and soil in the project area	✓	
2	Will the proposed project activities cause nuisance to workers and residents of the area		✓
3	Will the proposed project create job opportunities	✓	
4	Will the proposed project cause removal of vegetation	✓	
5	Do you welcome the proposed project		✓

2. Any other anticipated positive environmental, social economic and cultural impacts as a result of the project:

The social & economic impact that can be brought by the project is that there will be development of business activities within the proposed Estate

if you anticipate negative impacts list them

The negative impact that can come up is the poor management of solid waste Material

Any other information you would like to give

They should come up with proper ways of Managing waste materials and clean water

Name: OKUMU DAVIES KATONYA

Id number 35621094

Date 17/8/2021

Signature

Distance from site 1KM

PUBLIC PARTICIPATION (QUESTIONAIRE)

The proponent, Kakamega County Government, intends to develop affordable Housing project at Mudiri Estatte, Kakamega Town, Kakamega County. The environmental impact assessment and audit regulations (2017) requires that all projects listed in the second schedule of the EMCA act (1999 and EMCA Ammendment 2015) must undertake an environmental impact assessment and submit the report to NEMA.

A team of experts was commissioned to carry out the environmental impact assessment. We hereby invite you to express your views and opinion on the proposed project.

1. What is your opinion regarding the proposed project?

The Project is good

No	Questions	Response	
		YES	NO
1	Do you think the proposed project will cause pollution of air, water and soil in the project area	✓	
2	Will the proposed project activities cause nuisance to workers and residents of the area	✓	
3	Will the proposed project create job opportunities	✓	
4	Will the proposed project cause removal of vegetation	✓	
5	Do you welcome the proposed project	✓	

2. Any other anticipated positive environmental, social economic and cultural impacts as a result of the project;

It will improve housing in Kakamega town.
It will creat employment

if you anticipate negative impacts list them

Any other information you would like to give

Name: Kevin Otieno

Id number 27162610

Date 19/05/2021

Signature

Distance from site 15m

PUBLIC PARTICIPATION (QUESTIONAIRE)

The proponent, Kakamega County Government, intends to develop affordable Housing project at Madan Estate, Kakamega Town, Kakamega County. The environmental impact assessment and audit regulations (2017) requires that all projects listed in the second schedule of the EMCA act (1999 and EMCA Amendment 2015) must undertake an environmental impact assessment and submit the report to NEMA.

A team of experts was commissioned to carry out the environmental impact assessment. We hereby invite you to express your views and opinion on the proposed project.

1. What is your opinion regarding the proposed project?

Affordable houses

No	Questions	Response YES	Response NO
1	Do you think the proposed project will cause pollution of air, water and soil in the project area		✓
2	Will the proposed project activities cause nuisance to workers and residents of the area	✓	
3	Will the proposed project create job opportunities	✓	
4	Will the proposed project cause removal of vegetation	✓	
5	Do you welcome the proposed project	✓	

2. Any other anticipated positive environmental, social economic and cultural impacts as a result of the project;

creation of job during construction
Add aesthetic value to the town
Accessibility of house

if you anticipate negative impacts list them

N/A

Any other information you would like to give

N/A

Name: Oscar Macho

Id number

Date 17/8/2021

Signature

Distance from site 500.m

PUBLIC PARTICIPATION (QUESTIONAIRE)

The proponent, Kakamega County Government, intends to develop affordable Housing project at Mudavi Estate, Kakamega Town, Kakamega County. The environmental impact assessment and audit regulations (2017) requires that all projects listed on the second schedule of the EMCA act (1999 and EMCA Amendedment 2015) must undertake an environmental impact assessment and submit the report to NEMA.

A team of experts was commissioned to carry out the environmental impact assessment. We hereby invite you to express your views and opinion on the proposed project.

1. What is your opinion regarding the proposed project?

   Good project

No	Questions	Response	
		YES	NO
1	Do you think the proposed project will cause pollution of air, water and soil in the project area		✓
2	Will the proposed project activities cause nuisance to workers and residents of the area		✓
3	Will the proposed project create job opportunities	YES	
4	Will the proposed project cause removal of vegetation	YES	
5	Do you welcome the proposed project	YES	

2. Any other anticipated positive environmental, social economic and cultural impacts as a result of the project.

   Improve Town status

   If you anticipate negative impacts list them

   NO

   Any other information you would like to give

   NO

Name: REBECCA K. OYANDO

Id number: 9523165

Date: 17/8/2021

Signature:

Distance from site ..... 1.5 KM AWAY .....

PUBLIC PARTICIPATION (QUESTIONAIRE)

The proponent, Kakamega County Government, intends to develop affordable Housing project at Mudiri Estate, Kakamega Town, Kakamega County. The environmental impact assessment and audit regulations (2017) requires that all projects listed in the second schedule of the EMCA act (1999 and EMCA Ammendment 2015) must undertake an environmental impact assessment and submit the report to NEMA.

A team of experts was commissioned to carry out the environmental impact assessment. We hereby invite you to express your views and opinion on the proposed project.

1. What is your opinion regarding the proposed project?

I welcome the project.

No	Questions	Response	
		YES	NO
1	Do you think the proposed project will cause pollution of air, water and soil in the project area		✓
2	Will the proposed project activities cause nuisance to workers and residents of the area		✓
3	Will the proposed project create job opportunities		✓
4	Will the proposed project cause removal of vegetation		✓
5	Do you welcome the proposed project	✓	

2. Any other anticipated positive environmental, social economic and cultural impacts as a result of the project;

It will improve the security and housing

if you anticipate negative impacts list them

I

Any other information you would like to give

/

Name: Eric Koech

Id number 27220697

Date 17/08/2021

Signature

Distance from site 15m

PUBLIC PARTICIPATION (QUESTIONAIRE)

The proponent, Kakamega County Government, intends to develop affordable Housing project at Mudiri Estatte, Kakamega Town, Kakamega County. The environmental impact assessment and audit regulations (2017) requires that all projects listed in the second schedule of the EMCA act (1999 and EMCA Ammendment 2015) must undertake an environmental impact assessment and submit the report to NEMA.

A team of experts was commissioned to carry out the environmental impact assessment. We hereby invite you to express your views and opinion on the proposed project.

1. What is your opinion regarding the proposed project?

Enhanced housing products for Kakamega Town

No	Questions	Response	
		YES	NO
1	Do you think the proposed project will cause pollution of air, water and soil in the project area	✓	
2	Will the proposed project activities cause nuisance to workers and residents of the area	✓	✓
3	Will the proposed project create job opportunities	✓	
4	Will the proposed project cause removal of vegetation	✓	
5	Do you welcome the proposed project	✓	

2. Any other anticipated positive environmental, social economic and cultural impacts as a result of the project:

More jobs for local people, like plumbers, electricians, etc.

if you anticipate negative impacts list them

NONE

Any other information you would like to give

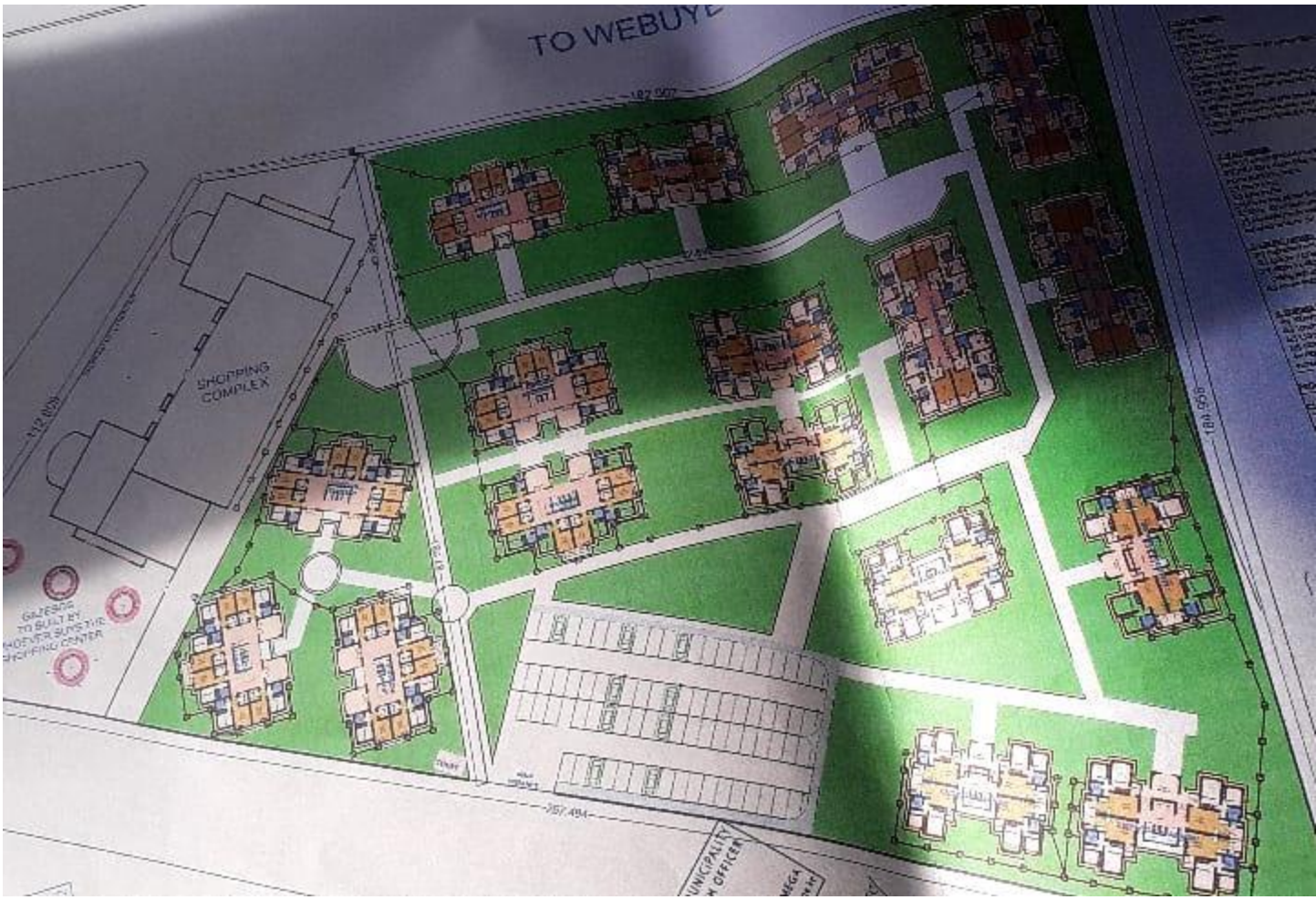
Name: Wangati Vincent

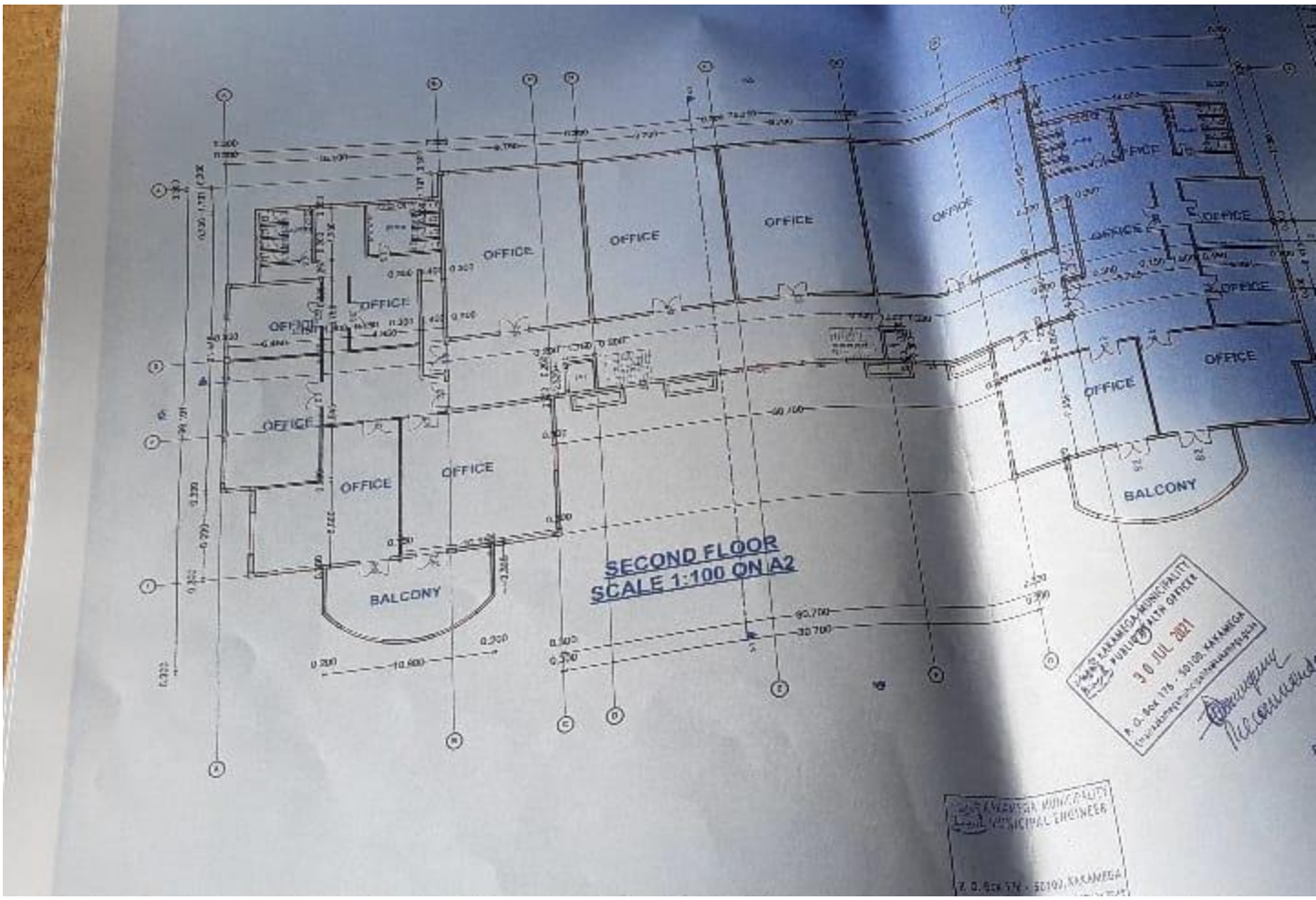
Id number 30791836

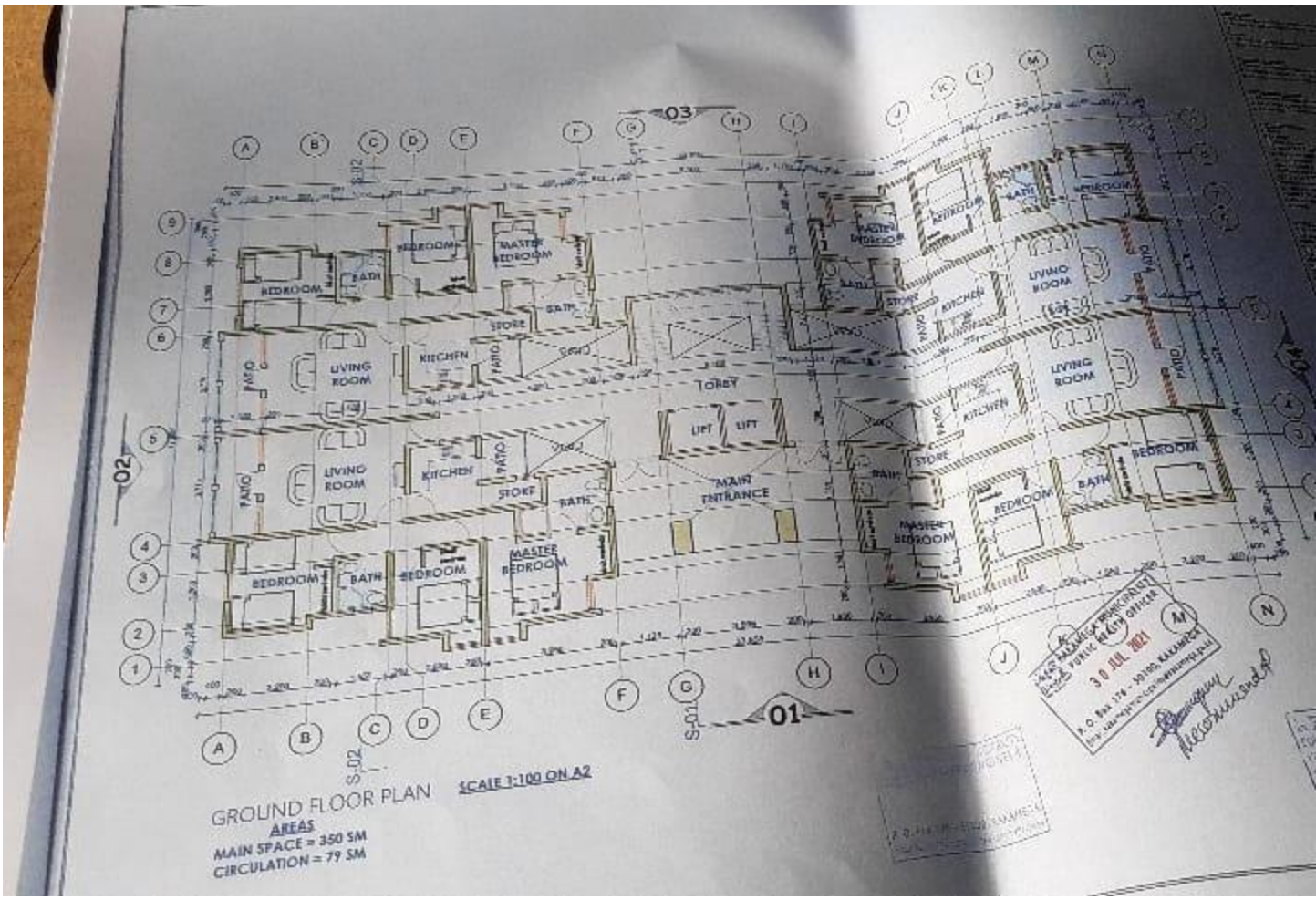
Date 17.8.2021

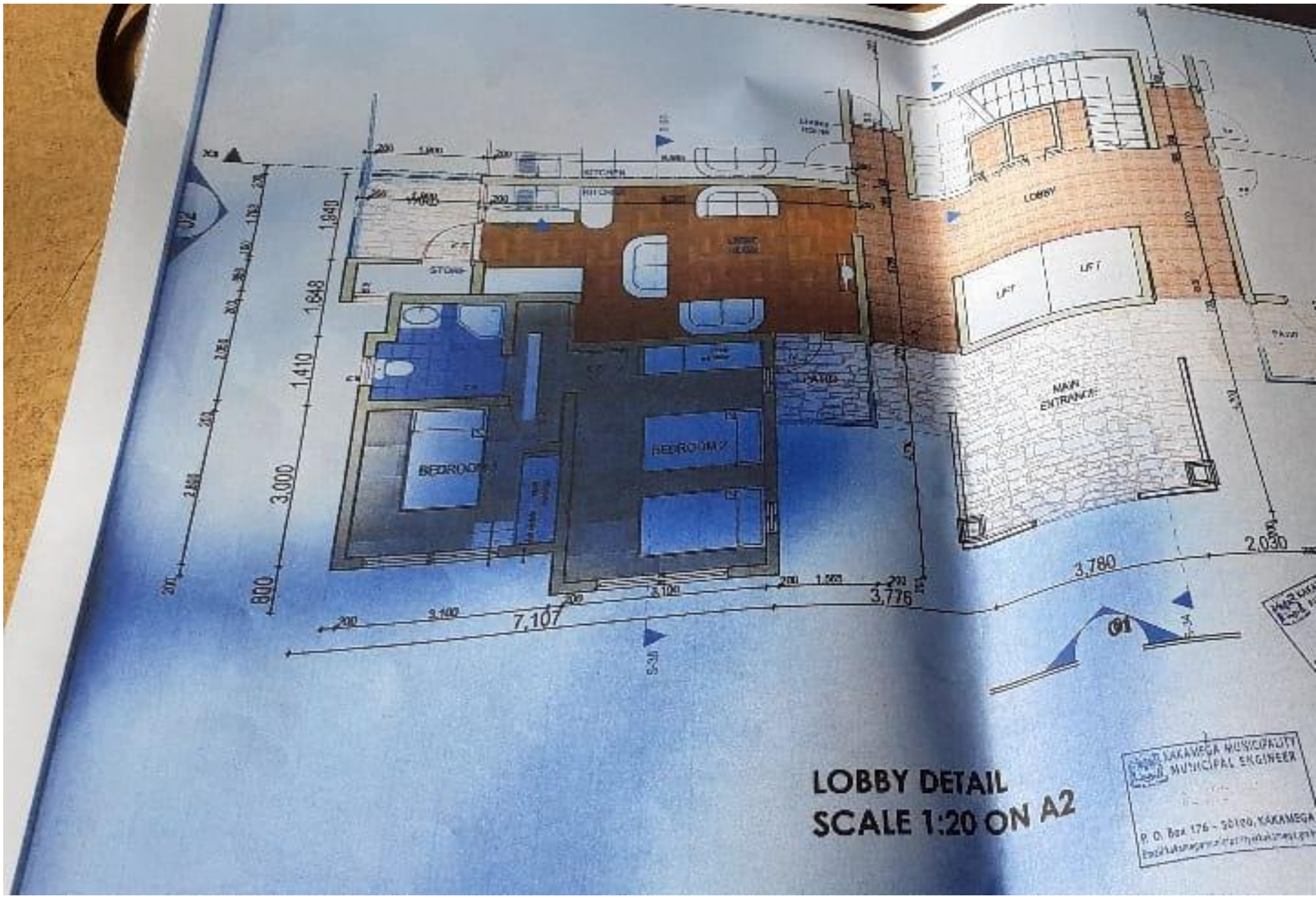
Signature Wangati

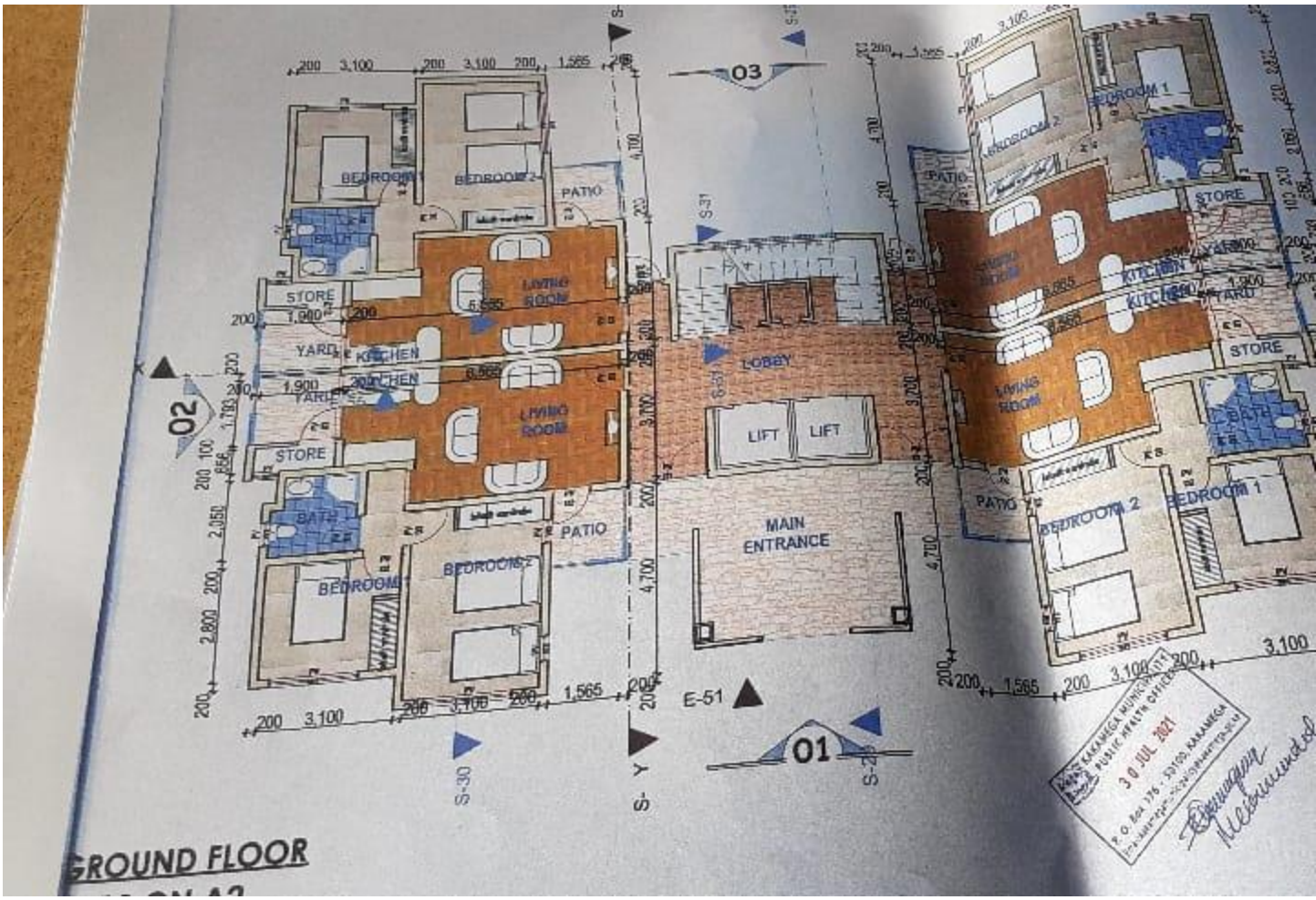
Distance from site Mudiri Resident

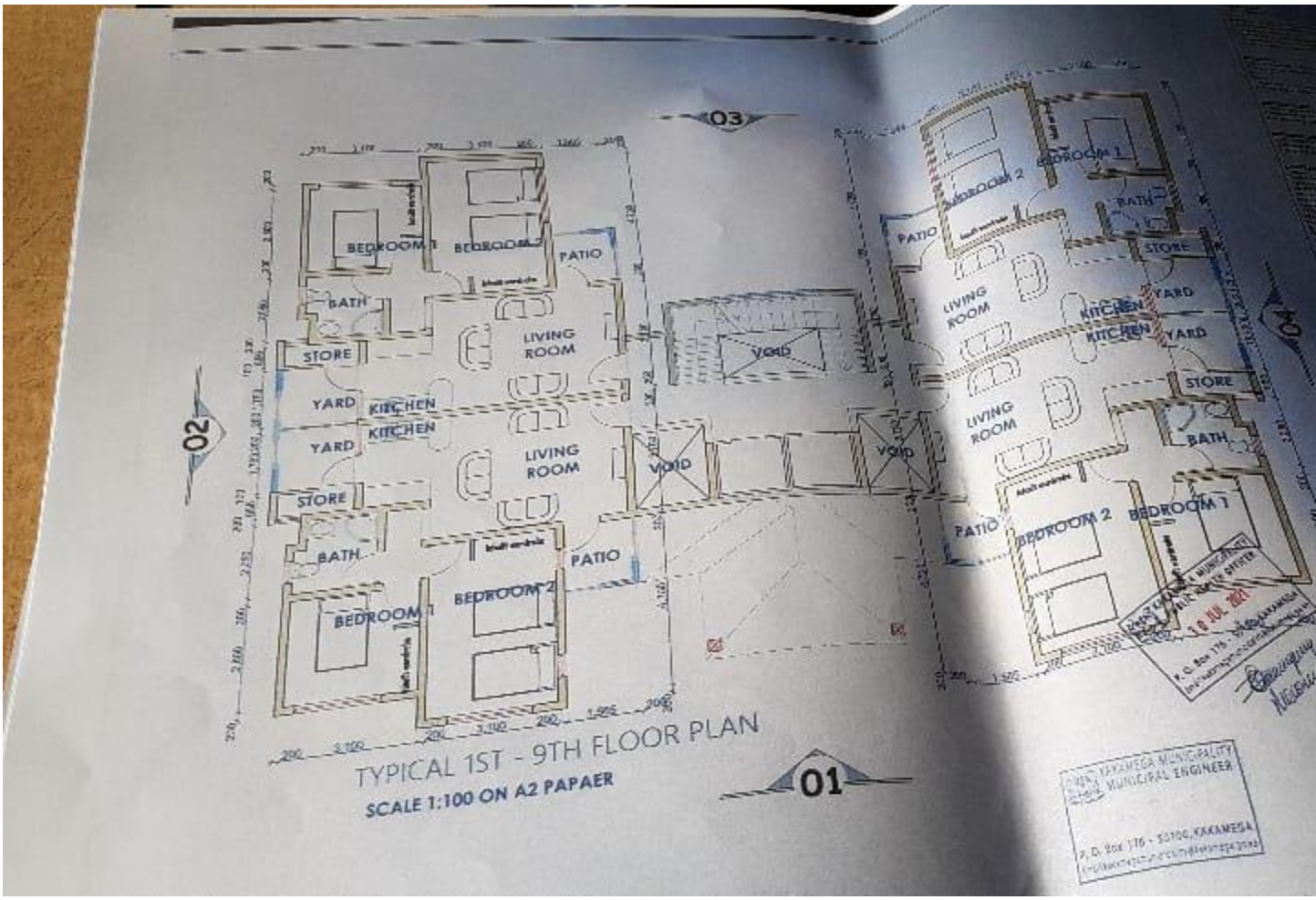

TO WEBUYD
SHOPPING COMPLEX

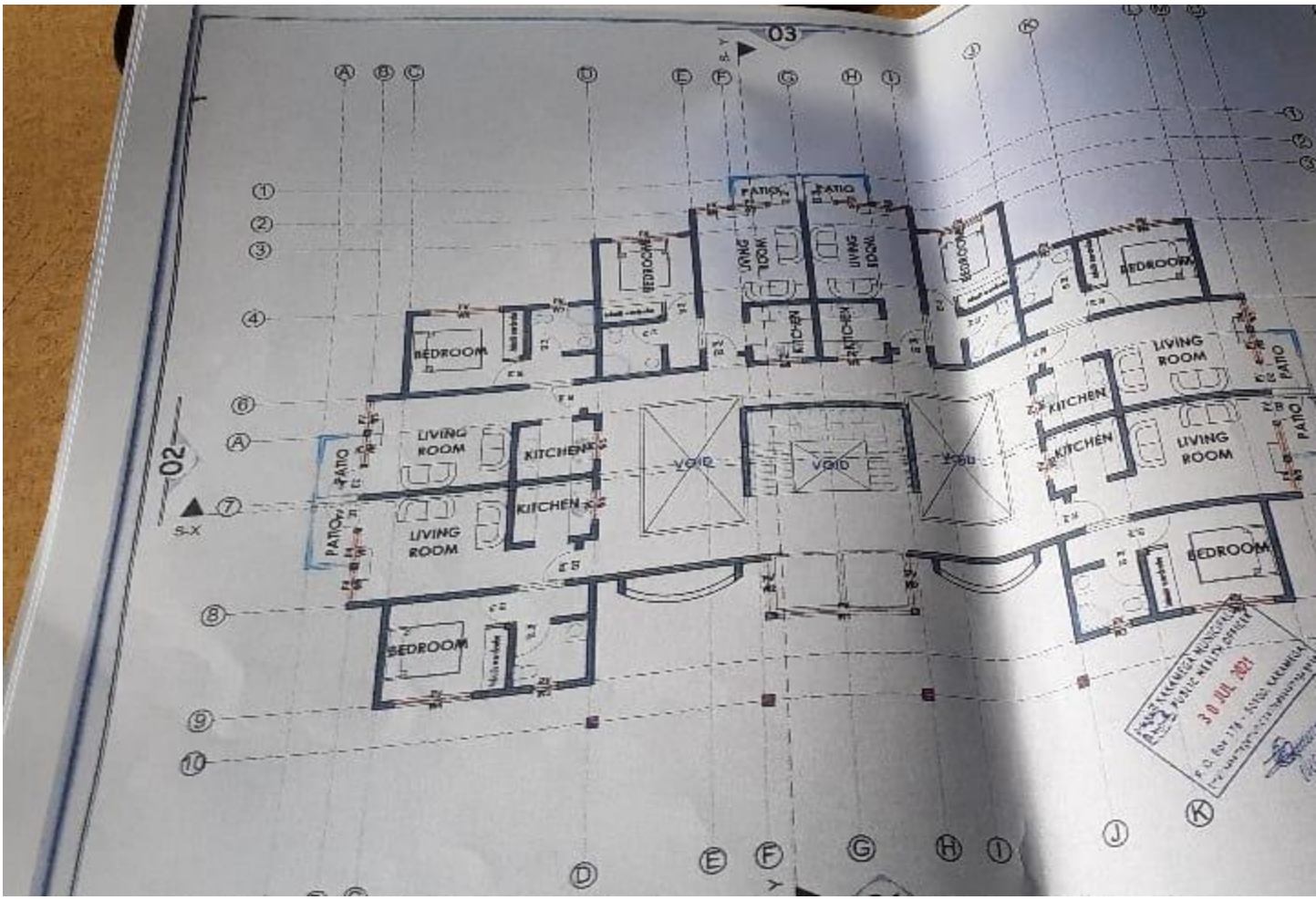

OFFICE
OFFICE
OFFICE
OFFICE
OFFICE
OFFICE
OFFICE
OFFICE
OFFICE
OFFICE
OFFICE
OFFICE
OFFICE
OFFICE
BALCONY
BALCONY
SECOND FLOOR
SCALE 1:100 ON A2
30 JUL 2021

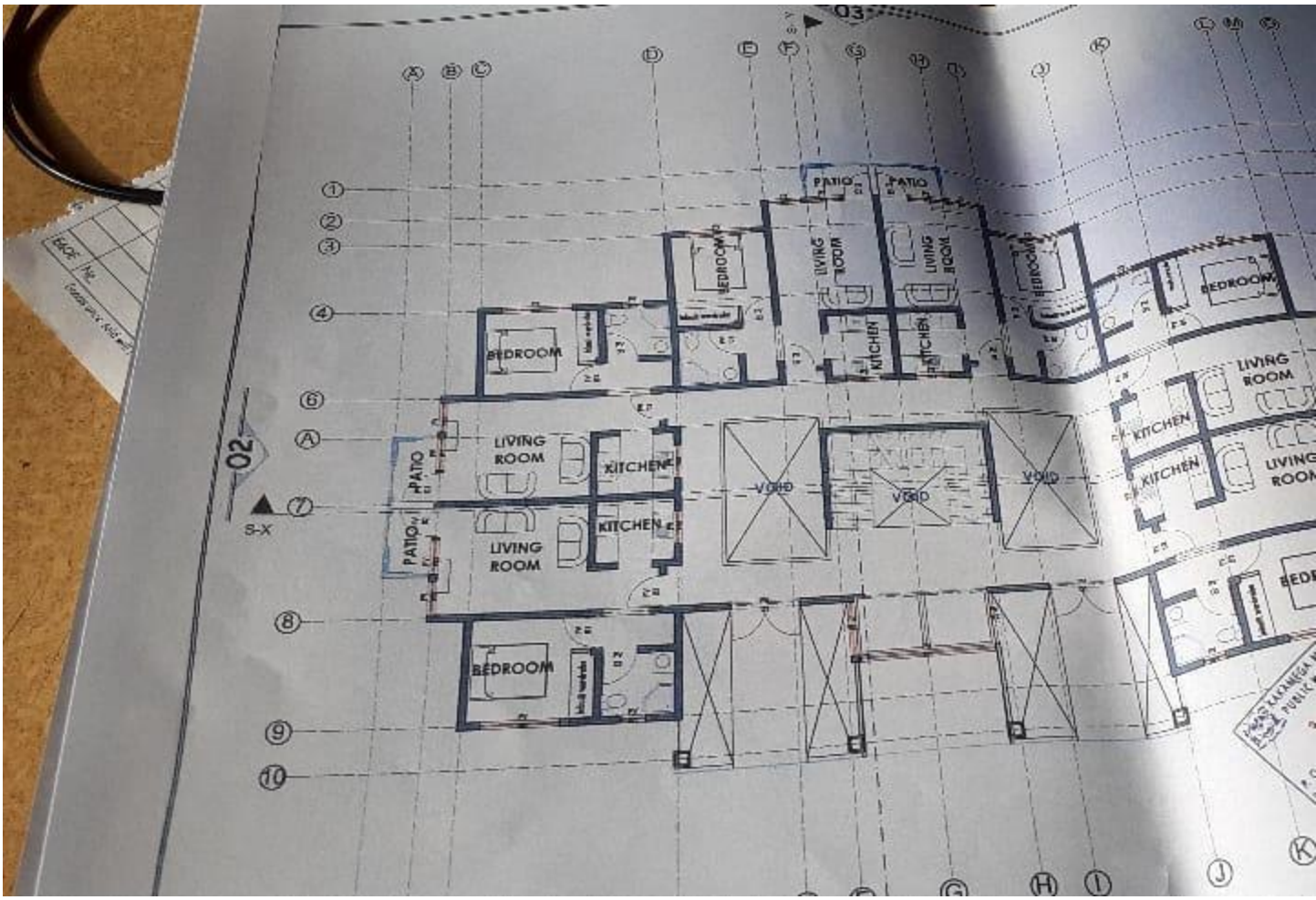

GROUND FLOOR PLAN
SCALE 1:100 ON A2
AREAS
MAIN SPACE = 350 SM
CIRCULATION = 79 SM
BEDROOM
BATH
LIVING ROOM
KITCHEN
PATIO
STORE
MASTER BEDROOM
LIFT
LIFT
MAIN ENTRANCE
TOILET
01
02
03
S-01
S-02


LOBBY
LIFT
LIFT
MAIN ENTRANCE
KITCHEN
STORE
BEDROOM 1
BEDROOM 2
7,107
3,776
3,780
2,030
3,000
1,410
LOBBY DETAIL
SCALE 1:20 ON A2
KAKAMEGA MUNICIPALITY
MUNICIPAL ENGINEER


BEDROOM 1
BEDROOM 2
PATIO
BATH
STORE
LIVING ROOM
KITCHEN
YARD
LOBBY
LIFT
LIFT
MAIN ENTRANCE
03
02
01
E-51
S-30
S-31
S-Y
GROUND FLOOR


03
02
01
BEDROOM 1
BEDROOM 2
PATIO
BATH
STORE
LIVING ROOM
VOID
YARD
KITCHEN
BEDROOM
TYPICAL 1ST - 9TH FLOOR PLAN
SCALE 1:100 ON A2 PAPAER
KAKAMEGA MUNICIPALITY
MUNICIPAL ENGINEER
P. O. Box 170 - 50100, KAKAMEGA


03
02
S-Y
S-X
PATIO
BEDROOM
LIVING ROOM
KITCHEN
VOID
30 AUG 2021


03
02
S-X
PATIO
PATIO
BEDROOM
LIVING ROOM
LIVING ROOM
KITCHEN
KITCHEN
BEDROOM
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BEDROOM
LIVING ROOM
KITCHEN
KITCHEN
LIVING ROOM
PATIO
LIVING ROOM
KITCHEN
PATIO
KITCHEN
VOID
VOID
VOID
BEDROOM
1
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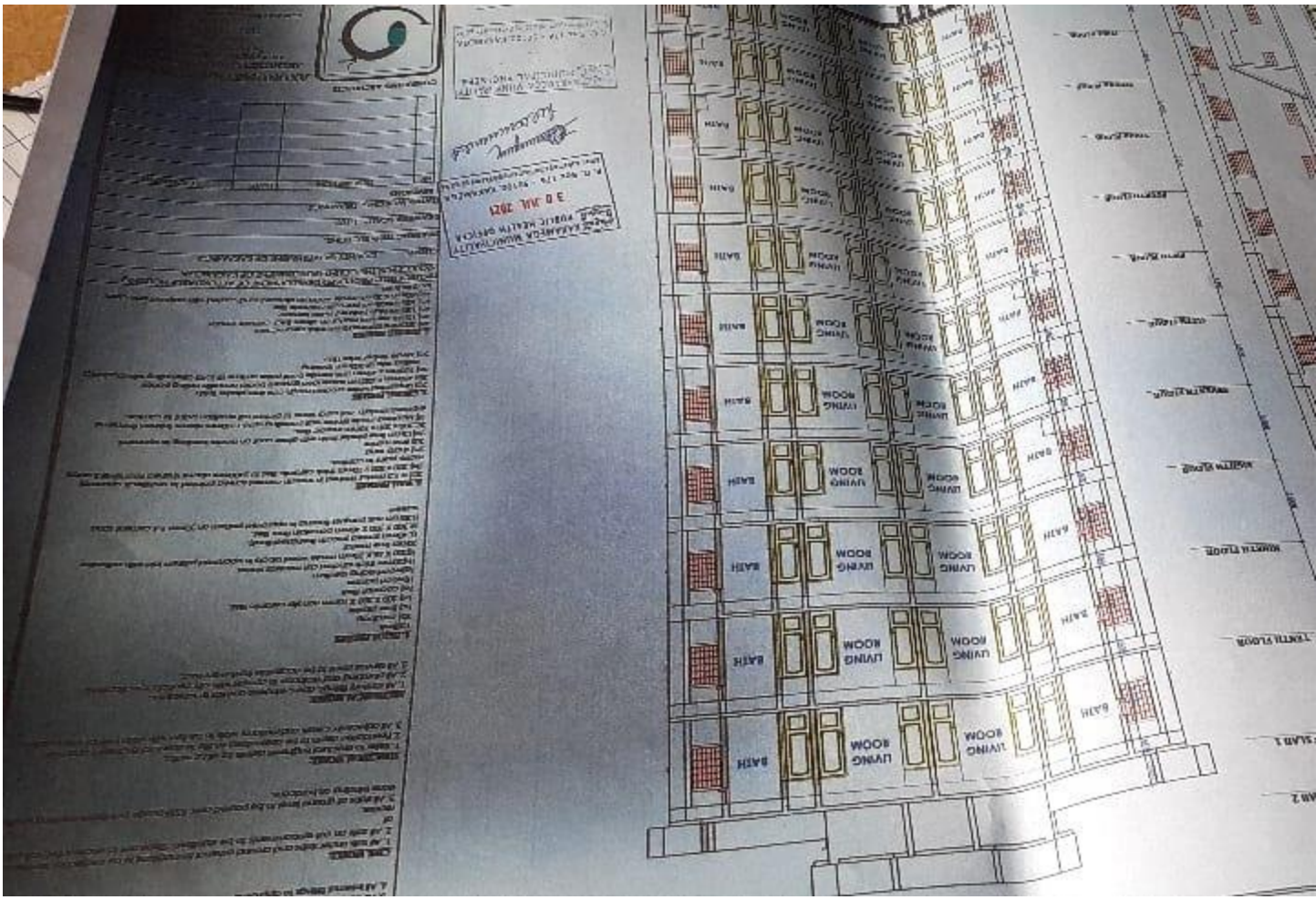
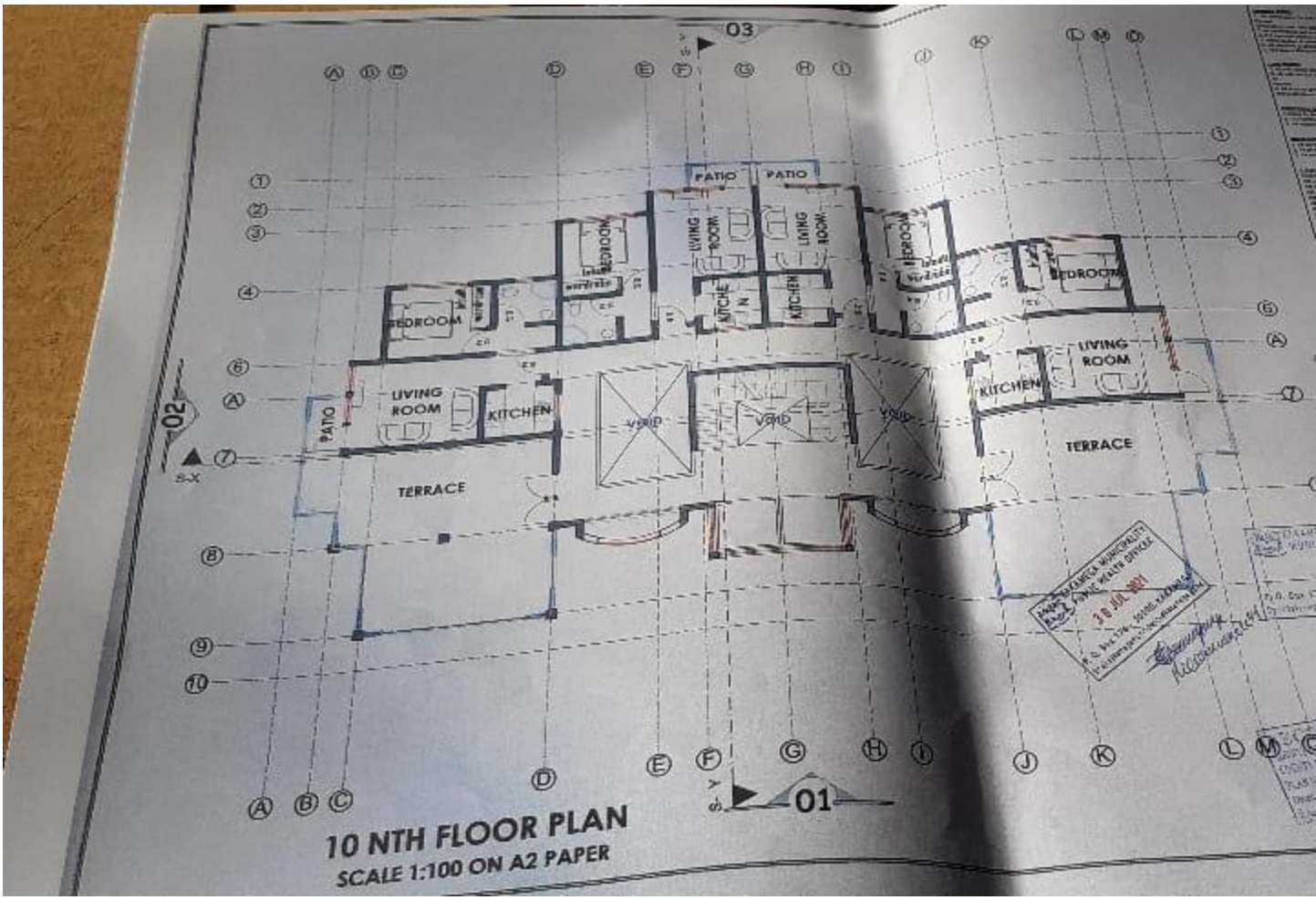
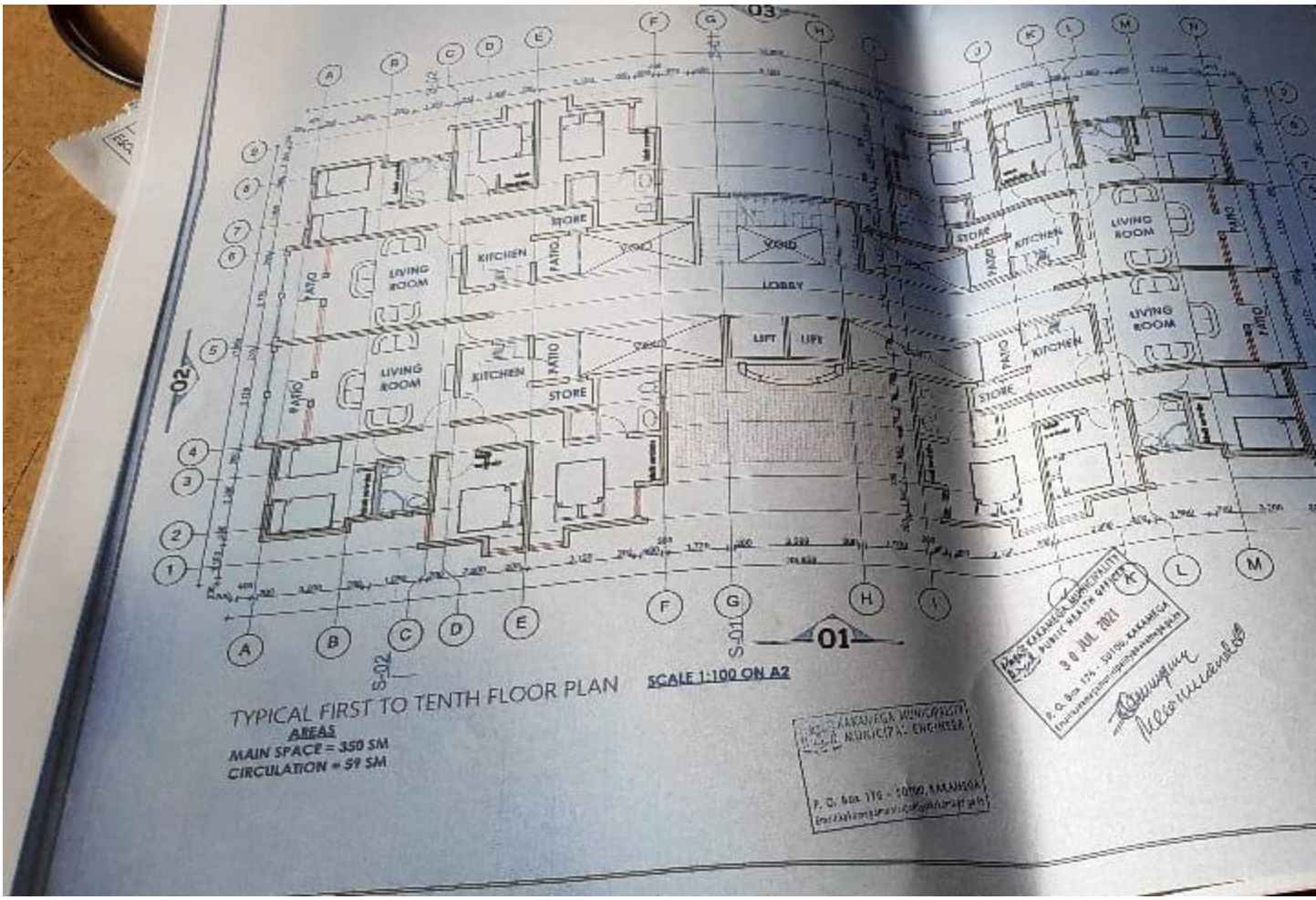
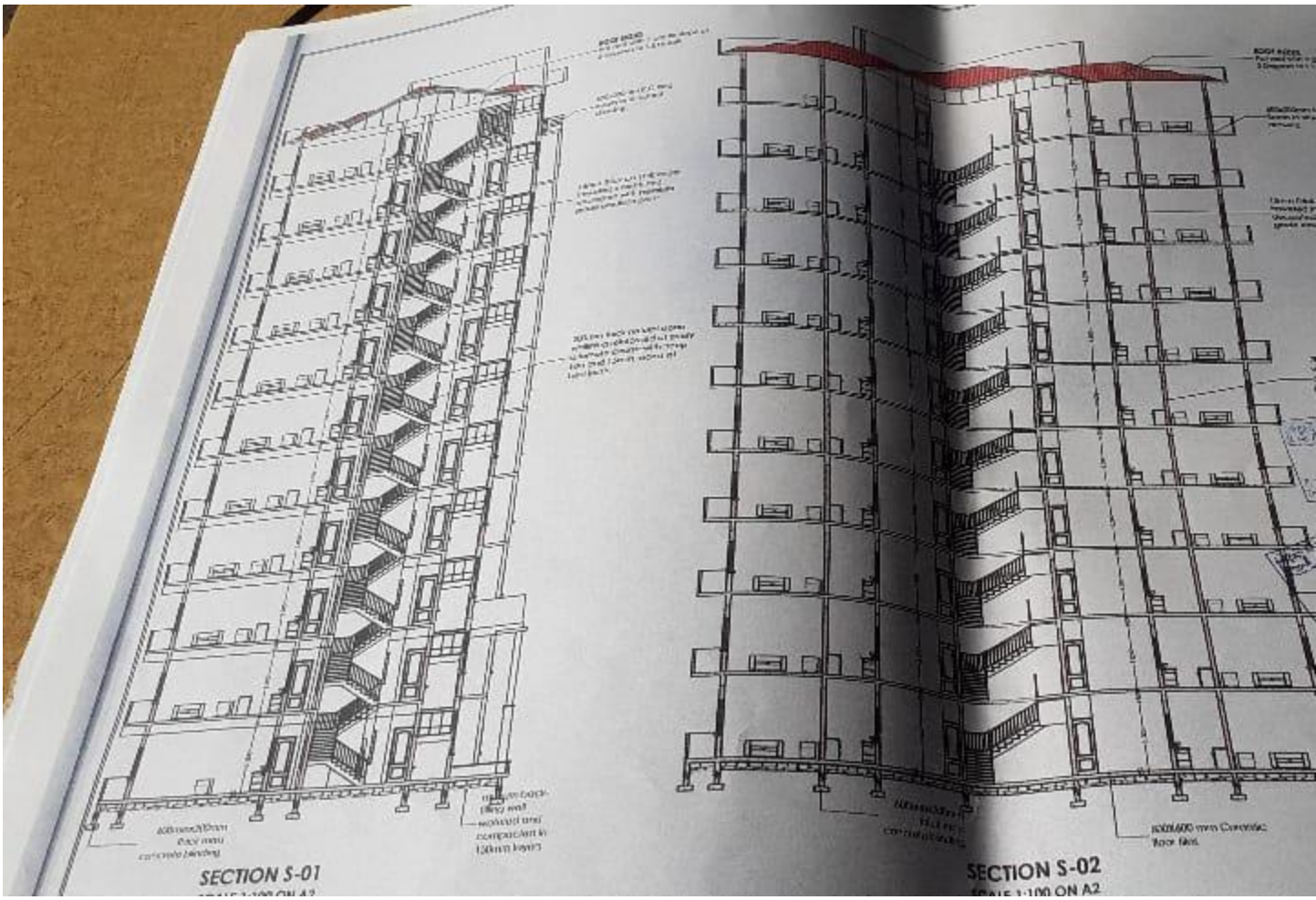
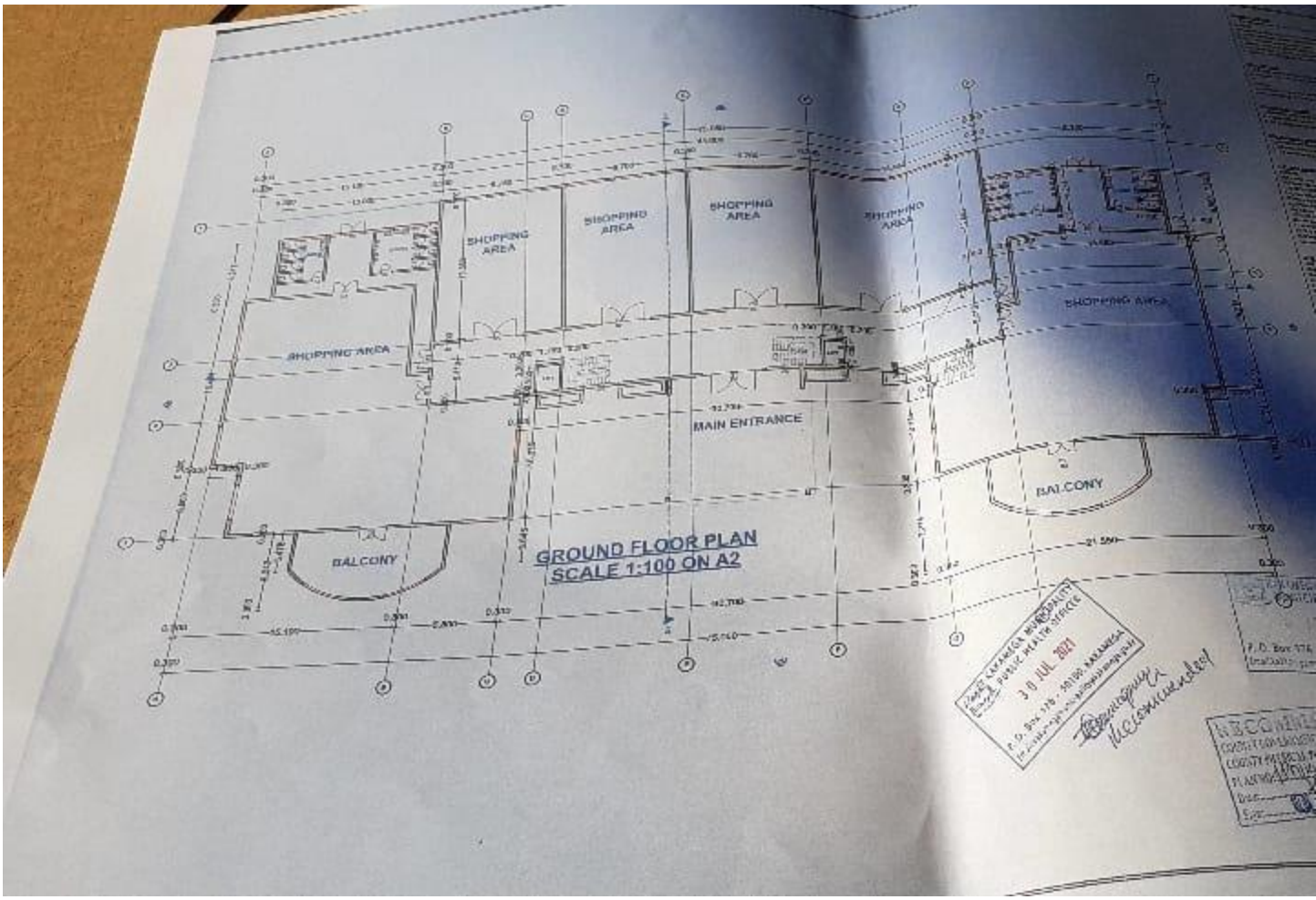

LIVING ROOM
BATH

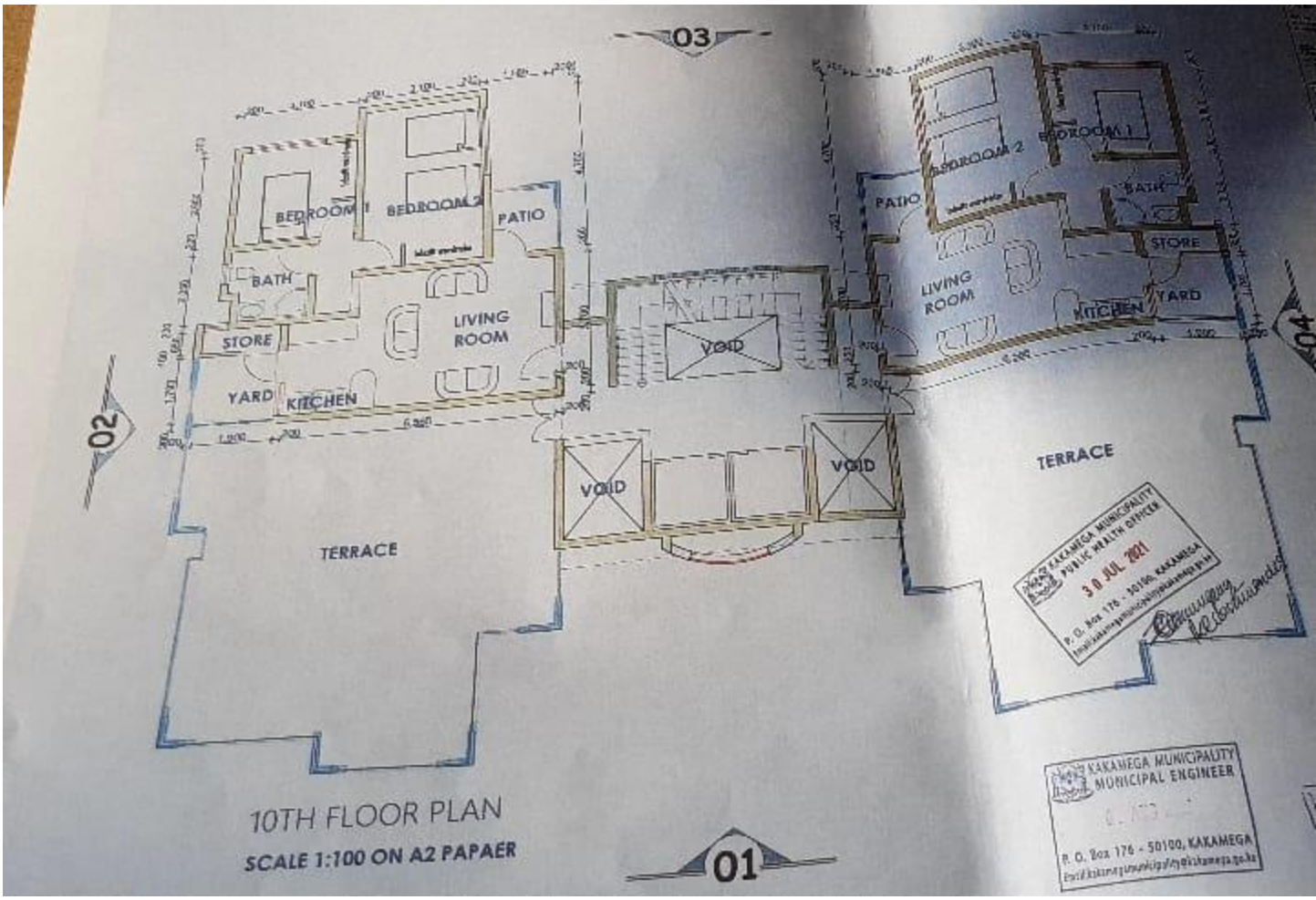

03
02
01
PATIO
PATIO
BEDROOM
LIVING ROOM
KITCHEN
LIVING ROOM
KITCHEN
BEDROOM
BEDROOM
PATIO
LIVING ROOM
KITCHEN
VOID
VOID
VOID
KITCHEN
LIVING ROOM
TERRACE
TERRACE
10 NTH FLOOR PLAN
SCALE 1:100 ON A2 PAPER


TYPICAL FIRST TO TENTH FLOOR PLAN
SCALE 1:100 ON A2
AREAS
MAIN SPACE = 350 SM
CIRCULATION = 59 SM
LIVING ROOM
KITCHEN
STORE
PATIO
LOBBY
LIFT
VOID
01
02
03
S-01
S-02


ELEVATION 01
SCALE 1:200 ON A2
ELEVATION 03
SCALE 1:200 ON A2
ELEVATION 02
SCALE 1:200 ON A2
ELEVATION 04
SCALE 1:200 ON A2
SHOPPING AREA
SHOPPING AREA
SHOPPING AREA
SHOPPING AREA
SHOPPING AREA
LOBBY
LOBBY
LOBBY
LOBBY
SHOPPING AREA
SHOPPING AREA
SHOPPING AREA
SHOPPING AREA
SECTION X-X
SCALE 1:200 ON A2


SECTION S-01
SECTION S-02


SHOPPING AREA
SHOPPING AREA
SHOPPING AREA
SHOPPING AREA
SHOPPING AREA
SHOPPING AREA
MAIN ENTRANCE
BALCONY
BALCONY
GROUND FLOOR PLAN
SCALE 1:100 ON A2
30 JUL 2021


03
BEDROOM 1
BEDROOM 2
PATIO
BATH
STORE
LIVING ROOM
KITCHEN
YARD
VOID
TERRACE
02
04
01
KAKAMEGA MUNICIPALITY
PUBLIC HEALTH OFFICER
30 JUL 2021
KAKAMEGA MUNICIPALITY
MUNICIPAL ENGINEER
P. O. Box 176 - 50100, KAKAMEGA
10TH FLOOR PLAN
SCALE 1:100 ON A2 PAPAER

SPECIAL CONDITIONS

1. No further buildings shall be erected on the land nor shall additions or extern be made to any buildings otherwise that in conformity with the plans and previously approved in writing by the National / County Government.

   The National/County Government shall not give its approval unless it is satis proposals are such as to develop the land adequately satisfactorily.

2. The Lessee shall maintain in good and substantial repair and conditions at any time erected on the land.

3. The land and buildings shall always be used for residential purposes

4. The buildings shall not cover more than 50% of the ..... area o such lesser area as may be prescribed by the National / County Government Control Regulations.

5. The land shall not be used for any purpose which the National / County Government be dangerous or offensive.