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REPUBLIC OF KENYA

MINISTRY OF TRANSPORT, INFRASTRUCTURE, HOUSING AND URBAN DEVELOPMENT

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT REPORT (ESIA)

PROPOSED CONSTRUCTION OF JUJA MARKET

GPS Coordinates: Latitude 1° 6'3.74"S Longitude 37° 0'56.48"E

Project Ref No.EHS-5240-522708-44

Date: March 3, 2018

CERTIFICATION

SGS Kenya Limited was commissioned by the Ministry of Transport, Infrastructure, and Housing and Urban Development to undertake Environmental and Social Impact Assessment for the proposed development of Juja Market, Kiambu County. The Report has been in accordance with the Environmental Management and Coordination Act no. 8 of 1999 and The Environmental (Impact Assessment and Audit) Regulations, 2003 for submission to the National Environmental Management Authority (NEMA). SGS Kenya Limited submits this Environmental and Social Impact Assessment Report, to NEMA Kenya. To the best of our knowledge, all the information in this report is true and correct.

Proponent: Ministry of Transport, Infrastructure, Housing and Urban Development

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ACRONYMS AND ABBREVIATIONS

Acronym	Meaning
CBD	Central Business District
CBD	Central Business District
CBOs	Community Based Organization
CDs	Compact Disk
CCTV	Closed-Circuit Television
DEC	District Environment Committee
DVR	Digital Video Recorder
EA	Environmental Assessment
EIA	Environmental Impact Assessment
EMCA	Environmental management and Coordination Act
ESIA	Environmental and Social Impact Assessment
ESMMP	Environmental/Social Management and Monitoring Plan
GIS	Geographic Information System
GoK	Government of Kenya
HIV/AIDS	Human Immuno-Virus/ Acquired Immune-Deficiency Syndrome
ICT	Information Communication Technology
IFC	International Finance Corporation
ILUT	Interdisciplinary Land-Use and Transportation Metropolitan Analysis within the Nairobi Metropolitan Region Study
KCG	Kiambu County Government
MDGs	Millennium Development Goals
MoT	Ministry of Transport
MoTIHUD	Ministry of Transport, Infrastructure, Housing and Urban Development
MP	Measurement point
MRTS	Mass Rapid Transit System/ Mass Rapid Transit Study
MSP	Measurement Sampling Point
NaMSIP	Nairobi Metropolitan Services Improvement Project
NEMA	National environment and Management Authority
NIUPLAN	Nairobi Integrated Urban Development Master Plan for the City of Nairobi
NMR	Nairobi Metropolitan region
OHS	Occupational Health and Safety
OP	Operative procedures
PAPs	Project Affected Persons
SDGs	Sustainable Development Goals
SPC	Spatial Planning Concept Development Plan
STDs	Sexually Transmitted Diseases

Acronym	Meaning
STIs	Sexually Transmitted Infections
TOD	Transit Oriented Development
ToR	Terms of Reference
WB	World Bank
WHO	World Health Organization
WRMA	Water Resource Management Authority

EXECUTIVE SUMMARY

Project Description

The Ministry of Transport, Infrastructure, and Housing and Urban Development through the Nairobi Metropolitan Services Improvement Project (NaMSIP) intends to upgrade 15 markets within the Nairobi Metropolitan Region. The World Bank with the objectives of providing an enabling physical space for organized markets; creating market linkages for products; fostering access to services to promote efficiency and quality of products and promoting reliable linkages with financial institutions finances this initiative. The goal is to enhance livelihoods especially for the urban poor who are operating as vendors in these select markets.

Nairobi Metropolitan Services Improvement Project (NAMSIP) is an initiative that is in line with Nairobi Metro 2030 that was published by Ministry of Nairobi Metropolitan Development. The report proposed the upgrade of the existing markets and establishment of new markets within Nairobi Metropolitan region. Several Market were selected by Local Authority Development Action Plan team for upgrade or establishment.

In this regard, Juja Market was one of the primary markets to be selected for development. The market is located in Juja town along Thika Super highway, which is approximately 30 Kilometers from Nairobi City and is a home for Jomo Kenyatta University of Agriculture and Technology (JKUAT). The market is location is adjacent to JKUAT on coordinate latitude 1° 6'3.74"S and Longitude 37° 0'56.48"E. The town is under the Nairobi Metropolitan Authority as visualized in the Nairobi metro 2030. The town is a business hub in the area offering education services, hotels, water companies (Juja Water and Sewerage Company (RUJWASCO), Ndarugo Flower Farm, coffee factory and many other type of business companies. It is also a dormitory for the Nairobi workers who commute to work in the city. Juja Market project is implemented by Ministry of Lands, Housing and Urban Development and Nairobi Metropolitan Development and funded by the World Bank.

Project Components

The most practicable intervention at Juja Market according to the feasibility studies done is the development of a new market building to accommodate the existing and future business community. The design of the market building has been done, with clear details on the design and plan of each floor, stall and wash room facilities. The floor design will vary from floor to floor depending on the deferent kinds of use of the

floor or the stalls.

The 4 key elements that were considered by the design options are:

- Design of infrastructure based on identified and prioritized needs
- Calculation of required space based on existing infrastructure standards
- Site planning including layout of buildings
- Cost implications

First Floor design

This floor is designed to have a total of 274 stalls with an area of 2.88 m^2 each and a total area of 789 m^2. The second set of stalls will be dealing with wholesale which will comprise of 70 stalls with an area of .88 m^2 each and a total area of 576 m^2. It will also carry washrooms for ladies, gents, the disabled and the janitors' office with an area of 37.5 m^2 each and a total of 75 m^2. The target kind of businesses in this floor will be Vegetable/cereal shops, Mpesa shops, ATMs, Accessory shops, cosmetic shops and household items.

Second Floor design

This floor is designed to have a total of 300 stalls with an area of 2.88 m^2 each and a total area of 2140 m^2. The washrooms for ladies, gents, the disabled and the janitors' office with an area of 37.5 m^2 each and a total of 75 m^2. The target kind of businesses in this floor will be fashion shops, sewing, Mpesa shops, cobblers'' shops, and ATMs.

Third Floor design

This floor is designed to have a total of 218 stalls with an area of 2.88 m^2 each and a total area of 627.88 m^2 and two kitchens/hotels with an area of 112.59.5 m^2 each and a total area of 225.18 m^2 The washrooms for ladies, gents, the disabled and the janitors' office with an area of 37.5 m^2 each and a total of 75 m^2. The target kind of businesses in this floor will be Kitchen/hotels, sewing, Mpesa shops, cobblers'' shops, and ATMs. There will be meeting rooms with a total area of 102 m^2 and a food court with a total area of 612 $m^{2.}$.

The Roof Plan

The roof will comprise of a continuous concrete slab with ventilation spaces for air circulation in the building. The roof will also carry water tanks and solar panels for use in the building.

The detailed description of the proposed market is provided in Chapter One of this report. However, in summary, the market will consist of the following:

- **Stalls** -two levels of stalls**;** bigger stalls designed for products demanding larger space such as clothes which measure 3m by 3m and smaller stalls that will measure 3m by 1.5m;
- **Infrastructure -** a car park, access roads and internal passes and drainages.
- **Water Supply and Reticulation -** Water supply will be mainly from Ruiru Juja Water and Sewerage Company and can be supplemented by a water tower. Check meters will be in place to monitor the water usage.
- **Sanitary Facilities -t**oilet spacing will be 2.3m2 per 1000 market users.
- **Fire Fighting -** fire exits and hydrants.
- **Garbage disposal -**. Garbage collection cubicles for both recyclable and non-recyclable materials.
- **Ventilation -** The standard air changes will be used to determine extract fan and duct sizes. Natural ventilation will be the predominant way of ventilating the market.
- **Power -** A switch room with a meter board will be required for power distribution to the different stalls. There will be check meters for every stall for management purposes. Provisions for future expansion of the stalls operation will also be taken into consideration. Cabling to and from the switch room will be done by use of cable trays for efficient and neat cable management.
- **Lighting - external lighting** for security reasons, movement of security guards and to explore the possibilities of 24-hour market operation and Internal lighting in the stalls.
- **Telecommunication systems -**. ICT infrastructure to support the service provider.
- **Security -** CCTV cameras located at strategic locations and the DVR and CCTV monitors located in security room.

Relocation Site

The construction will also involve relocation of the traders in the existing market to an adjacent site that is within the larger market and the relocation will involve compensating the traders as required by World Bank standards. As well, the traders will be relocated to the relocation site that will have been adequately prepared so that they can continue with their trading with minimum interruption to their livelihoods.

ESIA Study and Objective

The main objective of the Study was to identify environmental and social impacts associated with the proposed construction of the proposed market and to recommend an appropriate environmental management strategy for the project. The core outcome of the Study is an Environmental and Social Management and Monitoring Plan (ESMMP), which will be used to enhance and mitigate any positive and negative impacts respectively for the project.

Specific tasks included;

- Evaluation of the existing situation at the proposed project sites;
- Appreciation of the project concepts through the study of design documents, construction and intervention layout, feasibility of the project and other documents;
- Identification of potential impacts associated with the proposed projects;
- Identification of suitable mitigation and preventive measures appropriate for the impacts and;
- Development of a comprehensive environment and social management plan for integration into the project implementation.

Approach and Methodology

The ultimate goal of this approach was to identify positive and negative impacts resulting from the construction of the proposed project. . The systematic investigative and reporting methodology specified in the conduct of Project Report Studies (Legal Notice 101 of EMCA) was adopted in this Study. Baseline data on project design was generated through discussion with the client and review of project documentation. Opinions formed were revalidated through field work entailing site investigations and interviews with key primary stakeholders (e.g. traders, shoppers, market management) and secondary stakeholders (e.g. area residents, other traders).

To identify, predict, analyses and evaluate potential impacts that may emanate from the project, diverse study methods and tools including use of scoping the area, questionnaires, stakeholder consultations, focus group discussions, and observations were employed. An Environmental and Social Management and Monitoring Plan

comprising of an impact mitigation plan and modalities for monitoring and evaluation were then developed to guide environmental management during all phases of project development.

Policy, Legal, and Regulatory Framework

This Project Report has been developed to ensure that the proposed construction of the bus park is in conformity with national policy aspirations towards securing sustainable development. Specifically, this report has been developed to ensure compliance with requirements of the Environmental Management and Coordination Act (EMCA) 2015-Kenya's supreme environmental law and the National Constitution. Section 58 of EMCA requires that all proposed development in Kenya to be subjected to environmental impact assessment and to be conducted in line with the Second Schedule (of EMCA) and the Legal Notice 101 (Regulations for Environmental Assessment and Audit) of June 2003.

Potential Environmental Impacts and Mitigation Measures

Positive Impacts

The project is anticipated to have positive socio-economic impact on the traders and local residents. The provision of a modern market will ensure that traders operate in a more convenient place. It is also anticipated that the project will result in growth in revenue of Kiambu County Economy, Job creation and labor remuneration accruing to local residents. Inherent with the proposed project will be the following negative impacts:

Negative Impacts

Air Quality

The project is anticipated to impact on ambient air quality through generation of dust and combustion gases (SO_2, NOx, CO, and particulates). Dust will be generated from construction activities especially removal existing temporary market stalls/structures, grading, excavation, and increased traffic on unpaved roads. Fugitive dust will be greater during drier period in areas of fine textured soils.

The combustion emissions will be generated by diesel powered construction equipment: excavator, wheel loader, trucks, motor grader and compactor.

Considering the Project dust controls (watering; stabilizing disturbed areas) and the fact that the fugitive dust and combustion emissions will be short-term and localized, air quality impacts from the construction activities are expected to be of low significance at the site and negligible at the closest settlements respectively.

Soil erosion Impacts

The project is anticipated to cause soil erosion during construction and decommissioning phases. Construction phase and demolition phase activities especially excavation and demolition of structures, respectively are likely to cause soil erosion at the construction site and surrounding areas. However, the impacts are expected to be short term and of low significance.

Loss of vegetation

The development of the proposed Market is expected to impact on both flora and fauna currently inhabiting the site. The flora to be affected include: reeds of different species, water lilies and liver warts (in a swampy area), shrubs and bushes, grasses and a few trees such as acacia while fauna include: butterflies, birds of different species and crawling animals such as lizards. Both flora and fauna at the site are not on IUCN Red list of threatened species.

There will be no effect on the terrestrial ecology both during operation and during decommissioning phases. During the operation phase, the site would be covered by the proposed development while for decommissioning phase; the site would be restored and rehabilitated to the natural contours.

Impact on Water Resources

During construction phase, potential water contamination could arise from disturbance of soil, spillage of fuels, lubricants and other toxic materials at the construction site, discharge of silt laden run off from sites, and disposal of waste and wastewater from sanitary convenient provided to construction workers.

During operation phase, solid waste generated from the Market if not managed appropriately can be washed down to drainage system near the project area

During the decommissioning phase, the potential negative impacts to water resources are likely to be very similar to those considered during the construction phase of the Project, and the appropriate mitigation measures should be employed to reduce impact on receptors.

The potential risk of water pollution from proposed project can be reduced by adopting protective measures to prevent spills; putting in place suitable spill response plans; managing wastes appropriately and controlling soil erosion. With these good practices, the risk of water pollution from the project should be low.

Noise and Vibration

The ambient noise quality of the project site is characteristic of an urban setting. During construction phase, noise sources will include, including ground clearance, piling, concreting and equipment installation.

During operation phase, the primary noise sources at the site will include vehicles delivering the supplies to the market; customer's vehicles, and market activities including playing of loud music or use of sound amplifiers to attract customers, a characteristic behavior in most markets in Kenya. In addition, during decommissioning phase, sources of noise will include; demolition works and vehicles carting away materials.

Socio-Economic Impacts

Socio-economic impacts take into consideration the relationship between economic activities and social life. This relationship is interlinked by the dependence of social activities on economic activities and the vice versa. In most instances the focus is on the social impacts due to economic changes. With regards to the proposed market, there is however generally greater emphasis on economic issues, particularly relating to provision of enough space so that traders can do their business conveniently.

Disruption and damage of public utilities

There is potential for a few disruptions of public utilities, especially the electric power and some water lines, especially the ones that might be located near or located at the site. Although minimal, disruption of electric power will occur during connection of power to the project. During transportation of materials to construction site, the use of already existing tarmacked roads to the site may lead to damage on paved surfaces if axle load weight is not observed, resulting to poor roads, and spending more money repairing the affected roads. Water and sewer utilities may also be affected during construction through damage or disruption during connection periods

Mitigation measures include generation of a Utility Management Plan to minimize damage to public utilities

Traders' dissatisfaction due to perceived inequities in allocation of market stalls

The development of the market as well as allocation of space for doing business has been discussed with the traders through public consultation. Against the background of this knowledge and expectation, there is a risk of dissatisfaction if procedures of allocation of stalls or space are not adequately applied, or if they are seen to be applied in an inequitable manner. There is therefore need to adhere to the market policy in allocation of stalls or space to traders; and implement grievance resolution mechanism, which is part of the RAP for the market, prepared separately from this report.

Inconvenience and danger to proximate residents through increased road traffic and dust, and reduced access to worksites

The project is not anticipated to impact on traffic on the nearby roads (Gachororo road, traffic around the site will increase considerably. However, construction and decommissioning phase (demolition) activities on site and road traffic will produce dust and noise, and will pose hazards to road users. The impacts will be of short duration (the construction and decommissioning periods) and are low significance.

During operation phase, the market can generate light traffic from vehicles of suppliers delivering products to the markets as well as of customers visiting the market. When distributed over the wider road network, the impacts will be low. However, as with construction, the relative increase in traffic around the site will be slightly significant, with associated implications for access and safety.

Increased demand of construction materials, energy and water

Increased demand of construction materials, energy and water is bound to happen during construction activities. An elaborate waste material reduction is important to save on high demand for construction materials from the environment. Water storage and conservation measures should be adhered to save on water volume used.

During operation phase, water will be required for cleaning, welfare and hygiene. Demand for energy and water is not anticipated during decommissioning phase as energy and water supply infrastructure will be removed from the site.

Public Consultation, Participation and Disclosure

Apart from the gathering of quantitative data through a socio-economic survey of the area of influence of the project and a preliminary survey of project affected people, consultation sessions (qualitative) were held with the affected persons and other local community interests to share the information about the project and record their concerns/ feedback associated with this project. The consultation was in two stages namely scoping and stakeholder's consultation. Consultative sessions discussed the topics related to land acquisition and resettlement issues, employment and livelihoods of communities, gender and women issues, contractor's camp and access to existing routes and environmental issues.

The section on stakeholder consultations provides details of outcomes of consultations and covers issues and concerns showed by the stakeholders regarding land acquisition and resettlement. To address the issues and concerns raised by the stakeholders, mitigation measures have been developed and incorporated into the ESIA. Overall, the stakeholders generally supported the project and anticipated numerous benefits as a result of the project.

Environmental and Social Management Plan

Social safeguards and environmental protection are very important in any development. A detailed Environmental and Social Management Plan (ESMP) has been proposed for use during the implementation of the project. The ESMP details the important steps available to mitigate the impact that arise during all phases of the project. The proponent and the contractor are the responsible parties in the implantation and monitoring of the ESMP

Project and ESMMP Costs

The proposed project construction period will be 9 months and defect liability of 3 months respectively. The project is estimated to cost approximately: **Kshs. 170,508,852.** The cost of implementation of ESMMP is approximated to be **Kshs. 9,500,000.**

Conclusion

In view of this study, the project is socially and environmentally acceptable. As long as the implementation of the project adheres to the proposed Environmental and Social Management Plan. In conclusion, the project should be granted environmental license to pave way for its implementation.

CHAPTER ONE

1. INTRODUCTION

Nairobi Metropolitan Services Improvement Project (NaMSIP) is a World Bank Funded Project under the State Department of Nairobi Metropolitan Region in the Ministry of Transport, Infrastructure and Housing and Urban Development. NaMSIP mandate is to strengthen service delivery in the Nairobi Metropolitan Region (NMR) on various selected projects by investing in local infrastructure (markets, roads, street lighting, bicycle and pedestrian pathways, drainage, among others) and in providing large-scale metropolitan infrastructure in the areas of trade, solid waste management, transport, sewerage services, among others.

The objective of Nairobi metropolitan region department is to improve service delivery for the residences living within and outside the metropolitan. This general improvement of urban services and infrastructure is important for future development of the whole republic. Juja Market is one of the fifteen markets selected to be improved in the overall infrastructure development under the NaMSIP shown in table 1-1.

Under Kenya Vision 2030, one of the key objectives is to bring overall development and poverty eradication by building regional trade and business service hubs. These hubs include the establishment of metropolitan markets and stalls for trade in the region. The residence of the metropolitan and farmers around the republic will feel the benefit of these new markets. The market hub will encourage commercial farming and entrepreneurial culture in Kenya.

Table 1-1: Proposed NaMSIP Market and Location

	Market	Location	Location (County)
1.	Jogoo Road	Nairobi City along Jogoo Road	Nairobi
2.	Karandini	Nairobi City near Dagoretti Corner on the western side of the intersection of Ngong Road and Naivasha Road	
3.	Mwariro	Nairobi near Kariakor	
4.	Muthurwa	Nairobi City, Off Haile Selassie Avenue	
5.	Thika (Madaraka)	Thika, Makongeni area along Garissa Road	Kiambu
6.	Juja	Juja Town near Jomo Kenyatta University of Science and Technology	
7.	Ruiru	Along Kamiti road in Ruiru Town	
8.	Githurai	Githurai town along the Thika Super Highway next to Githurai Bus stop	
9.	Kiambu	Kiambu town along Biashara Road	

	Market	Location	Location (County)
10.	Kihara	In Kihara town, along Kihara - Gachie– Karura Road	
11.	Kikuyu	Kikuyu town, near Kikuyu-Nairobi bus park	
12.	Kitengela	Off Nairobi Namanga Road in Kitengela town behind the Kobil petrol station	Kajiado
13.	Ngong	Ngong Town near Ngong bus terminus	
14.	Ongata Rongai (Ole Kasasi)	Ole Kasasi, Rongai area near Maasai Lodge, Off the main Magadi Road	
15.	Tala	Tala Town	Machakos

1.1 Proposed Project Locations

The proposed market is located in Juja town along Thika Super highway, which is approximately 30 Kilometers from Nairobi City and is a home for Jomo Kenyatta University of Agriculture and Technology (JKUAT). The market is location is adjacent to JKUAT on coordinate latitude 1° 6'3.74"S and Longitude 37° 0'56.48"E.

Figure 1-1: Juja Market Satellite Map (Google earth 2016)

1.2 Current Market Profile

The market site is operational as an open air Market; therefore, there will be some resettlements and/ or livelihood restoration requiring relocation of the PAPs to pave way for the project. A separate RAP report has been done for the project with detailed information on the resettlement process. Current Status of the market includes the following;

- **Customers:** Majority of the population forming the customers of this market are from the neighbouring residential and commercial buildings. The market also borders a university with some of the customers forming the student population.
- **Design and market facilities:** The stalls in Juja Market are self-fabricated temporary structures made of iron sheets, polythene and timber.
- **Water:** Water was previously provided by Ruiru-Juja Water and Sewerage Company (RUJWASCO) but was disconnected due to outstanding bills.
- **Loading/ Offloading and parking zone:** There is no designated loading and offloading zone in Juja market. There is no designated parking zone available for customers and traders.
- **Security:** There is no perimeter wall demarcating the market and largely lacks a working security system. Security guards have been hired by the market committee to guard traders' goods on a 24 hour basis.
- **Sewerage/ Sanitation:** the pit latrines are inadequate. The traders therefore use the available private sanitary facilities near the market. The figure below shows their dilapidated condition.

Plate Figure 1-2: Dilapidated Toilets in Juja Market

Source: *Impulso-AWEMAC- Ecoplan, 2016*

Plate Figure 1-3: Current Juja Market

1.2.1 Juja Market relocation site

The proposed relocation site is part of the market that is currently unoccupied as traders trade on one side of the market. The relocation site belongs to the county government of Kiambu. The site is susceptible to floods and water logging though inexpensive reclamation work can be done to make it suitable for trading activities.

The relocation layout plan has provision for 484 stalls compared to 416 PAPs. The RAP consultant will use the layout to plan for stall allocation for each PAP. Each PAP will be given a Stall Allocation Form after RAP Validation exercise. Only verified PAPs will be allocated a stall

The market's water supply is currently not adequate and the PAPs moving to the relocation site may also face the same challenges. The designs have made provisions for adequate sanitation and water facilities at both the relocation site and the proposed market.

Waste management at the market is inadequate as the county government hardly collects waste at the market on a daily basis. The heaps of waste which are not collected will pose environmental and health hazards. The designs will have provisions made at the relocation site and constructed market. The proposed market management model has come up with

proposals on how county governments should manage markets under NaMSIP program for markets, as well as other public markets in Kenya.

Currently, the market is prone to flooding during the rainy season, leading to stagnation of water an, which is not conducive for traders or clients. This environment is healthy for breeding mosquitoes and pose unhealthy working environment for the traders. The relocation site, which is adjacent to the market, has similar characteristics and furthermore resulting into blockage of sewer drains. The engineering designs have provided for engineering solutions to solve this problem. The contractor will prepare the relocation site and provide it with adequate sanitation and water facilities before the PAPs move.

NEMA being a corporate body charged with; exercising supervision and coordinating overall matters relating to the environment as well as being the principal instrument of the Government in the implementation of all policies relating to the environment. NEMA will play a role in supervisory and monitoring of environmental conditions at both relocation and construction of market as per the ESMP in the ESIA report.

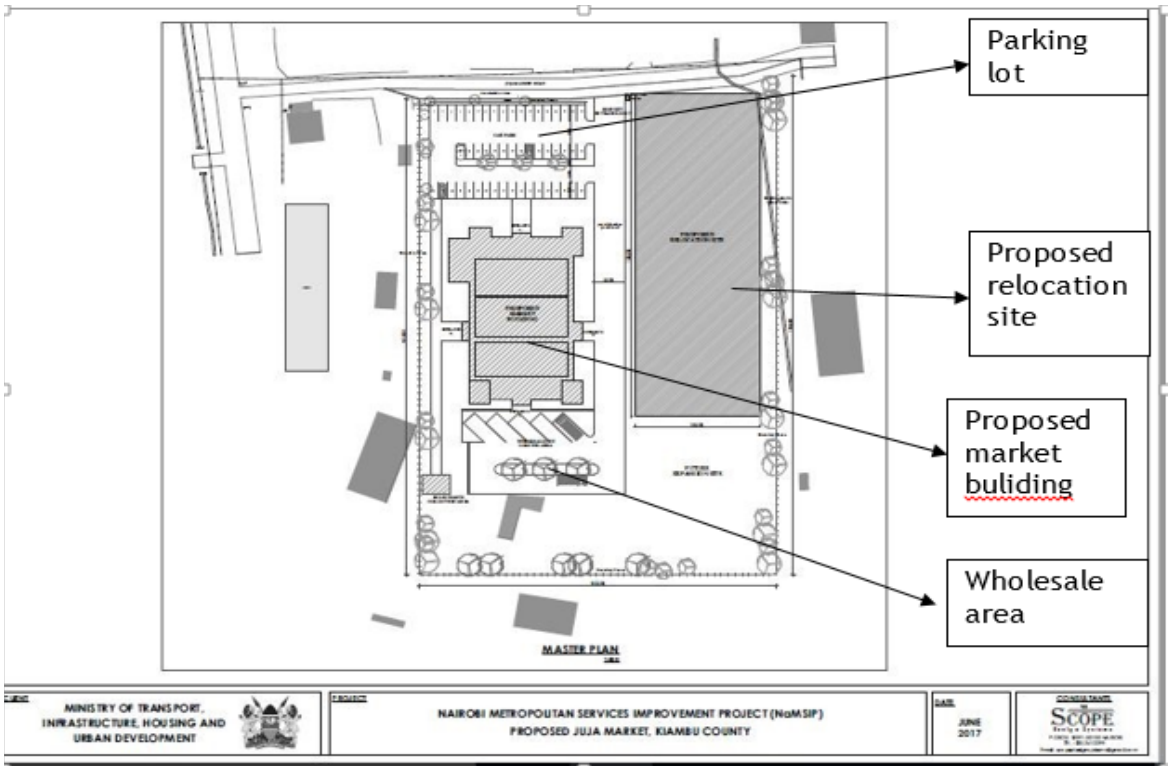


Figure 1-3: *Project location and relocation sites*

Source: Impulso RAP report

Plate Figure 1-5: Proposed Relocation Site – within larger market periphery

The following are the proposed infrastructural and services to be provided at the relocation site:

1. fencing of the site
2. Clearing and levelling of the site
3. Backfilling with murram to create a suitable surface for the market use
4. Provision for a high mast security light
5. Provide for a designated area for damping waste to facilitate collection by the county government
6. Provide for toilets for use by the traders and the customers
7. Provide for parking and appropriate loading and off loading zones
8. Proper storm water drainage to the existing drainage channels
9. Provide adequate water points

1.3 Proposed profile

The most practicable intervention at Juja according to the feasibility studies done will be to build a new market building to house both the existing and future businesses. A critical analysis has been done in the design of the stalls, the layout of the building as well as the consideration for horizontal and vertical accommodation of the vendors. From the existing list of approximately **1120** traders and the projected number in future,

a typical multi-level arrangement accommodating all potential vendors is proposed by the market design team.

The 4 key elements that were considered by the design options are:

- Design of infrastructure based on identified and prioritized needs
- Calculation of required space based on existing infrastructure standards
- Site planning including layout of buildings
- Cost implications

1.4 Rationale for Improvement of the Market

The following are major drivers for improvement of the market:

- Changing organizational structure of commerce – e.g. Increasing volumes of produce handled; alterations to commercial practices and trading patterns, such as the private sector taking over markets;
- Demographic factors – e.g. Overall increase in population of the city and population shifts within cities;
- Changing transportation patterns – e.g. Increased traffic growth and resulting congestion; shifts in transport mode (i.e. the proportion of different types of vehicles); changes in the capacity and size of delivery and distribution trucks;
- To make use of the current asset more effectively, e.g. collection of rental charges from traders;
- To provide traders and consumers with a modern market with more facilities and amenities;
- To comply with statutory requirements (such as public health, safety and environmental standards).

1.5 Improvement Objectives

- To improve the economic benefit of the site to Kiambu County and local traders;
- To improve operations and maintenance of the site;
- To increase water and sanitation availability;
- To enhance safety and security within and around Juja Market.

1.6 Proposed Project description

The most practicable intervention at Juja according to the feasibility studies done will be to erect new market buildings to house both the existing and future vendors. A critical analysis has been done in the design of the stalls, the layout of the building as

well as the consideration for horizontal and vertical accommodation of the vendors. This project is expected to accommodate more traders in the future as compared to the open air market type of market arrangement that currently exist. A typical multi-level arrangement accommodating all potential vendors is proposed by the market design team.

The 4 key elements that were considered by the design options are:

- Design of infrastructure based on identified and prioritized needs
- Calculation of required space based on existing infrastructure standards
- Site planning including layout of buildings
- Cost implications

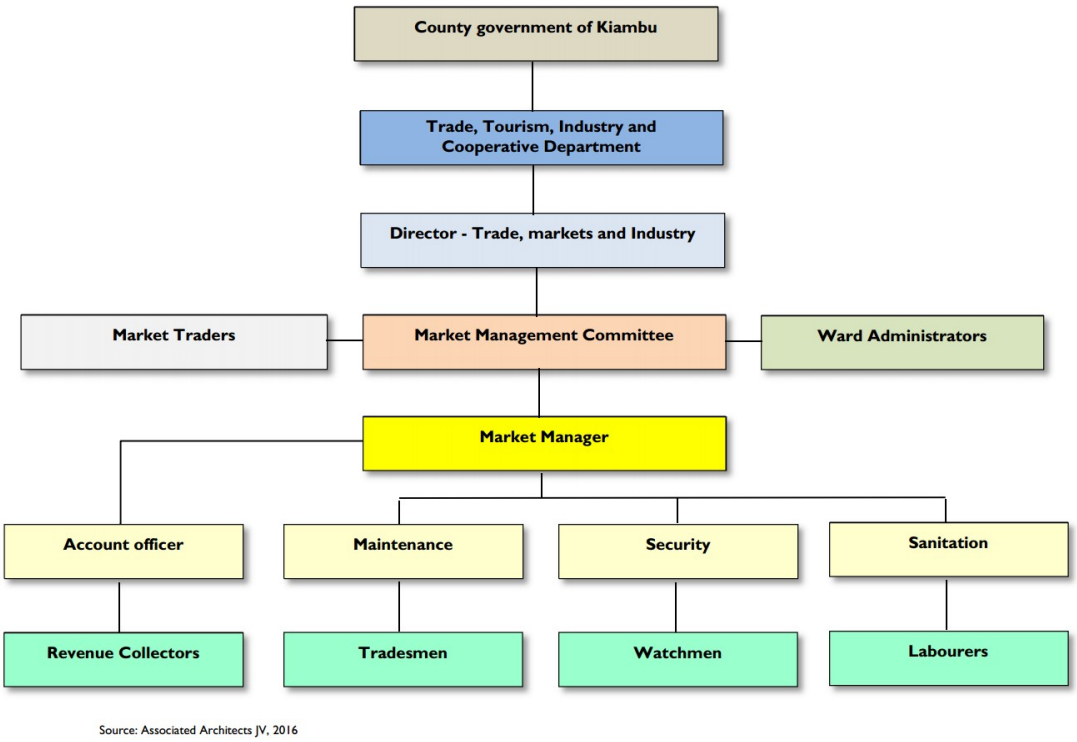
In addition, the market design has provided for a ramp for disabled users. It will also provide for a restaurant area and facilities for cleaners while zoning will be done for retailers selling similar produce. A parking area with a roof shed will be provided for boda boda riders to park their motorbikes. The construction of the relocation site will be completed before the main market is built so as to provide temporary trading space for the traders who are required to move from the current market to this relocation site which will be within the larger market periphery.

In summary, the market will consist of the following:

- Stalls -two levels of stalls; bigger stalls designed for products demanding larger space such as clothes which measure 5m by 5m and smaller stalls that will measure 2m by 1.5m;
- Infrastructure - a car park, access roads and internal passes and drainages.
- Water Supply and Reticulation - Water supply will be mainly from Ruiru Juja Water and Sewerage Company and can be supplemented by a water tower/water tanks. Check meters will be in place to monitor the water usage.
- Sanitary Facilities -toilet spacing will be 2.3m2 per 1000 market users.
- Fire Fighting - fire exits and hydrants.
- Garbage disposal -. Garbage collection cubicles for both recyclable and non-recyclable materials.
- Ventilation - The standard air changes will be used to determine extract fan and duct sizes. Natural ventilation will be the predominant way of ventilating the market.
- Power - A switch room with a meter board will be required for power distribution to the different stalls. There will be check meters for every stall for management purposes. Provisions for future expansion of the stalls operation will also be taken

into consideration. Cabling to and from the switch room will be done by use of cable trays for efficient and neat cable management.

- Lighting - external lighting for security reasons, movement of security guards and to explore the possibilities of 24-hour market operation and Internal lighting in the stalls.
- Telecommunication systems -. ICT infrastructure to support the service provider.
- Security - CCTV cameras located at strategic locations and the DVR and CCTV monitors located in security room.
- Access – The market shall have a stair case and an access ramp for use by the physically challenge people.
- Market Management Model - The proposed overall market manage will be the responsibility of Kiambu County. The levels of management is as shown in figure 1-2 overleaf



Source: Associated Architects JV, 2016

Figure 1-4: Market Managed model

1.7 Stalls

There will be different levels of stalls/rooms. The ordinary stalls and larger rooms/stalls designed for products demanding larger space such as kitchens and meeting rooms. The ordinary stall measures 2.88 M^2 and kitchens measures 112.59 $M^{2.}$ These

standards have been adopted based on the retail markets planning guide by the Food and Agriculture Organization (FAO). Space for stores, stalls and stands shall not exceed 40% of total area.

Figure 1-5: Proposed design of Juja Market

Source: Scope design System Consultants, 2016

1.8 Zoning

The site will be organized to allow for different uses as outlined below:

- Grouping of sale outlets- retailers selling similar products will be grouped together
- Customer flow- staple products will be placed away from the point of arrival of customers so as to draw customers into the market
- Facilities for temporary Vendors-Regular operators will be appointed fixed locations while temporary vendors will be allotted separate spaces. Small-scale vendors will also be allocated space .
- Marketing of live animals- special separate enclosures that are well-ventilated and close to the exits and that have separate supply of water, will be provided. Walls should be solid to prevent spread of contamination and disease while birds will be in cages.

1.9 Water supply and reticulation

Ruiru Juja Water and Sewerage Company serve Juja market. The water supply can be used to meet the water requirements in the whole market. An underground and overhead water storage tanks have been proposed for the market. .A water pump will be used to pump water into the overhead tank and a gravity fed system employed to distribute water to the required areas within the market.

1.10 Sanitary facilities

Use of Asian type toilets combined with a flush valve system in the washrooms would be the best vandal proof and hygienic system for use at the market. With a proper facilities maintenance system, the washrooms will serve the users efficiently. Use of push taps for the wash basins will be an efficient way of reducing water usage in the washrooms unlike the knob type where the taps can be left running for long periods of time. Use of a high level cistern for the urinals with distributed flush mechanisms will suffice in cleaning the urinals. The toilets and urinals will be at a maximum distance of 50M-100M from users.

Water supply standpipes will preferably be at least 25m from any user and must not exceed 50m away from the furthest user. Meat and fish stalls will have water adjacent to the stalls.

1.11 Drainage

An ideal site when considering drainage is one that is sloping gently away from the road because the site can be drained naturally. If the site is flat or complicated, the drainage will be laid out before any other structures are made.

For foul drainage**,** the site currently has the Kiambu County Government sewer line serving the surrounding area passing through it. The proposed market facilities can therefore drain into this existing sewer line.

For storm water drainage, an adequate drainage infrastructure has been incorporated in the design.

1.12 Fire fighting

Fire fighting and detection systems will be installed in the proposed market based on the architectural design and fire risk assessment. Fire hose reels and fire extinguishers will be located in prime locations to ensure that quick response and corrective action when there is a fire outbreak. The equipment will be encased in cabinets with break glass to discourage theft. Smoke detectors in the stalls and heat detectors in the food cooking /serving areas will also be installed to ensure fires are detected early before spreading.

1.13 Garbage Disposal

A garbage collection point and procedure has been provided for the market. Garbage collection bins will be located in various parts of the market for collection of different waste streams including recyclable and non–recyclable materials. The market maintenance team will be responsible for collecting the waste in the waste bins for disposal into the main market waste receptacle. Dustbins and garbage will be within 25M-50M from the furthest user. The non-recyclable wastes will be collected by the County Government waste department for disposal at the dumpsites and recyclable wastes will be sold off to waste recyclers.

1.14 Ventilation

The market will mainly utilize natural ventilation from the doors and windows. The market design will incorporate restaurants, which necessitate ventilation of the kitchens. The air changes required per hour for the kitchens will be used to determine extract fan and duct sizes. UPVC pipe ducts can be used in place of aluminium ducts

to cut costs. This forced ventilation will provide a much more habitable work environment.

1.15 Power

A switch room with a meter board will be required for power distribution to the different stalls. Power requirement to the stalls will be calculated based on area and designated use. This will allow us to confirm whether the existing transformer will be sufficient to cater for the improved market. Power points will be installed in the market stalls to enable traders to connect their equipment and devices. There will be check meters for every stall for management purposes. Provisions for expansion will also be taken into consideration. Cabling to and from the switch room will be done by use of cable trays for efficient and neat cable management.

1.16 Lighting

External lighting:

For security reasons, movement of security guards and to explore the possibilities of 24 hour market operations, wall mounted lights and floodlights will be used to effectively light up the market.

Internal lighting:

The lighting levels in the stalls will be of a high standard of luminance. LED lights will be used to provide sufficient lighting. LED lights have a longer lifespan and reduce electricity bill as compared to other lighting methods. The number of light fittings will be dependent on the Architectural design.

1.17 Telecommunication systems

Access to internet is essential to have a modern market. ICT infrastructure will be provided for in the market to support the service provider. This will enhance communication between the buyers and sellers where orders can be placed online and to increase the trader‘s coverage.

1.18 Security

CCTV cameras located at strategic locations will be installed to help curb insecurity in the market area. With the inclusion of ICT infrastructure, the security system can be linked to an emergency backup service provider to ensure quick response.

The DVR and CCTV monitors will be located in the security room. Security lamps will be placed at 15M – 25M intervals.

1.19 Building Structures

Stalls: They will be simple to cut on construction costs. Need good ventilation; be clean, well-lit and sheltered from direct sunlight. They will be at least 2.4x3.0M.

Stores: will be lockable with the front wall either half or completely capable of opening up.

Burglarproof vents are made at least 2.1 M high on all sides. They may be constructed back to back with stalls.

Shops: they may be used for functions like tailoring, flower vending, groceries etc. a combination of two or three stalls can constitute a shop.

Meat stalls: All the openings to these stalls will be made insect proof and fly-trapped. The walls will be of concrete to prevent wear due to frequent scrubbing. Water, cold storage, good ventilation, security, showers and staff changing room will be provided.

Offices: these may include ticketing offices and administrative offices. The latter ought to be at a vantage point for ease of supervision of market activities.

Fences and perimeter walls: these shall aid revenue collection at the gate besides being security measures. A good fence will allow cross ventilation.

1.20 Roads and Walkways

Road widths will be as follows:

- Single lane road width 3.5 M;
- One-way road width 7M
- Two-way road width 12M

Parking areas will be 4.8M by 2.4M per car providing 2-5 spaces to the shoppers per $100M^2$ of sales area, the parking being not further than 100M from the market. Parking for pickups and trucks is 8M by 3.68M and 11M by 3.68 M respectively.

Width of sidewalks will not be more than 2.5 M and where roadside stalls are to be accommodated; will not be less than 5.2 M. Pedestrian walkways will be well drained, paved and shaded where possible. They will be at about 2.4M wide to allow for free walking as well as easy viewing of goods on sale.

1.21 Environmental Considerations

1.21.1 Water storage

In planning the construction, there will be adequate water storage in form of both underground and raised tanks. The size of these tanks will adequately provide the number of traders expected to be hosted by the market. This storage will come in two folds, both as storage for water to be used during fire emergencies within the market and water to be used during water shortages. The storage tanks infrastructure has been incorporated in the design

1.21.2 Common washing trough/point

A common washing point will be provided within the market with modern water conserving taps installed. This point will be away from the stalls and out in an open place within the market compound. This will ensure no water gets in the stalls which instead can lead to dampening the stalls and causing foul smell in the market.

Every trader will use this point to do any kind of washing, e.g. washing of fresh produce from the farm. A County worker or traders in a merry go round cleaning process will clean the washing point regularly.

1.21.3 Toilets

Modern toilets that would adequately serve the expected number of traders in the market will be constructed. The toilets will be connected to the existing sewer lines for a quality and perfect management of sewer. Sinks will be installed in the toilets and connected to tap water from the storage tanks. This will ensure high level of cleanliness and reduce chances of communicable diseases such as amoeba and cholera.

Toilets will also be located at a safe distance from the stalls and furthest from section where food products are sold. This reduces chances of flies moving back and forth both the food products and toilets, hence minimizing chances of diseases breaking out.

1.22 Solid Waste Management

1.22.1 Proposed effective ways of managing solid waste in Juja Market

Solid waste management will be a shared responsibility among all the stakeholders who are the County government, generators, shoppers, contracted and licensed waste handlers, owners and occupiers of premises.

1.22.2 Solid waste categorization and segregation

Solid waste that will be generated in the market will be divided into various categories depending on their physical or chemical characteristics and necessary manner of handling of such waste. This will provide measures to ensure the health and safety of all users, including waste handlers and the wellbeing of the environment. This will also be enhanced by division of thee stalls according to product and goods sold. Categories of solid waste to be produced in the market might include, and not limited to:

- Municipal waste- Waste that is majorly composed of solid material and mainly produced within a municipal region and area of high population.
- Market waste- As the name suggests, these are wastes that are produced within a market area and other areas of trading. They mainly compose of the dominant goods sold within a specific market.
- Agricultural/organic wastes- These are wastes that are mainly from farm products that are sold in a market, e.g. banana and orange peels, vegetable wastes and many other green farm produce wastes.
- E-waste- These are electronic wastes that are mainly left out after electronic appliances break down beyond repair. They compose of motherboards of radios, televisions sets and many more.
- Plastic waste and paper wastes- wastes from materials made of plastics. They mainly compose of polythene bags, plastic bottles, broken plastic chairs, tables, and many others.
- Junk waste- Junk waste is mainly waste from garages and car wash found around these markets. They mainly compose of old metals from old cars and repaired vehicles.
- Vehicle Service waste – this comprise of waste generated as a result of vehicle service which will include oil, filters, batteries, etc. that will be generated from the garages.

Kiambu County has come up with method to code litter bins, liner bags and other solid waste bags. This facilitates waste segregation at their points of generation i.e.

- Green liner container for organic wastes
- Blue liner container for plastic and paper wastes
- Brown liner container for any other waste

The following information will be clearly printed or marked of the liner bags, litter bins or containers:

- The name and logo of the service provider
    - Address and phone number of the service provider

Traders will keep every litter bin and refuse containers continuously covered when not in use so as to prevent any escape of its content thereof or any soakage into the ground. Traders will also ensure that the refuse containers and litter bins are kept reasonably clean and maintained in good conditions. Traders will also ensure safe and sanitary disposal of their wastes in the right refuse container. Traders and customers in these markets will be sensitized on solid waste management in order to enhance the level of awareness and knowledge of solid waste management and disposal to ensure that waste is managed in a manner which will protect human health and the environment against adverse effects, which may result from the waste.

Litter bins will be movable and with wheels, hence can be pushed down and up a ramp. This ensures safer movement of waste without spilling them on the ground. There will be a designated point where these bins will be kept ready for emptying into a truck managed by the Kiambu County Government or a licensed waste collector on a weekly or twice a week basis.

1.22.3 Access and point collection

Every stall shall be provided with a litter bin. The stalls shall then be serviced by a sweeper with a cart who exchanges empty bins for full ones and then empties the bins into a large container stationed in an area immediately adjacent to the market for collection by a lorry managed by the Kiambu County Government or a licensed waste collector.

1.23 ESIA Justification

In accordance with the EMCA, (Amendment) 2015, all new projects must undergo environmental impact assessment study so as to comply with the EIA Regulation, 2003. The proposed project is expected to have an overall positive impact to the people and the environment. However, project construction phases and other associated civil works are anticipated to have environmental and social impacts that would require mitigation.

Construction related project including markets are listed in the second schedule of EMCA, (Amendment) 2015 as among project that should undergo EIA. The magnitude

of the projects further justifies the EIA study to provide an Environmental Management Plan (EMP) for integration into implementation process. In addition, the National Policy on building and construction as well as the building Act calls for Environmental Impact Assessment on construction related projects for long-term sustainability and acceptability by the beneficiaries.

1.24 Project Cost

The project is estimated to cost Kenya Shillings, one hundred and seventy million, five hundred and eight thousand, eight hundred and fifty two (170,508,852) to construct while the cost of implementing ESMMP is estimated at Kenya Shillings, Nine Million Five Hundred Thousand (9,500,000.00). The following table 1-2 shows the summary cost estimate of the project.

Table 1-2: BoQ Cost Summary page

PPROPOSED CONSTRUCTION OF MARKET FOR NAIROBI METROPOLITAN SERVICES IMPROVEMENT PROJECT (NaMSIP) UNDER MINISTRY OF LAND, HOUSING AND URBAN DEVELOPMENT &NAIROBI METROPOLITAN DEVELOPMENT (NMED) JUJA MARKET

SEC NO.	Description	Page NO.		AMOUNT
	MAIN SUMMARY			
5	PRELIMINARIES	Page 5/29		32,496,250.00
6	RAP RELOCATION	Page 6/1		10,976,600.00
7	DEMOLITIONS	Page 7/1		125,000.00
8	GROUND FLOOR	Page 8/19		34,867,679.00
9	FIRST FLOOR	Page 9/17		36,888,100.00
10	ROOFING AND RAINWATER DISPOSAL	Page 10/5		18,603,450.00
11	GATES AND GATE HOUSES	Page 11/11		1,423,570.00
12	EXTERNAL WORKS	Page 12/30		14,660,203.00
13	DAYWORKS	Page 13/4		98,000.00
14	P.C AND PROVISIONAL SUMS	Page 14/1		4,400,000.00
15	ELECTRICAL INSTALLATIONS.	VOL 2		5,270,000.00
16	MECHANICAL INSTALLATIONS	VOL 3		10,700,000.00
	TOTAL CONSTRUCTION COST			170,508,852.00

1.24.1 Presentation of the report

The report is presented as outlined below:

Chapter 1: Introduction of the project which include Background, Scope of the proposed project. It also gives the format of the presentation of the report

Chapter 2: Gives the Objectives, Scope, and Methodology of the ESIA Study.

Chapter 3: Gives the Policy, Legal and Regulatory Framework Policy, Legal, Institutional and Administrative Framework.

Chapter 4: Project Baseline Information of the Study Area.

Chapter 5: Outcome of the Public Participation and Consultation process.

Chapter 6: Alternatives to the Project.

Chapter 7: Identification of Potential Impacts and mitigation measures of the project.

Chapter 8: Mitigation Measures of Potential Impacts of the Project.

Chapter 9: Environmental and Social Management and Monitoring Plan (ESMMP)

Chapter 10: Concludes the Project and recoups the core recommendations.

1.24.2 ESIA Study Team

The study team composed of members from different professional disciplines. The team members included:

- Environmental team leader
- Sociologist
- Environmental support staff.

CHAPTER TWO

2. ESIA OBJECTIVES, SCOPE AND METHODOLOGY

An environmental and social impact assessment has been undertaken to fulfill the legislative requirements of the Environmental Management and Coordination Act (Amendment), 2015 and the subsequent Kenya Gazette Supplement on Environmental Impact Assessment and Environmental Audit Regulations 2003.

The ESIA identifies potential positive and negative environmental, social, and economic impacts of the proposed project and proposed mitigation and measures.

The process in support of the preparation of the ESIA comprised of discussions and consultations with the proponent and stakeholders; initial site reconnaissance; desk study and literature review; preparation of data collection instruments; field visits for consultations and observations; data analysis and report writing.

2.1. Terms of Reference (TOR) for the ESIA Process

The following terms of reference for the proposed Juja Market Development Project were used by the ESIA expert team.

- Identification of both positive and negative impacts and the most appropriate interventions during construction and operation.
- Collection of baseline socio-economic data of the proposed project area and potential impact expected from project construction, implementation and operation from existing secondary data sources.
- Development of an environmental and social monitoring program (ESMP) during construction and operation and presentation of plans to minimize, mitigate, or eliminate negative effects and impacts.
- Description of implementation of ESMP.
- Identification and consultation with key stakeholders, facilitation of public consultation and conducting interviews with the proposed project beneficiaries.
- Collection of secondary data.
- Maintenance of all correspondences with NEMA relating to the ESIA including improvement orders in close consultation with the client.
- Acquisition of an Environmental and Social Impact Assessment License from NEMA.

In accordance with the EMCA, 1999, all new projects must undergo environmental impact assessment study such as to comply with the EIA Regulation, 2003 and to ensure provisions for environmental protection. Therefore, the main objective of environmental and social impact assessment associated with development of the proposed project is to comply with the current requirements of the EIA regulations of 2003 as established under the EMCA, 2015, in addition to the requirements of the World Bank (project financier) OP 4.01 requirements. Scope of the ESIA

The scope of ESIA study, therefore, covered the following key areas;

Provide a description of the environmental, social and economic issues associated with the proposed boreholes projects,

Undertaking public and stakeholder consultations in the process through interviews and meetings with stakeholders and the affected members of public,

Identification of anticipated environmental and social impacts with particular focus on social, economic and natural resources aspects,

Development of mitigation measures and an environmental management plan for identified environmental and social impacts. Preparation of ESIA Reports including a Project Report and ESIA Study Report for submission to NEMA, Obtain appropriate EIA Licenses from NEMA

2.2. ESIA APPROACH AND METHODOLOGY

In accordance to the ESIA guidelines, the study included the following:

- A clear description of the proposed project including its objectives, design concepts, proposed interventions and anticipated environmental and social impacts,
- Description of the baseline conditions in the project area to cover the physical location, environmental setting, social and economic issues,
- A description of the legal, policy and institutional framework within which the proposed market development project will be implemented,
- Description of the project alternatives and selection criteria,
- Details of the anticipated impacts to the environment, social and economic aspects of the area covered by the project.
- Appropriate mitigation and/or corrective measures,
- Development of an environmental and social management plan (ESMP) presenting the project activities, potential impacts, mitigation measures and responsibilities, associated costs and monitoring indicators.

2.3. Approach

According to the Environmental Management and Coordination Act (EMCA), 2015, section 58 requires that all projects falling under the second schedule of the Act must undergo comprehensive environmental and social impact assessment studies. ESIA study should also comply with the EIA Regulations of 2003 on the minimum and other convectional environmental guidelines. ESIA studies are adopted as integrated approach where desk documentary reviews, field investigations, consultations as well as interviews and discussions with stakeholders and affected communities are considered. The overall study was undertaken following these stages;

2.4. Environmental Screening

Screening process was undertaken to decide whether the proposed CRS project needed to be subjected to an ESIA study or not. Based on literature review, the proposed project falls under category 2 of projects to be subjected to EISA study as provided for by the second schedule of the Environmental Management and Coordination Act of 2015 and Category B under the World Bank Environmental and Social Safeguards Policies as defined in the Bank's Operational Procedures (OPs).

2.5. Environmental Scoping

The aim of this stage was to ensure that the ESIA study adequately addresses all the crucial issues of environmental and social concern to the decision-makers. This was done by narrowing down on the proposed Market Development project issues and also to those requiring detailed analysis. The process involved dialogue with all project stakeholders so as to ensure that this aim was fulfilled. It also involved the collection of primary and secondary data. From an evaluation of this data, a rapid assessment of the project site and its surrounding areas was made.

The key benefits of scoping include:

- Identification and engagement of key stakeholders
- Identification of the existing gaps
- Ensures that the assessment focuses on the key likely environmental and social impacts

2.6. Documentary Review

Several relevant documents were reviewed for a clear understanding of the terms of reference, environmental status of the project area, data on demographic trends (for

the project area, the beneficiary areas and the adjoining towns and counties), land use practices in the affected areas, development strategies and plans (Local, National and International) as well as the policy, legal and institutional documents. The documents reviewed were:

- Interdisciplinary Land-Use and Transport Metropolitan Analysis within the Nairobi Metropolitan Region (ILUT) Report which had Detailed Design Report for the Proposed CRS Project Sites.
- Relevant Legal, Policy and Regulatory documents;
- EMCA (Amendment), 2015
- Nairobi Integrated Urban Development Master Plan for the City of Nairobi
- Kenya National Bureau of Statistics, 2009

2.7. Site Assessment

A physical inspection of the ground (proposed site and their surrounding environment) was conducted. This process was meant to appreciate the project's scope of land requirements, and establish actual baseline as well as verification of facts stated for project designs. This was done with an aim of establishing the anticipated positive and negative impacts on the physical and biological environment (hydrology, climatic patterns and geology), social and economic trends (population trends, settlement trends, economic patterns, cultural setting and linkages, land ownership issues, etc.) and the project affected persons (PAPs) and beneficiaries.

Specific objectives of the field assessment included:

- Obtaining any available information and data from the local public offices including environment, water, lands and agriculture.
- Evaluating the environmental setting around the proposed site - observations were focused on the topography, land tenure, surface and ground water sources, public amenities, land cover, climate, flora and fauna, soils, etc.
- Undertaking comprehensive consultative public participation exercises so as to reach a large section of the affected persons as well as other stakeholders. Public consultations were also organized with the stakeholders to evaluating the environmental setting around the proposed site - observations were focused on the topography, land tenure, surface and ground water sources, public amenities, land cover, climate, flora and fauna, soils, etc.
- Evaluate social, economic and cultural settings in the entire project site.

2.8. Socio-Economic Survey

A socio-economic survey undertaken around the project area of influence affected and/or benefit from the project. The main tools of the survey were questionnaires, which sampled Kiambu County Government, Juja Business Community, Kenya National Police, NaMSIP, and Businesses within 500m from the project site and Traders at the Juja Market. The main aim of conducting the surveys was to gather information regarding the anticipated socio-economic and environmental impacts due to proposed project. The data collected was analyzed with the help of summaries made by SPSS software. The findings have been presented using charts, tables and graphs as shown on Chapter 4 of this report.

2.9. Public Participation

It is a Government policy that beneficiaries and members of the public living near new or improvement project sites (both public and private) are consulted to seek their views and opinions regarding the projects before they are implemented.

Interaction with the stakeholders and communities living around the project area was undertaken through public participation and consultation. Through this process, the stakeholders had an opportunity to contribute to the overall project design by making recommendations and raising any environmental and social concerns of the project. In addition, the process aimed at creating a sense of responsibility, commitment and local ownership for smooth implementation of the project.

2.10. Impact Assessment and Mitigation Measures

The primary function of an environmental impact assessment study is to predict and quantify potential impacts, assess and evaluate the magnitude and their importance to develop an Environmental and Social management plan to mitigate the impacts. Environmental impacts could be positive or negative, direct or indirect, local or regional and also reversible or irreversible. Assessment of impacts depends on the nature and magnitude of the activity being undertaken and on the type of mitigation measures that are envisaged as part of the project proposal.

For the proposed project, the anticipated impacts are divided into three components of the project: impacts based on Project Location, impacts during Construction phase, and impacts during De-commissioning and Operational phases. The identified positive and negative impacts of the project are presented in Chapter 7 of this report.

2.11. Environmental and social Management and Monitoring Plan (ESMMP)

The Consultants have developed an Environmental and social Management and Monitoring Plan (ESMMP) to guide the project team in eliminating or reducing the project impacts to acceptable minimum/ standards. The ESMMP is based on good environmental practices of project implementation and safety of the operations. The proposed ESMMP can be improved through continuous monitoring and audits during project implementation. The plan is provided in a matrix form in Chapter 9 of this report and it identifies the anticipated impact; proposed measures to be undertaken; monitoring indicators; the party responsible for implement the measures, and the estimated cost likely to be incurred to undertake the measures.

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CHAPTER THREE

3. POLICY, LEGAL AND ADMINISTRATIVE POLICY, LEGAL AND ADMINISTRATIVE FRAMEWORK

This chapter outlines the policy, legal, regulatory and institutional framework in Kenya particularly for environmental management, protection and assessment applicable to the proposed Project. The Project will be subject to laws, regulations, guidelines and standards of the Government of Kenya and international institutions (IFC/World Bank). Note that wherever any of the laws contradict each other, the Environmental Management and Coordination Act (EMCA) prevails.

3.1. Government of Kenya Policy Framework

Applications of national statutes and regulations on environmental conservation suggest that the owner of any project has a legal duty and responsibility to discharge wastes of acceptable quality to the receiving environment without compromising public health and safety. This position enhances the importance of an EIA for the proposed extension project to provide a benchmark for its sustainable operation when finally commissioned. Juja market project complies with government policy framework by the act of the proponent conducting ESIA study before initiating any civil works on the project.

The Constitution of Kenya 2010

The Constitution of Kenya, promulgated into law on 27 September 2010, is the supreme law of the Republic: It provides the broad framework regulating present and future development aspects of Kenya and along which all national and sectoral legislative documents are drawn.

With regard to environment, Section 42 inside the Bill of Rights of the Constitution, states that: every person has the right to a clean and healthy environment, which includes the right to have the environment protected for the benefit of present and future generations through legislative and other measures; particularly those contemplated in Article 69; and to have obligations relating to the environment fulfilled under Article 70.

Chapter 5 of the new constitution provides the main pillars on which the 77 environmental statutes are hinged and covers "Land and Environment" and includes the aforementioned articles 69 and 70. Part 1 of the Chapter dwells on land, outlining the principles informing land policy, land classification as well as land use and property.

Part 2 of the Chapter directs focus on the environment and natural resources. It provides for a clear outline of the state's obligation with respect to the environment. The Chapter seeks to eliminate processes & activities likely to endanger the environment.

Article 69 states that the State shall:

- Ensure sustainable exploitation, utilization, management and conservation of the environment and natural resources, and ensure the equitable sharing of the accruing benefits;
- Work to achieve and maintain a tree cover of at least ten percent of the land area of Kenya;
- Protect and enhance intellectual property in, and indigenous knowledge of, biodiversity and the genetic resources of the communities;
- Encourage public participation in the management, protection and conservation of the environment;
- Protect genetic resources and biological diversity;
- Establish systems on environmental impact assessment, environmental audit and monitoring of the environment;
- Eliminate processes and activities that are likely to endanger the environment; and,
- Utilize the environment and natural resources for the benefit of the people of Kenya.

There are further provisions on enforcement of environmental rights as well as establishment of legislation relating to the environment in accordance to the guidelines provided in this Chapter.

In conformity with the Constitution of Kenya 2010, every activity or project undertaken within the Republic of Kenya must be in tandem with the state's vision for the national environment as well as adherence to the right of every individual to a clean and healthy environment.

Section 70 provides for enforcement of environmental rights thus:-:

- If a person alleges that a right to a clean and healthy environment recognized and protected under Article 42 has been, is being or is likely to be, denied, violated, infringed or threatened, the person may apply to a court for redress in addition to any other legal remedies that are available in respect to the same matter.
- On application under clause (1), the court may make any order, or give any directions, it considers appropriate.

- to prevent, stop or discontinue any act or omission that is harmful to the environment; (b) to compel any public officer to take measures to prevent or discontinue any act or omission that is harmful to the environment; or
- To provide compensation for any victim of a violation of the right to a clean and healthy environment.
- For the purposes of this Article, an applicant does not have to demonstrate that any person has incurred loss or suffered injury.

Essentially, the New Constitution has embraced and provided further anchorage to the spirit and letter of the Environmental Management and Co-ordination Act (EMCA), 1999, whose requirements for environmental protection and management have largely informed Sections 69 through to 71 of the Document. In Section 72 however, the new constitution allows for enactment of laws towards enforcement of any new provisions of the Supreme Law. The proposed project complies with the Constitution by proposing a framework in its ESIA on Social, Health, safety and environmental protection

3.1.1. The Kenya Vision 2030

Kenya Vision 2030 is the country's development programme from 2008 to 2030. It was launched on 10 June 2008 by President Mwai Kibaki with the aim to help transform Kenya into a newly industrializing, middle-income country with a consistent annual growth of 10 % by 2030. Developed through an all-inclusive and participatory stakeholder consultative process, involving Kenyans from all parts of the country, the Vision is based on three "pillars": Economic, Social, and Political. The 2030 goal for urban areas, to reach “a well-housed population living in an environmentally-secure urban environment in particular, will be achieved by bringing basic infrastructure and services namely roads, street lights, water and sanitation facilities, storm water drains, footpaths, and others. It is likewise important the promotion of: environmental conservation and pollution and waste management, through the application of the right economic incentives in development initiatives.

Under the first Medium-Term Plan (MTP-1) (2008-12) of Kenya’s Vision 2030 strategy, significant efforts were made to promote growth and preserve sound economic policies under challenging circumstances. While reforms were being implemented across the board during 2008-12, the biggest achievements under MTP-1, as noted in the MTP-2, were in improving infrastructure as well as some social indicators, such as school enrolment rates. Though short of the targets set in MTP-1, average annual GDP growth reached 3.8 percent despite the impact of repeated

droughts, high international commodity prices, the global financial and economic crisis, and political uncertainty in the run up to the 2013 general elections. Furthermore 2.7 million jobs were created between 2008 and 2012 compared with an objective of 3.3 million.

Kenya's second Medium Term Plan (MTP-2) covers the 2013-2017 period. It seeks to build on the successes of the MTP 1, including macroeconomic stability, the enactment of the 2010 Constitution, infrastructure development, the growth of the services sector, and improved access to education. At the same time, it recognizes remaining challenges, including a low and declining share of manufacturing, low agricultural productivity, high energy costs, a still limited transport infrastructure, a narrow export base, and major economic and social disparities across the country. The MTP-2 aims to continue the positive trend in areas where substantial progress was achieved, as well as to increase attention on areas where progress was slower while keeping the same priority sectors.

The overall objectives of the MTP-2 are to accelerate growth to reach double-digit levels, to create jobs for the Kenyan youth, and to further reduce the still high poverty levels. The key thematic areas that seek to describe how these objectives will be achieved are: (I) the foundations for national transformation, which cover a broad range of areas including infrastructure, information technology, employment policies, land reform, ending drought emergencies, public sector reform, and national security; (ii) the economic pillar, which identifies the seven sectors that are expected to spur faster growth; (iii) the social pillar; and (iv) the political pillar.

By promoting investment in the priority sectors identified under the Economic Pillar2, Vision 2030 seeks to achieve and sustain annual GDP growth rate at 10% up to 2030 and thereby generating resources required to address other SDGs. This creates the urgent need of investing in both Flagship Projects and requisite infrastructure.

The realization of the proposed project is a step towards realizing the Vision 2030 as provision of trading infrastructure that will create employment for the Kenyan population and spur economic growth for the country.

3.1.2. Nairobi metro 2030

Nairobi Metro 2030 was developed in the year 2008 to provide a guide for the NMR play its role in the National growth strategies under the Kenya Vision 2030. It is a transitional document that brings into focus challenges faced under urban growth and development. The document provides forum to achieve sustained rates of economic

growth necessary for successful economic and social development. The Metro 2030 provides links with the Central Government through Kenya Vision 2030 and other development plans as well as seeking to strengthen the Local Authorities as part of the devolvement of power and recognizing need for ensuring efficient and effective management of resources at the grassroots.

Nairobi Metro 2030 carries the vision for Nairobi Metropolitan Region to be a World Class African Metropolis supportive to the overall national agenda under the Kenya Vision 2030. The agenda to achieve this vision is the need to enhance mechanisms for economic growth, employment creation, improved lifestyles and improved infrastructure. Therefore, the proposed project contributes to the Nairobi Metro 2030 by providing development that will contribute to the economic and employment growth within the metropolitan.

3.1.3. The Sustainable Development Goals

The 2030 Agenda comprises 17 new Sustainable Development Goals (SDGs), or Global Goals, which will guide policy and funding for the next 15 years, beginning with a historic pledge to end poverty.

The concept of the SDGs was born at the United Nations Conference on Sustainable Development, Rio+20, in 2012. The objective was to produce a set of universally applicable goals that balances the three dimensions of sustainable development: environmental, social, and economic.

The Global Goals replace the Millennium Development Goals (MDGs), which in September 2000 rallied the world around a common 15-year agenda to tackle the indignity of poverty.

The MDGs established measurable, universally-agreed objectives for eradicating extreme poverty and hunger, preventing deadly but treatable disease, and expanding educational opportunities to all children, among other development imperatives.

The MDGs drove progress in several important areas:

- Income
- Poverty
- Access to improved sources of water
- Primary school enrolment
- Child mortality

With the job unfinished for millions of people—we need to go the last mile on ending hunger, achieving full gender equality, improving health services and getting every child into school. Now we must shift the world onto a sustainable path. The Global Goals aim to do just that, with 2030 as the target date.

This new development agenda applies to all countries, promotes peaceful and inclusive societies, creates better jobs and tackles the environmental challenges of our time—particularly climate change.

Nationally, the GOK has taken bold steps to domesticate the SDGs as illustrated by:

- Investment in the Poverty Reduction Strategy Paper (PRSP) process through which participatory mapping of poverty incidence at both District and National Level was undertaken,
- Implementation of the Economic Recovery Strategy for Wealth and Employment Creation, and
- Implementation of projects that directly confront specific aspects of the SDGs. By anchoring the Economic Pillar of Vision 2030 which seeks to generate resources needed to address SDGs, implementation development of the proposed project is attuned to the national and indeed global agenda for economic and social development. Juja market project contributes to the policy by creating direct and indirect employment opportunities for many people that be served by the operation of the market.

3.2. Legal and Regulatory Framework for Environment

3.2.1. The Environment Management and Coordination Act No 8, 1999 and the relative Amendment Act No 5, 2015

The Environment Management and Co-ordination (Amendment) Act 2015 No 5 of 2015 was effective on the 17th June 2015 to amend the Environmental Management and Co-ordination Act 1999. The Act has aligned EMCA Act 1999 with the Constitution of Kenya (2010) to include new structures that the Constitution of Kenya 2012 created particularly entrenchment of county government in environment and natural resource management.

The EMCA is an act of Parliament that provides for the establishment of an appropriate legal and institutional framework for the management of the environment and for matters connected therewith and incidental thereto.

The Act further aims to improve the legal and administrative co-ordination of the diverse sectoral initiatives in the field of environment so as to enhance the national

capacity for its effective management. In addition Act seeks to harmonize all the 77 sector specific legislation touching on the environment in a manner designed to ensure protection of the environment.

As the principal environmental legislation in Kenya, EMCA sets the legal framework for environmental management basically as follows:-

Part II of the Act states that every person in Kenya is entitled to a clean and healthy environment and has the duty to safeguard and enhance the environment.

In order to ensure the achievement, part VI of the same Act directs that any proponent of a new project, activity or operation should undertake an Environmental Impact Assessment (EIA) and a report prepared for submission to the National Environmental Management Authority (NEMA), who in turn may issue a license as appropriate; while projects already in place will undertake annual Environmental Audits (EA).

Section 58 of the Environmental Law requires that notwithstanding any approval, permit or license 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, proceed carried out, executed or conducted by another person for any undertaking specified in the second schedule to this Act, submit a project report to the Authority in the prescribed form, giving the prescribed information and shall be accompanied by the prescribed fee.

Section 68 and 69 of EMCA requires all on-going projects to conduct an EA with a view to finding out if the processes and activities have any negative impacts on the environment and to propose any mitigation measures to counter such impacts .EA are further expounded in Regulation 35 (1) and (2) of Legal Notice 101 of June 2003.

Under EMCA 2015, NEMA has gazette legal tools that govern how EIAs are conducted and general environmental protection. These guidelines are captured in the Contracts for Construction to ensure that contractors are legally bound to undertake mitigation alongside general construction work.

Under EMCA, NEMA has gazette legal tools that govern conduct of EIAs and general environmental protection. The Proposed project by the NaMSIP falls under the requirement of this Act, and has been screened against these tools with results that (table below) five of the tools will be triggered.

Table 3-1: Analysis of the Project triggers to the EMCA and its tools.

Legal Tool	Status	Trigger mechanism

EIA and Audit regulations	Triggered	EIA Study has to conform to these rules
Waste Management Rules	Triggered	Construction likely to generate solid waste
Water Quality rules	Triggered	Water for construction will be drawn from rivers or other sources and have to adhere to ensuring water quality is observed
Conservation of Biodiversity regulations	Not triggered	These regulations focus more on benefit sharing in biodiversity conservation.
National Sand Harvesting Rules	Triggered	Construction works will require concrete mixture which shall include sand
Environmental Management and Coordination (Noise and Excessive Vibration Pollution) (Control) Regulations, 2009 Legal Notice No. 61:	Triggered	Both construction activities and construction equipment likely to generate noise
Air Quality Regulation (2014)	Triggered	Both construction activities and construction equipment likely to generate air pollution

In particular, specifications of these guidelines would require to be captured in the Contracts for Construction to ensure that contractors are legally bound to undertake mitigation alongside general construction work. The EMCA Tools likely to be triggered by the proposed construction of the proposed project are briefly reviewed below.

3.2.2. Environmental Impact Assessment and Audit Regulations, 2003

Environmental impact Assessment (EIA) is a tool for environmental conservation and has been identified as a key component in new project implementation. At the national level, Kenya has put into place necessary legislation that requires EIA be carried out on every new project, activity or programme (EMCA), and a report submitted to the National Environmental Management Authority (NEMA) for approval and issuance of

relevant certificates. These Regulations provide procedures for conducting an EIA study and detail the parameters to be evaluated during the study. It also provides guidelines on the payment of the EIA license fees, conducting environmental audits and development of project monitoring plans.

In particular, specifications of these guidelines indicate that no proponent should implement a project which can have a negative environmental impact.

This ESIA report has been undertaken in accordance with the Environment (Impact Assessment and Audit) regulation 2003, which operationalizes the Environment Management & Coordination Act (EMCA) 1999 and its subsequent amendment, the Environmental Management and Coordination Act (Amendment), 2015. The report is prepared in conformity with the requirements stipulated in the Act and its amendment and the Environmental Impact Assessment and Audit regulations 2003 regulation7 (1) and the second schedule.

3.2.2.1. Environmental Management and Coordination Act (Waste Management) Regulations, 2006

The regulations provide details on management (handling, storage, transportation, treatment and disposal) of various waste streams including:

- Domestic waste
- Industrial waste,
- Hazardous and toxic waste
- Pesticides and toxic substances
- Biomedical wastes
- Radioactive waste

Regulation No.4 (1) makes it an offence for any person to dispose of any waste on a public highway, street, road, recreational area or in any public place except in a designated waste receptacle.

Regulation 5 (1) provides categories of cleaner production methods that should be adopted by waste generators in order to minimize the amount of waste generated and they include:

- Improvement of production process through:
- Conserving raw materials and energy
- Eliminating the use of toxic raw materials and waste
- Reducing toxic emissions and wastes
- Monitoring the product cycle from beginning to end by:

- Identifying and eliminating potential negative impacts of the product
- Enabling the recovery and re-use of the product where possible
- Reclamation and recycling
- Incorporating environmental concerns in the design and disposal of a product.

The Proponent shall ensure that the main contractor adopts and implements all possible cleaner production methods during the construction phase of the project.
Regulation 6 requires waste generators to segregate waste by separating hazardous waste from non- hazardous waste for appropriate disposal.
Regulation 14 (1) requires every trade or industrial undertaking to install at its premises anti-pollution equipment for the treatment of waste emanating from such trade or industrial undertaking.
Regulation 15 prohibits any industry from discharging or disposing of any untreated waste in any state into the environment.
Regulation 17 (1) makes it an offence for any person to engage in any activity likely to generate any hazardous waste without a valid Environmental Impact Assessment license issued by NEMA.
Regulation 18 requires all generators of hazardous waste to ensure that every container or package for storing such waste is fixed with a label containing the following information:

- The identity of the hazardous waste
- The name and address of the generator of waste
- The net contents
- The normal storage stability and methods of storage
- The name and percentage of weight of active ingredients and names and percentages of weights of other ingredients or half-life of radioactive material
- Warning or caution statements which may include any of the following as appropriate.
- the words "WARNING" or "CAUTION";
- the word "POISON" (marked indelibly in red on a contrasting background;
- The words "DANGER! KEEP AWAY / NO ENTRY FOR UNAUTHORIZED PERSONS";
- A pictogram of a skull and crossbones.

Regulation 19 (1) requires every person who generates toxic or hazardous waste to treat or cause to be treated such hazardous waste.

During the construction phase of the project, the Proponent shall ensure that the main contractor implements the above mentioned measures as necessary to enhance sound environmental management of waste.

3.2.2.2. Environmental Management and Coordination Act (water quality) Regulation 2006

The Regulations provides for sustainable management of water resources including prevention of water pollution and protection of water sources (lakes, rivers, streams,' springs, wells and other water sources).

It is an offence under Regulation No.4 (2), for any person to throw or cause to flow into or near a water resource any liquid, solid or gaseous substance or deposit any such substance in or near it, as to cause pollution.

Regulation No. 11 further makes it an offence for any person to discharge or apply any poison, toxic, noxious or obstructing matter, radioactive waste or other pollutants or permit the dumping or discharge of such matter into the aquatic environment unless such discharge, poison, toxic, noxious or obstructing matter, radioactive waste or pollutant complies with the standards for effluent discharge into the environment

Regulation No. 14 (1) requires every licensed person generating and discharging effluent into the environment to carry out daily effluent discharge quality and quantity monitoring and to submit quarterly records of such monitoring to the Authority or its designated representatives.

The proponent will have to ensure that appropriate measures to prevent pollution of underground and surface water sources are implemented throughout the project cycle.

Wastewater guidelines

Part of the study involves a review of the environmental standards that provides a basis for monitoring and future audits. The table below presents recommended guidelines on wastewater quality for discharge into the public sewers and open water bodies.

Table 3-2: Kenya discharge Guidelines for Waste water

- Standards for Discharge into public sewers (mg/l)

PARAMETER	Maximum levels permissible
Suspended solids (mg/L)	250
Total dissolved solids (mg/L)	2000
Temperature 0C	20 - 35
pH	06-Sep
Oil and Grease (mg/L) -where conventional treatment shall be used	10

Oil and Grease (mg/L)- where ponds is a final treatment method	5
Ammonia Nitrogen (mg/L)	20
Substances with an obnoxious smell	Shall not be discharged into the sewers
Biological Oxygen Demand BOD5 days at 20 oC (mg/L)	500
Chemical Oxygen Demand COD (mg/L)	1000
Arsenic (mg/L)	0.02
Mercury (mg/L)	0.05
Lead (mg/L)	1
Cadmium (mg/L)	0.5
Chromium VI (mg/L)	0.05
Chromium (Total) (mg/L)	2
Copper (mg/L)	1
Zinc (mg/L)	5
Selenium (mg/L)	0.2
Nickel (mg/L)	3
Nitrates (mg/L)	20
Phosphates (mg/L)	30
Cyanide Total (mg/L)	2
Sulphide (mg/L)	2
Phenols (mg/L)	10
Detergents (mg/L)	15
Color	Less than 40 Hazen units
Alkyl Mercury	Not Detectable (nd)
Free and saline Ammonia as N (mg/L)	4
Calcium Carbide	Nil
Chloroform	Nil
Inflammable solvents	Nil
Radioactive residues	Nil
Degreasing solvents of mono-di-trichloroethylene type	Nil

- Standards for Discharge into Environment (Water body)

Parameter	Max. Allowable(Limits)
1,1,1-trichloroethane (mg/l)	3
1,1,2-trichloethane (mg/l)	0.06
1,1-dichloroethylene	0.2
1,2-dichloroethane	0.04
1,3-dichloropropene (mg/l)	0.02
Alkyl Mercury compounds	Nd

Ammonia, ammonium compounds, NO3 compounds and NO2 compounds (Sum total of ammonia-N times 4 plus nitrate-N and Nitrite-N) (mg/l)	100
Arsenic (mg/l)	0.02
Arsenic and its compounds (mg/l)	0.1
Benzene (mg/l)	0.1
Biochemical Oxygen Demand (BOD 5days at 20 oC) (mg/l)	30
Boron (mg/l)	1
Boron and its compounds – non marine (mg/l)	10
Boron and its compounds –marine (mg/l)	30
Cadmium (mg/l)	0.01
Cadmium and its compounds (mg/l)	0.1
Carbon tetrachloride	0.02
Chemical Oxygen Demand (COD (mg/l)	50
Chromium VI (mg/l)	0.05
Chloride (mg/l)	250
Chlorine free residue	0.1
Chromium total	2
cis –1,2- dichloro ethylene	0.4
Copper (mg/l)	1
Dichloromethane (mg/l)	0.2
Dissolved iron (mg/l)	10
Dissolved Manganese(mg/l)	10
E.coli (Counts / 100 ml)	Nil
Fluoride (mg/l)	1.5
Fluoride and its compounds (marine and non-marine) (mg/l)	8
Lead (mg/l)	0.01
Lead and its compounds (mg/l)	0.1
n-Hexane extracts (animal and vegetable fats) (mg/l)	30
n-Hexane extracts (mineral oil) (mg/l)	5
Oil and grease	Nil
Organo-Phosphorus compounds (parathion,methyl parathion,methyl demeton and Ethyl parantrophenyl phenylphosphorothroate, EPN only) (mg/l)	1
Polychlorinated biphenyls, PCBs (mg/l)	0.003
pH (Hydrogen ion activity----marine)	5.0-9.0
pH (Hydrogen ion activity--non marine)	6.5-8.5
Phenols (mg/l)	0.00 1

Selenium (mg/l)	0.01
Selenium and its compounds (mg/l)	0.1
Hexavalent Chromium VI compounds (mg/l)	0.5
Sulphide (mg/l)	0.1
Simazine (mg/l)	0.03
Total Suspended Solids, (mg/l)	30
Tetrachloroethylene (mg/l)	0.1
Thiobencarb (mg/l)	0.1
Temperature (in degrees celious) based on ambient temperature	± 3
Thiram (mg/l)	0.06
Total coliforms (counts /100 ml)	30
Total Cyanogen (mg/l)	Nd
Total Nickel (mg/l)	0.3
Total Dissolved solids (mg/l)	1200
Colour in Hazen Units (H.U)	15
Detergents (mg/l)	Nil
Total mercury (mg/l)	0.005
Trichloroethylene (mg/l)	0.3
Zinc (mg/l)	0.5
Whole effluent toxicity	
Total Phosphorus (mg/l)	2 Guideline value
Total Nitrogen	2 Guideline value

Sources: EMC (Water Quality) Regulations, 2006.

3.2.2.3. Air Quality Regulation, 2014

This regulation is referred to as "The Environmental Management and Coordination (Air Quality) Regulations, 2014". The objective is to provide for prevention, control and abatement of air pollution to ensure clean and healthy ambient air.

It provides for the establishment of emission standards for various sources, including as mobile sources (e.g. motor vehicles) and stationary sources (e.g. industries) as outlined in the Environmental Management and Coordination Act, 1999. It also covers any other air pollution source as may be determined by the Minister in consultation with the Authority. Emission limits for various areas and facilities have been set.

The Regulations prohibits the Proponent from:

- Acting in a way that directly or indirectly cause or may cause air pollution to exceed levels set out in the second Schedule to the Regulations.
- Allowing particulates emissions into the atmosphere from any source not listed in the six schedule of the Regulations.

- Causing ambient air quality in controlled areas (listed in Schedule Thirteen) to exceed those stipulated under second Schedule.
- Allowing (during construction and demolition) emission of particulate matter above the limits stipulated in second Schedule.
- Causing or allowing stockpiling or storage of material in a manner likely to cause air pollution.
- Causing or allowing emissions of oxides of nitrogen in excess of those stipulated in the eleventh Schedule of the Regulation.

The Proponent shall observe policy and regulatory requirements and implement the mitigation measures proposed in this document in an effort to comply with the provisions of these Regulations on abatement of air pollution.

3.2.2.4. Environmental Management and Coordination Act (Noise and Excessive Vibrations Pollution Control) Regulations, 2009

The regulations define noise as any undesirable sound that is intrinsically objectionable or that may cause adverse effects on human health or the environment. The regulations prohibit any person from making or causing to be made any loud, unreasonable, unnecessary or unusual noise which annoys, disturbs, injures or endangers the comfort, repose, health or safety of others and the environment.

Article 13 2(d) of the regulations allows for construction work at night for public utility construction, construction of public works, projects exclusively relating to roads, bridges, airports, public schools and sidewalks, provided noise generated is not caused within a residential building or across a residential real property boundary where such noise interferes with the comfort, repose, or safety of the members of the public. The second Schedule of the Regulations provides for the maximum permissible level of noise at construction sites.

Table 3-3: Maximum permissible noise levels for construction sites (measurement taken within the facility)

Facility		Maximum Noise level permitted (leq) in dB (A)	
		Day (6.01am-6.00pm)	Night (6.01 pm-6.00am)
(i)	Health facilities, educational institutions, homes for disabled and residential areas	60	35
(ii)	Residential	60	35
(iii)	Areas other than those prescribed in (i) and (ii)	75	65

Under section 15, the Regulations require the Proponent during EIA studies to:

- Identify natural resources, land uses or activities which may be affected by noise or excessive vibrations from construction or demolition;
- Determine the measures which are needed in the plans and specifications to minimize or eliminate adverse construction or demolition noise or vibration impacts
- Incorporate the needed abatement measures in the plans and specifications.

It is anticipated that the proposed project will generate noise and/or vibration during the construction phase that will originate from the construction equipment, vehicles and the workers since the project neighbors homesteads and businesses in some sections. It is therefore recommended that the construction team develops mitigations to reduce noise propagation in the project area.

The provisions of this Act will be applied by the Proponent in the management of the project where the contractor will be required to adhere to the provisions of this regulation.

Noise guidelines

The following guidelines will be used to monitor noise levels, especially during the construction stage of the project.

Table 3-4 Comparison between WHO and NEMA Noise Guidelines

Specific Environment	Critical Health Effects	LAeq dB(A) WHO	Time base (hours)	LAeq dB(A) NEMA	Time base (hours)
Outdoor living area	Serious annoyance Moderate annoyance	55 50	16 16	45 35	14 14
Indoor dwelling Inside bedroom	Speech interference Sleep disturbance	35 30	16 8	-	-
Outdoor bedroom	Sleep disturbance	45	8	35	-
School classroom Indoor	Speech and communication	35	During class time	Day 60 Night 35	14 14
School playground outdoor	Annoyance External	55	During play	45	Day
Hospital, treatment room indoor	night time daytime	30 30	8 16	-	-
Industrial, Commercial and traffic areas	Hearing impairment	70	24	60	12

Ceremonies, festivals entertainment events	Hearing impairment	100	4	-	-

The provisions of this Act will be applied by the Proponent in the management of the project where the contractor will be required to adhere to the guidelines to reduce the possibility of adverse noise and vibration impacts to human health. The regulation stipulates that the acceptable standard day and night noise levels should not exceed 65dBa and 45 dB respectively.

3.3. World Bank Environmental and Social Safeguard Policies

Like in any project financed by, or with financial participation of, the World Bank, the environmental and social safeguards as defined in the Bank's Operational Procedures (OPs) will be respected for the purposes of this project implementation. WB classifies its projects into four Environmental Assessment categories according to the likely impacts on the environment they will have. This classification is as follows (only main conditions mentioned):

- Category A: A proposed project is classified as Category A if it is likely to have significant adverse environmental impacts.
- Category B: A proposed project is classified as Category B if it's potential adverse environmental impacts on human populations or environmentally important areas—including wetlands, forests, grasslands, and other natural habitats—are less adverse than those of Category a projects. These impacts are site-specific; few if any of them are irreversible; and in most cases mitigation measures can be designed more readily than for Category A projects. *This particular NaMSIP subproject has been categorized as B.*
- Category C: A proposed project is classified as Category C if it is likely to have minimal or no adverse environmental impacts. Beyond screening, no further environmental assessment action is required for a Category C project.
- Category FI: A proposed project is classified as Category FI if it involves investment of Bank funds through a financial intermediary, in subprojects that may result in adverse environmental impacts; this case, in any way, is not applicable to the NaMSIP project.

By virtue of source of funding, the proposed development of the market by the Ministry of Land, Housing and Urban Development, and Nairobi Metropolitan Development

under the NaMSIP is also subject to World Bank requirements for impact assessment. As such, this Project Report study has been formulated to address and cater for both Kenyan and World Bank requirements for impact assessment. World Bank projects and activities are governed by Operational Policies, which are clearly spelt out in the Bank's Operational Manual ("Bank Procedures" and "Good Practices"). The World Bank's safeguard policies are designed to ensure that projects proposed for Bank financing are environmentally and socially sustainable, and thus improve decision-making. These operational policies include:

- OP 4.01 Environmental Assessment;
- OP 4.04 Natural Habitats;
- OP 4.09 Pest Management ;
- OP 4.11 Cultural Heritage;
- OP 4.12 Involuntary Resettlement;
- OP 4.10 Indigenous People;
- OP 4.36 Forests;
- OP 4.37 Safety of Dams;
- OP 7.50 Projects on International Waterways ;
- OP 7.60 Projects in Disputed Areas.

The table below shows the applicability of World Bank Operational Policies to the proposed project.

Table 3-5: Analysis of potential triggers to World Bank Safeguards Policies

OP	Title	Comments/Impact
4.01	Environmental Assessment	Applicable. As a result of environmental and social screening, the project was identified as a Category B
4.04	Natural Habitats	Not applicable - there no natural habitats at the project site
4.09	Pest Management	Not applicable- the project will not involve any pest management
4.10	Indigenous Peoples	Not applicable- there are no indigenous people at the site or project area
4.11	Physical Cultural Resources	Not applicable. Site inspections and literature searches have not indicated the presence of any cultural (historical, archaeological) sites in the construction area. However, to manage "chance finds" an appropriate procedure is included in this ESIA. Such procedure to be followed by contractors during the construction phase.
4.12	Involuntary Resettlement	Applicable. Traders will be relocated temporarily to pave way for the construction. A separate RAP report has been done for the project
4.36	Forests	Not applicable- there is no forest at the site
4.37	Safety of Dams	Not applicable because the project will not involve construction of dams.

7.50	Projects on International Waters (OP 7.50)	Not applicable- the site does not sit on international waters
7.60	Projects in Disputed Areas	The site is not classified as disputed in the project area.

3.3.1. Environmental Assessment (OP 4.01)

OP 4.01 requires Environmental Assessment (EA) for projects proposed for Bank financing to ensure that they are environmentally sound and sustainable, and as a basis for decision making. Under OP 4.01 projects are screened and assigned either of four categories each of which requires different levels of environmental assessment as follows:

- **Category A**: A proposed project is classified in this category if it is likely to have significant adverse environmental impacts that are sensitive, diverse or unprecedented. Moreover, the EA for this category includes examining the project's potential negative and positive impacts in comparison with those of feasible alternatives and recommends any measures required to prevent, minimize, mitigate or compensate for adverse impacts and improve environmental performance. These impacts may affect an area boarder than the sites or facilities subject to physical works.
- b) **Category B**: A proposed project is classified in this Category if it's potential adverse environmental impacts on human populations or environmentally important areas, including wetlands, forests, grasslands, and other natural habitats, are less adverse than those of Category a projects. These impacts are site-specific, few of them are irreversible and in most cases the mitigation measures can be designed more readily than Category A projects.
- **Category C**: A proposed project is classified in this Category if it's likely to have minimal or no adverse environmental impacts. Beyond screening, no further EA action is required for Category C project.
- **Category FI**: A proposed project is classified as Category FI if it involves investment of Bank funds through a financial intermediary in subprojects that may result in adverse environmental impacts.

The proposed improvement of the proposed project has been classified as environmental category B and hence requirement for this Project Report study.

3.3.2. Harmonization of both WB and GOK requirements for social and environmental sustainability

With regard to the project under review, our experience informs that when proposed projects are subjected to environmental and social impact assessment as stipulated under EMCA 2015 and its tools, the same process simultaneously fully resolves requirements of OP 4.01. Generally, both requirements are aligned in principle and objective in that:

- Both require Environmental Assessment before project implementation leading to development of comprehensive Environmental and social Management plans to guide resolution of social and environmental impacts as anticipated.
- Both require public disclosure of Project Report and stakeholder consultation during preparation,
- While OP 4.01 of World Bank stipulates different scales of Project Report for different category of projects, EMCA requires Project Report for all sizes of projects, which are required to be scoped as relevant
- Where EMCA requires consultation of Lead Agencies comprising of relevant sectors with legal mandate under GoK laws, the WB has equivalent safeguards for specific interests.
- The Bank requires that stakeholder consultations be undertaken during planning, implementation and operation phases of the project which is equivalent to the statutory annual environmental audits at the operation phase of projects in Kenya.
- The understanding of this Project Report study is that, pursuit of an in-depth Project Report process as stipulated by EMCA 1999 is adequate to address all World Bank requirements for environmental and social assessment. This is a major guiding principle in this study.

In keeping with this trend, public consultation has been done to the stakeholders, and their comments have been incorporated in the final Environmental Assessment and final design of the project. In addition, the Environmental Assessment report will be made publicly available to all stakeholders through disclosure at the project's proponent website, NEMA, and WB info shop, as well as copy of the report available at the project site.

3.3.3. The Urban Areas and Cities Act 2011

This law passed in 2011 provides legal basis for classification of urban areas (City) when the population exceeds 500,000; a municipality when it exceeds 250,000; and a town when it exceeds 10,000) and requires the city and municipality to formulate County Integrated Development Plan (Article 36 of the Act). Under Article 36, the integrated development plan so developed is required to be the central pillar in public administration of the city or municipality this forming the basis for:

- the preparation of environmental management; preparation of valuation rolls for property taxation plans;
- provision of physical and social infrastructure and transportation;
- preparation of annual strategic plans for a city or municipality;
- disaster preparedness and response;
- overall delivery of service including provision of water, electricity, health, telecommunications and solid waste management; and
- The preparation of a geographic information system for a city or municipality.

The strategy plan as stated above denotes an annual plan to be adopted in the county assembly following the integrated development plan, and the Act requires the board of town committee to formulate the strategy plan soon after the adoption of the integrated development plan (Article 39).

The integrated development plan as stipulated in the Act has to reflect:

- vision for the long term development of the city or urban area;
- An assessment of the existing level of development;
- Any affirmative action measures to be applied; development priorities and objectives;
- Development strategies which shall be aligned with any national or county sectoral plans and planning requirements;
- A spatial development framework;
- Operational strategies; and
- Applicable disaster management plans;
- A regulated city and municipal agricultural plan;
- A financial plan and;
- The key performance indicators and performance targets (Article 40).

The integrated development plan thus formulated has to be submitted to the county executive committee, and the committee has to submit the plan to the county assembly with an opinion within 30 days (Article 41).

Juja market project complies with the urban area and other cities act its integrated in the County integrated Development plan, and will comply with all the regulations set in the Act.

3.3.4. The County Government Act 2012

The County Government Act of 2012, which has been adapted to the Constitution's State and County structure in relation to devolution, declares the County Integrated Plan to be central to the County's administration and prohibits any public spending outside of the plan. The Act clarifies that the County Integrated Plan to be broken down into the economic plan, physical plan, social environmental plan and spatial plan. Also, the Act states that the County Plan commands,

- County integrated development plan
- County Sectoral plans
- County spatial plan
- Cities and urban areas plans as stipulated by Urban Areas and Cities Act

The act also stipulates that the County Government will be –responsible for functions stipulated in article 186 and assigned in the Fourth Schedule of the Constitution which includes control of air pollution, noise pollution, other public nuisances and outdoor advertising.

The Proponent will ensure the project will be compliant with County Government Act 2012 by controlling all forms of pollution. Additionally an Environmental and Social Management/monitoring plan has been provided in this report with measures for mitigating potential environmental pollution anticipated from the development of the project.

3.3.5. The National Land Commission Act (2012)

Section 5 of the Act, the Commission's functions are to manage public land, recommend national land policy, advise the GoK on a land registration program, conduct research on land use and natural resources, and monitor and oversee land use planning throughout the country. The same section goes on to stipulate that the NLC ensure that state owned land is managed sustainably for future generations. The

project will be subjected to this act by ensuring the land used for the project is a public land and has no encumbrances to be used for development of a market.

3.3.6. National Sand Harvesting Guidelines, 2007

These Guidelines apply to all sand harvesting activities in Kenya to ensure sustainable utilization of the sand resource and proper management of the environment. Among key features, the guidelines empower respective DECs to regulate sand harvesting within areas of jurisdiction implying that, sand should only be sourced from approved sites and by approved dealers.
The project will commit to the fulfillment of the guidelines.

3.3.7. Traffic Act Chapter 403

This Act consolidates the law relating to traffic on all public roads. The Act also prohibits encroachment on and damage of roads including land reserved for roads. The proposed project is under the provisions of the Act, in that it will utilize the roads near the project.

3.3.8. The Water Act, 2002

The Act vests the water in the State and gives the provisions for the water management, including irrigation water, pollution, drainage, flood control and abstraction. It is the main legislation governing the use of water.
The proposed project shall require some quantities of water during the construction phase and generation of equally large volumes of surface run-off during operations. The water supplied by the local water provider and local rivers might be the sources of water for construction. Any water body near the project will be receiving bodies for the surfaces run-off, as all the drainage systems shall be designed to discharge into them.
The contractor shall ensure that there will be no pollution to the nearby drainage system, and will seek the necessary permits to abstract the water from the rivers, or any other sources, and shall abide by the conditions attached to the permit(s).

3.3.9. The Water Resources Management Rules (2007)

These Rules are described in Legal Notice Number 171 of the Kenya Gazette Supplementary Number 52 of 2007. They apply to all water resources and water bodies in Kenya, including all lakes, water courses, streams and rivers, whether

perennial or seasonal, aquifers, and shall include coastal channels leading to territorial waters.

The Water Resources Management Rules empower Water Resources Management Authority (WRMA) to impose management controls on land use falling under riparian land. It also enables any person with a complaint related to any matter covered by these rules to the appropriate office in WRMA as per the Tenth Schedule which provides a format for report on complaints. WRMA is to reply to the complainant with "copies to all other relevant parties within twenty one days of receiving the complaint, starting with what action is being taken, the position of the Authority on the matter and any recommendation to the complainant."

The contractor shall seek the necessary permits to abstract the water from the rivers, or any other sources, and shall abide by the conditions attached to the permit(s).

The contractor/proponent will adhere to the provision of this regulation by obtaining relevant water permit from WRMA or consult with the Ruiru Juja Water and Sewerage Company *for its water sources.*

3.3.10. HIV/AIDS Prevention and control Act (Act No. 14 of 2006)

Part 11, Section 7 of the Act requires that HIV and AIDs education be carried out at the work-place. The government is expected to ensure the provision of basic information and instruction on HIV and Aids prevention and control to: -

(I) Employees of all government ministries, departments, Authorities, and other agencies and employees of private and informal sectors.

(ii) The information on HIV/AIDS is expected to be treated with confidentiality at the work place and positive attitude towards infected employees.

In allocating contractors to the proposed project, the proponent should ensure that the contractor offers such training to the worker as provided by law.

3.3.11. Occupational Safety and Health Act OSHA, 2007

The Occupational Safety and Health Act, 2007, is an Act of Parliament to provide for the safety, health and welfare of all workers and all persons lawfully present at workplaces, to provide for the establishment of the National Council for Occupational Safety and Health and for connected purposes. The Act applies to all workplaces and workers associated with it; whether temporary or permanent. The main aim of the Act is to safeguard the safety, health and welfare of workers and non-workers. Part 9 states that the occupier or employer shall establish a health and safety committee where

twenty or more people are employed and such an employee shall prepare a written statement of his general policy with respect to the safety and health at the work place. Further, the occupier shall prepare annual safety and health audits by a qualified person.

The contractor shall adhere to all Sections of the Act as it relates to this project, such as observing safety guidelines, provision of protective clothing, clean water, and insurance cover are observed so as to protect all from work related injuries or other health hazards.

3.3.12. Work Injury Benefits Act, 2007

This is an Act of Parliament to provide for compensation to employees for work related injuries and diseases contracted in the course of their employment and for connected purposes. An employee is a person who has been employed for wages or a salary under a contract and includes apprentice or indentured learner.

The proposed project will adhere to the provisions of this act throughout the construction period of the project.

3.3.13. The Public Health Act (Cap. 242)

The Public Health Act provides for the protection of human health through prevention and guarding against introduction of infectious diseases into Kenya from outside, to promote public health and the prevention, limitation or suppression of infectious, communicable or preventable diseases within Kenya, to advice and direct local authorities in regard to matters affecting the public health to promote or carry out research and investigations in connection with the prevention or treatment of human diseases. This Act provides the impetus for a healthy environment and gives regulations to waste management, pollution and human health.

Part IX section 115 states that no person shall cause nuisance or condition liable to be injurious or dangerous to human health. Section 116 requires Local Authorities to take all lawful, necessary and reasonably practicable measures to maintain 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 or 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 flowing or discharged from any premises into Public Street or into the gutter or side channel or watercourse, irrigation channel or bed not

approved for discharge is also deemed as a nuisance. Other nuisances are accumulation of materials or refuse which in the opinion of the medical officer of health is likely to harbor rats or other vermin.

This provision is supplemented by Section 126A that requires local authorities to develop by-laws for controlling and regulating among others private sewers, communication between drains and sewers and between sewers as well as regulating sanitary conveniences in connection to buildings, drainage, cesspools, etc. for reception or disposal of foul matter.

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

The operations and activities of the proposed project can be detrimental to human and environmental health and safety in the absence of appropriate measures. For example waste, dust, noise and air emission generated from activities and process of the proposed project can directly or indirectly have adverse impacts on human and environment. The Act prohibits the Proponent from engaging in activities that cause environmental nuisance or those that cause danger, discomfort or annoyance to inhabitants or is hazardous to human and environmental health and safety.

The proponent will therefore observe the public Health act to mitigate on the negative environmental health and safety to the public.

3.3.14. The Physical Planning Act (Cap. 286)

Section 24 of the Physical Planning Act gives provision for the development of local physical development plan for guiding and coordinating development of infrastructure facilities and services within the area of authority of County, municipal and town council and for specific control of the use and development of land. The plan shows the manner in which the land in the area may be used. Section 29 of the physical Planning Act gives the county councils power to prohibit and control the use of land, building, and subdivision of land, in the interest of proper and orderly development of its area. The same section also allows them to approve all development applications and grant development permissions as well as to ensure the proper execution and implications of approved physical development plans. On zoning, the act empowers them to formulate by-laws in respect of use and density of development.

The proposed project adheres to this act by ensuring that the proposed project is being developed as per the plans approved by the Ministry of Lands and Physical Planning in accordance to the law.

3.3.15. Way Leave Act Cap 292

Section 3 of the Act states that the Government may carry any sewer, drain or pipeline through, over or under any land whatsoever, but may not in doing so interfere with any existing building. Notice, however, should be given one month before carrying out any such works (section 4) with full description of the intended works and targeted place for inspection.

Any damages caused by the works would then be compensated to the owner as per Section 8 of the Act that states that any person whom without consent causes any building to be newly erected on a way leave, or cause hindrance along the way leave shall be guilty of an offence and any alterations will be done at his/her costs.

The proponent shall observe this Way leave Act when developing or improving the sewer and drainage system for the project.

3.3.16. The Building Code 2009

This code was formulated to provide rules and guideline to be observed during construction it requires the proponent to adhere to the set rules and guidelines in the code. The code requires building plans to be approved by county government. It also prohibits;

- Erection, or causing or permitting erection of temporary buildings (e.g. a site office, store, builder's shed etc.) to which the Regulations apply without a permit granted under Regulations and
- Knowingly occupying a temporary building which is erected in contravention to the regulations.

The proponent is committed to developing the proposed project in accordance to the building codes, the national standards and other international building standards and guidelines.

3.3.17. Public Roads and Roads of Access Act (Cap 399)

Sections 8 and 9 of the Act provides for the dedication, conservation or alignment of public travel lines including construction of access roads adjacent to lands from the nearest part of a public road.
Sections 10 and 11 allows for notices to be served on the adjacent land owners seeking permission to construct the respective roads.
The proponent shall issue notices to land owners adjacent to the project area before construction works begins. In addition, the proponent will inform the relevant authorities on the intended modifications of the roads near the proposed project.

3.3.18. National Gender and Equality Commission Act, 2011

The Commission was established through an Act of parliament and is mandated but not limited to perform the following functions:
(a) promote gender equality and freedom from discrimination in accordance with Article 27 of the Constitution; (b) monitor, facilitate and advise on the integration of the principles of equality and freedom from discrimination in all national and county policies, laws, and administrative regulations in all public and private institutions; (c) co-ordinate and facilitate mainstreaming of issues of gender, persons with disability into the overall national development framework.
The provisions of this Act shall be invoked in the implementation of the project, especially in ensuring gender equity, by offering opportunities to women in employment and allocation of stalls.

3.3.19. The Sexual Offences Act (No. 3 of 2006)

Relevant Sections in this Act include:-

- 24- Sexual offences relating to position of authority and persons in position of trust.
- 25- Sexual relationship which pre-date position of authority or trust.
- 26- Deliberate transmission of HIV or any other life threatening sexually transmitted disease.

The proposed project will ensure that this Act is adhered to, by ensuring that there will be NO sexual offences committed, especially during the construction period.

3.4. The Institutional Framework

3.4.1. Ministry of Environment and natural resource

Kenya's Ministry of Environment and Natural Resource is mandated to monitor, protect, conserve and manage environment and natural resources of the country. The Ministry is to achieve this monumental task through sustainable exploitation of natural resources for socio-economic development geared towards eradication of poverty, improving living standards and maintaining a clean environment for present and future generations.

3.4.2. The Ministry of Transport, Infrastructure, Housing and Urban Development (MTIHUD)

The MTIHUD is the project proponent and is implementing the development of Juja Market through Nairobi Metropolitan Services Improvement Project (NaMSIP).

3.4.3. National Environment Management Authority (NEMA)

The Government established the administrative structures to implement EMCA as follows:-

3.4.3.1. The National Environmental Council

The National Environment Council (the Council) is responsible for policy formulation and directions for the purposes of the EMCA Act. The Council also sets national goals and objectives, and determines policies and priorities for the protection of the environment.

3.4.3.2. The National Environmental Management Authority

EMCA allows for formation of the National Environmental Management Authority (NEMA) as the body charged with overall responsibility of exercising general supervision and co-ordination over all matters relating to the environment and to be the principal instrument of government in the implementation of all policies relating to the environment. In the context of the EIA process NEMA is responsible for approving the ToR for the ESIA and for the approval of the ESIA. Without this latter approval, the project cannot proceed.

The Authority shall review this ESIA Report for the proposed project, visit the project site to verify information provided in this report and emanate an ESIA license whether all the relevant issues to the project have been identified and mitigated in accordance to the proposed measures.

3.4.3.3. County Environmental Committees

The County Environmental Committees also contribute to decentralized environmental management and enable the participation of local communities. These environmental committees are to be constituted by the governor and are responsible for the proper management of the environment within the county for which it is appointed.

3.4.3.4. Public Complaints Committee

Under EMCA 2015, a Public Complaints Committee has been established to provide an administrative mechanism for addressing environmental harm. The Committee whose membership include representatives from the Law Society of Kenya, NGOs and the business community has the mandate to investigate complaints relating to environmental damage and degradation.

3.4.4. The Directorate of Nairobi Metropolitan Development

In the capacity of Employer, the Ministry of Land, Housing and Urban Development, Nairobi Metropolitan Development through the NaMSIP PCT has administrative jurisdiction over the EIA process.

3.4.5. The Market Committees, local CBOs and other Civil Society

Members of the market committees at Juja, civil society working in the area in related fields are responsible for sensitizing the people and empower them to realize maximum benefits from the project. They will be involved in the training and creating awareness of the project, and assisting in grievance handling (if any) for the proposed project.

CHAPTER FOUR

4. ENVIRONMENTAL AND SOCIAL BASELINE

4.1. Project Background

Juja Market, hereafter referred to as proposed project, discussed in this ESIA report forms part of the Nairobi Metropolitan service improvement project being implemented by the Ministry of Lands and Urban Development with financial support from the Word Bank. As the population of Nairobi grows and demand for goods and services increase, the demand for these service improvement is warranted. Therefore, NaMSIP initiation is based on service improvement in the urban areas which are covered in the Nairobi metropolitan region. The selection of the Juja Market was on the basis of the existing local participatory process from prioritizing local investment called the Local Authority Service Development Action Plan.

The market was initially located along the Gachorororo and later relocated to a 5.25 acre piece of land. The market however currently uses 0.5 acres of the land as the other part is a wetland and prone to flooding. The market is a wholesale and retail center for farm produce and actively operates between 3.00 a.m. to 9.30 p.m. The market hosts approximately 450 traders with some being wholesale suppliers who only report for short durations during the day.

Structures within the market are numbered. Traders without structures are allocated spaces in the middle of the market. There is vehicular access to the market but with limited parking spaces.

All market utility, facilities and services currently available will be constructed at the relocation site to normalize operations without being impoverished. Such facilities will include: sanitation facilities, flood lights, security temporary wall, garbage collection points and water points.. The design team have made provisions for sanitation and water facilities at the constructed market.

4.2. Political Unit

Kiambu County has twelve (12) constituencies, which are Gatundu South, Gatundu North, Juja, Thika Town, Ruiru, Githunguri, Kiambu, Kiambaa, Kikuyu, Kabete, Limuru, and Lari. These constituencies are further divided into 60 electoral wards. Ruiru Constituency has the highest number of wards with 8 wards, while the rest of the constituencies have five each with the exemption of Kiambu, Gatundu South and Gatundu North which has four each.

4.3. Location and Size

Juja Market is located in Juja town off Thika super highway. It's approximately one Kilometer off Thika Super Highway, following JKUAT Entry Road, right turn into Gachororo Road and right into Juja Market Road. The market is surrounded by residential student hostels to the north, east, south and west.

Figure 4-1: Juja Market site (Google Earth August 2016)

4.4. Drainage and Hydrology

The Market site currently has no elaborate storm drainage and other form of drainage. Therefore the drainage in the market area will require an upgrade from the existing type. The sewerage services is provided by Ruiru Juja Water and Sewerage Company (RUJWASCO).

There were no nearby ground and surface water observed on site around the market and therefore no impact to surface and ground water is anticipated.

4.5. Climatic Condition

The region is characteristic by equatorial climatic conditions and rainfall is highly influenced by altitude and proximity to the Aberdare forest. Rainfall in the area comes in two seasons, long rains come between March to May and short rains come between October and December. The annual mean rainfall varies from 1070mm to 1750mm

per annum. The nearest meteorological station registered in the Kenyan Meteorological Department is the Thika meteorological station.

Juja Town and its Environment experience a bi-modal type of rainfall. The long rains experienced between Mid-march to May then followed by a cold season. Drizzles and frost, which occur in the months of June to August, characterized the cold season .The short rains fall between Mid-Octobers to November. The town receives rainfall of a high of 2,000mm and a low of 600mm.

The mean temperature in the project area is approximately 26^0C with temperature ranging from 13.1^0C to 27^0C. July and August are the months during which the lowest temperatures are experienced, whereas January to March is the hottest months.

The main wind direction is easterly, evaporation ranging from 100 to 150mm per month while the humidity varies from 50% to 90%.

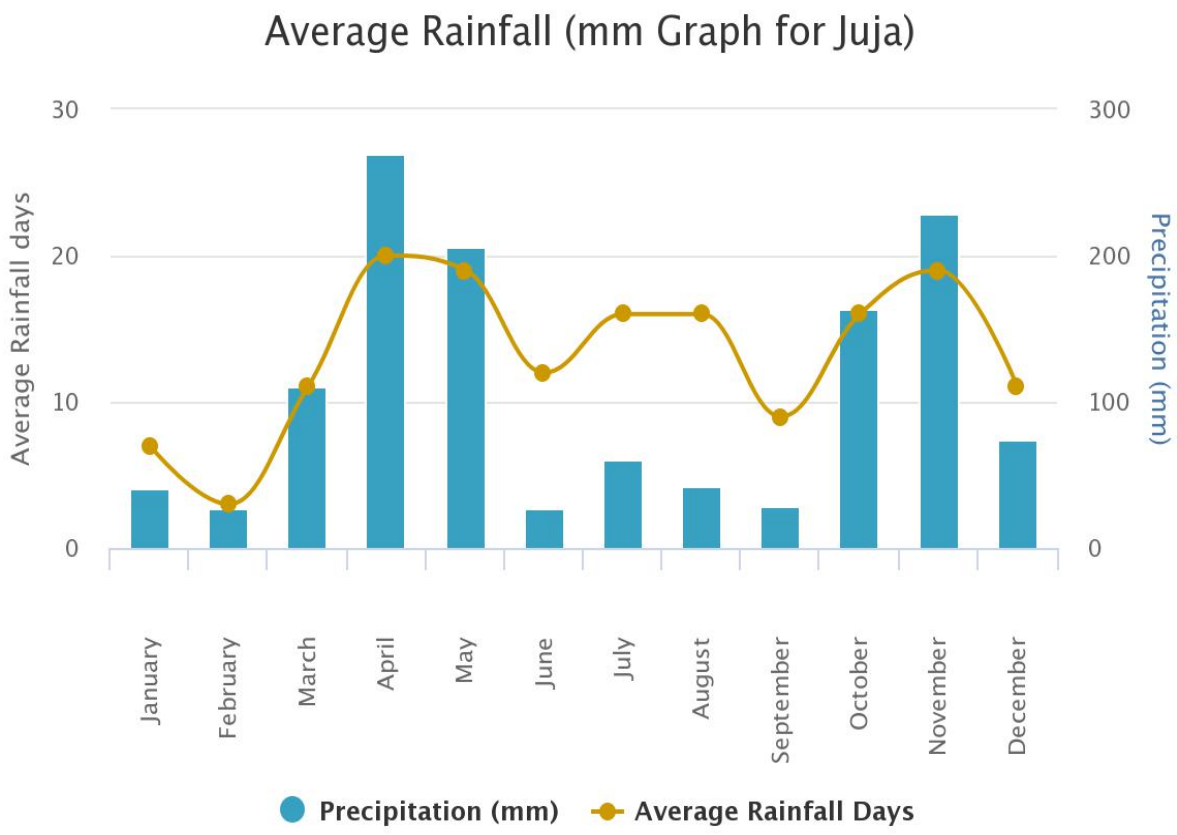


Figure 4-2: Graph Representation of Juja Climate

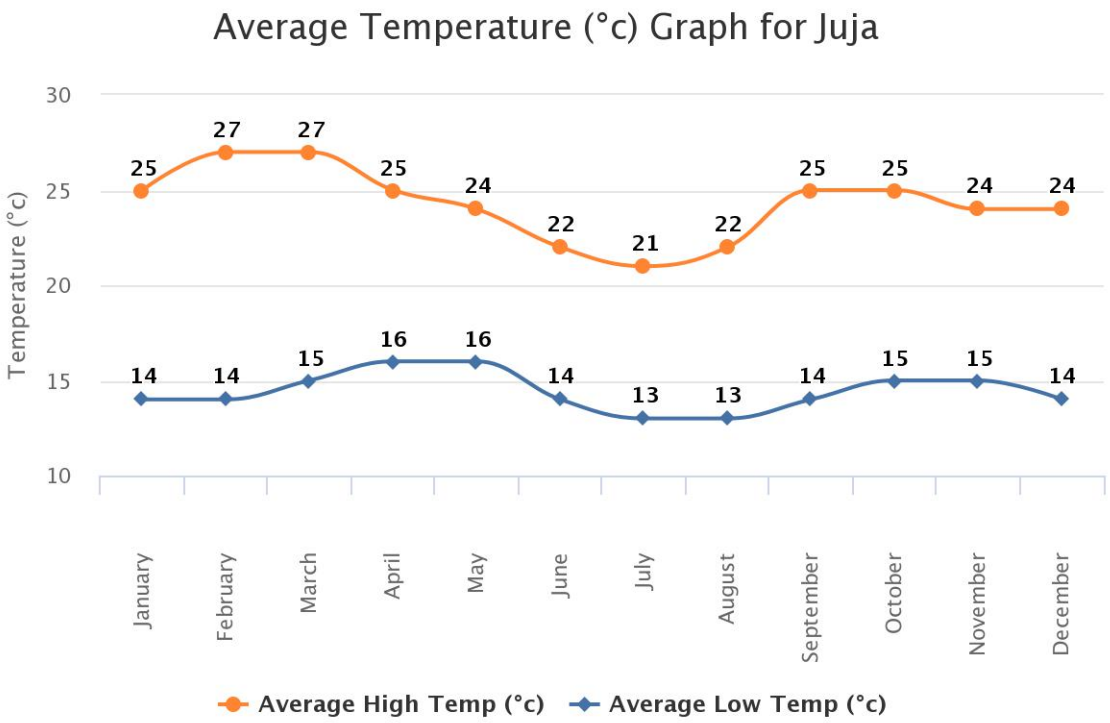


Figure 4-3: Graph Representation of Temperatures of Juja

4.6. Topography

Kiambu County can be divided into four broad topographic zones namely, Upper Highland, Lower Highland, Upper Midland and Lower Midland. The project area lying at about 1515 meters above sea level is located in the Upper Highland Zone, which is an extension of the Aberdare ranges. It is dominated by highly dissected ranges and it is very wet, steep and an important water catchment area. Hills, plateaus, and high-level structural plains characterize the area.

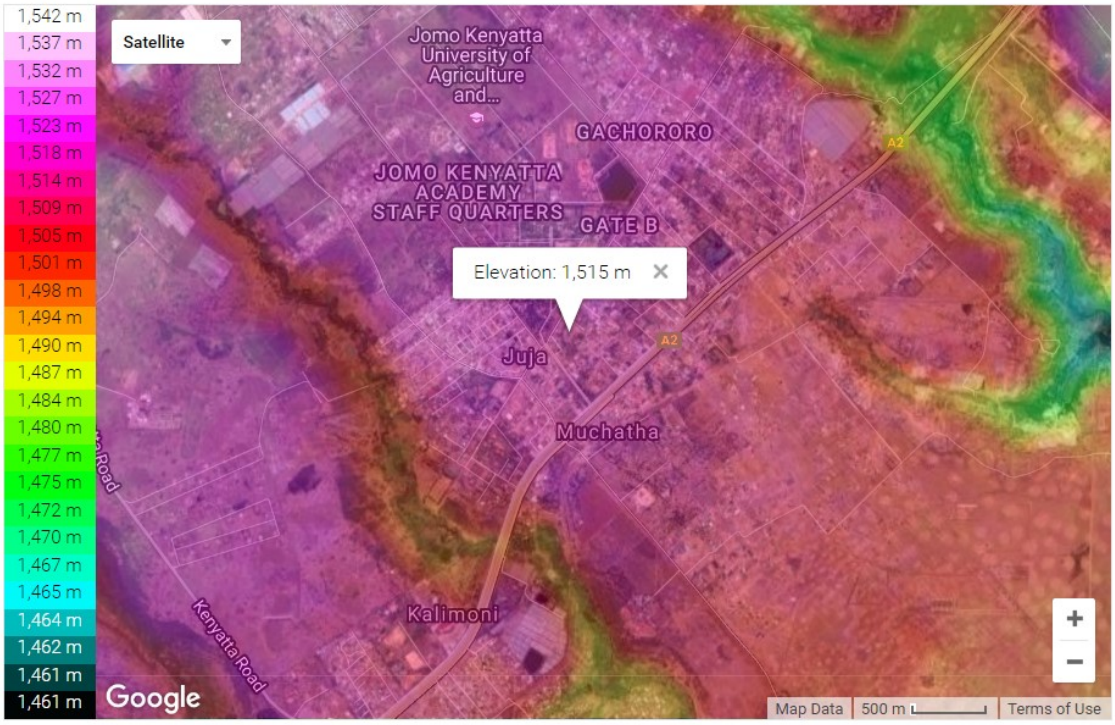


Figure 4-4: Elevation of Juja Market (http://en-ca.topographic-map.com/places/Juja)

4.7. Air Quality

A limited spot check air quality survey and analysis was undertaken in the Project site as part of this ESIA process. Measurements of the baseline PM_{10}, SO_2 and NO_2 levels were undertaken at proposed market site The results obtained were well within WHO and Kenyan standards; Environmental Management and Coordination (Air Quality) Regulations 2014. The air quality is expected to be impacted by construction, operation and demolition activities; however, implementation of the proposed recommended mitigation measures will keep the levels within the acceptable limits. The results are presented in Table 4-2 below

Table 4-1: Air Quality Results for Juja **Market**

Site / Location **Unit**	**GPS Coordinates**	**Parameter**	**Results ug/m^3**	**Kenyan Limits (NEMA) ug /m^3**	**IFC/WB Guidelines** **ug /m^3**	**EU standards/ WHO Guidelines ug /m^3**
MP 1	1° 6'3.05"S 37° 0'55.31"E	PM_{10}	20	100	50	50
		NO_2	54	80	200	-
		SO_2	<0.76	80	20	20

4.8. Ambient Noise levels

Noise surveys were taken between 2nd and 10th September 2016 as part of this assessment. Measurements were undertaken at one location; 1°14'45.81"S, 37° 0'55.31"E (MP1).at the proposed project site using Type 1 Precision Impulse Integrating Sound Level Meter, in accordance with international standards for sound level meter specifications IEC 61672:1999, IEC 61260:1995 and IEC 60651, as well as ISO 19961:2003 and ISO 3095:2001 for the measurement and assessment of environmental noise.

Ambient noise levels measured at the site during this study ranged between 57 dB (A) and 62 dB (A) as shown in Table 4-3. The levels are expected to increase during construction and demolition phases; however, implementation of the proposed recommended mitigation measures will keep the levels within the acceptable limits

Table 4-2: Noise Survey Results for Juja Market

Measurement Points	Type of Zone	Noise Level (dB(A))	NEMA Limits	WB Limits
		Daytime		
MP1 Commercial/ residential	1°14'45.81"S 37° 0'55.31"E	52	55	55
World Bank Guidelines: Residential: Daytime: 55 dB(A), Night-time: 45 dB(A), Industrial: Daytime: 70 dB(A), Night-time: 60 dB(A) Mixed Residential (with some commercial and places of entertainment): 55 dB(A)				

4.9. Geology and Soils

The geology of Juja town comprises of tertiary volcanic rocks, the most important being what is termed as Nairobi Stone. The Nairobi stone is a tertiary volcanic rock used extensively for building purposes. Soils resulting from tertiary volcanic rocks are dark reddish brown, well drained, friable and very calcareous. The general nature of the soil ranges from shallow to red friable clays. In geological terms, these are youthful soils formed after removal of black clays by erosion process. Soils disturbance human activities over a long period exists due to the town developments. The soil at Juja Market consist of sandy clay soils type of origin. The surface of the market is most by vegetation e.g. grasses, herbaceous plants and some trees.

4.10. Biodiversity

Juja Town was formerly an agricultural area (Juja Farm) which has been slowly turned into an urban town with industrial areas, housing areas, market and business areas. The flora and fauna of the market is that of any typical market in Kenya. During the

site visit some birds and some tree species were observed. The market or the proposed site is not fully developed and therefore most of the area is covered by grasses and herbaceous plants.

4.11. Social Environment

The social environment in the area consist of several business established enterprises, and transportation system (roads), a University (JKUAT) and residential area. The interaction of these establishment with people in the area and outside the area is part of the functional Nairobi socioeconomic environment. Currently the social environment around the area auger well with movement of people, goods and delivery of services due to the existing infrastructure such as roads, railway line, Water pipelines sewerage pipelines, power lines, commercial and residential buildings. The existing infrastructure is currently being upgraded by Ministry of Lands, Housing and Urban Development and Nairobi Metropolitan.

4.12. Demographics

Kenya Population and Housing Census 2009 indicate Kiambu County population at 1,623,279 with 802,609 being male and 820,670 being female. The average population growth rate in the County is 2.81% and the sex ratio is approximately 1/1.02. During the 2009 population census, only Lari was a sub county while Githunguri was a division within Lari sub-county.

Juja Town (urban Centre) had a population of 238,858 people according to the 2009 National Census, 259,867 people in 2012 and 282,723 people in 2015. The population increase is projected to be over 299,022 in the year 2017. (Source; Kiambu county government Website and Kenya National Census 2009).

CHAPTER FIVE

5. PUBLIC PARTICIPATION

5.1. Stakeholder Mapping and Consultations

Public participation is concerned with involving, informing and consulting the public in planning, management and other decision-making activities. Public participation tries to ensure that due consideration is given to public values, concerns and preferences when decisions are made. It encompasses the public actively sharing in the decisions that government and other agencies make in their search for solutions to issues of public interest.

Public consultation in this project carried out with the following aims:

- To inform the local people, leaders and other stakeholders about the proposed project and its objectives.
- To seek views, concerns and opinions of people in the area concerning the project.
- To establish if the local people foresee any positive or negative environmental effects from the project and if so, how they wish the perceived impacts to be addressed.

5.2. Public Consultation Methodology

The ESIA team conducted public participation within the project area in order to give the community a platform of expressing their environmental and social concerns; the team also conducted institutional consultations with all relevant lead agencies. The table below illustrates the identified stakeholders consulted.

Table 5-1: Stakeholder Mapping Checklist

Primary Stakeholders		
No	**Name**	**Category**
1.	NaMSIP	Project Proponent
2.	Project Affected Persons/Traders	Project Affected Persons
3.	Kiambu County	County Government
4.	Local Administration	

5.3. Initial Interviews

Interview of the stakeholders was undertaken during the ESIA study process. The principle was to assess the initial opinions and attitude of the stakeholders to the project including all the components.

5.4. Socio-Economic Survey

This process involved an Economic and Social Surveys conducted on both the Project Affected Persons and general community through direct interactions with the local communities and other stakeholders and also through questionnaire administration.
A quantitative survey was conducted at project using structured questionnaire and it was designed to generate the required information. The information was used to answer questions related to status of social and economic parameters within the project site including, the availability or lack of social service facilities, existing levels of access to education, health, potable water and related services, local market prices as well as agricultural production and productivity, all of which were useful in valuation of assets and computation of compensation rates.

5.5. Public Consultative Forums

Formal public consultations were undertaken within the month of July 2016; this involved a sensitization forum followed by consultation meetings. The sensitization forum was designed in an attempt to bring the project concept down to the people and stakeholders as an initial formal contact.
It was anticipated that the stakeholders would react and provide their views and opinions on the project to add value to the design and planning as well as enhancing social and economic benefits and as well as avoiding potential cultural conflicts. Participants to the meetings were drawn from the following groups and organizations.
Table 5-2: Overleaf indicates the schedule of meeting held in the project area during the assessment.

PROJECT NAME	**PROPOSED CONSTRUCTION OF JUJA MARKET**		
DATE OF MEETING	20/06/2016	**TIME**	11AM
MINUTES PREPARED BY	SGS Limited	**LOCATION**	Juja Market
Objective • To provide the community with a consultative forum where they can present their concerns regarding the Project during preparation of Environmental and Social Impact Assessment (ESIA).			
Agenda • Introduce the Project to the traders and other interested stakeholders			

- To inform the traders on the need for stakeholder engagement
- Question and answer (Plenary Session)
- Closing Remarks

Attendees

- Kiambu County Government Official
- Trader within Juja Market
- SGS consultants
- Traders as per attached attendance list in the annexes

Notes decision issues

TOPIC	DISCUSSION
Trader 1 Who is "***SGS"*** and "***NAMSIP"***	**"SGS"** is a consulting firm hired by Ministry of Infrastructure, Transport, Housing and Urban Development (MoITH&UD) under the Nairobi Metropolitan Services Improvement Project (NAMSIP) to undertake Environmental and Social Impact Assessment (ESIA) for the proposed Construction of Juja Market
Trader 2 Who if financing the Project	The Project is jointly financed by the World Bank Support and Kenya Government through a Project implemented by Ministry of Infrastructure, Transport, Housing and Urban Development (MoITH&UD) called the Nairobi Metropolitan Services Improvement Project (NAMSIP)
Trader 3 Who will re pay the loan	The loan will be repaid by the government of Kenya
Trader 4 What other Markets / Projects are also being implemented under this Project apart from Juja Market	The Project is supporting many other sub Project in the Transport sector (Railway stations) and Markets in Juja, Kikuyu, Kangangi, Kihara, Githurai Ruiru and Madaraka in Kiambu County. The Project is also financing Markets in Nairobi, Kajiado and Machakos Counties

Trader 5 I support the Project, however will we pay to secure space in the new market, how will the Government ensure that our current spaces are secured	No one will loss his or her space of trade during the transition period, in fact the design has allowed adequate stalls with the capacity of accommodating the current traders and also traders operating outside the market. A census will be undertaken of all traders by another consultancy firm called ***"Impulso"*** which is also hired by the Ministry under the Project. This will help the County Government in allocating spaces to the traders
Trader 6 How will the women and youth benefit from the Project in terms of tenders for non-technical services and also employment opportunities associated with such Project	The Project has allowed employment opportunities to the benefitting communities (women and youth), tenders for non-technical services will also be offered
Trader 7 How long will be the construction duration, and where will be the relocation sites for the traders during construction period?	The actual construction period will be determined after completion of detailed design and preparation of tender documents by the design firm, however the construction period is expected to be approximately 12 months. The County government will provide alternative market sites to traders during construction. The Resettlement Action Plan Report (RAP) will proposed for compensation and livelihood restoration measures for Project impacts associated with Project to peoples assets and sources of livelihood.

Trader 8 How will the socio-economic survey be done and will all stakeholders be interviewed?	The survey will conducted using a structured questionnaire as the interview tool, not all traders will be interviewed, and the survey team will take a sample of the stakeholders. "Impulso" the RAP consultant will undertake a 100% census of all the traders.	
Trader 9 How will the traders know the Project Designs, ESIA and RAP reports prepared for the Project	The preparation of RAP and ESIA follows the best practices of Environment Management and Coordination Act (EMCA) 1999 through of Environment Impact Assessment (EIA) and Environment Audit (EA) and World Bank Operation Policy OP 4.01 on Environment Assessment. The instruments allow for disclosure of ESIA and RAP in the local newspapers and local offices within the access of the community in a language that can be understood by the stakeholders. For this Project the reports will available at the local chief's office, NEMA offices and Ministry website.	
CONCLUSION	The meeting was concluded at 1pm, the overall resolution is that the Project is welcome by traders, traders expect the Project to Improve their social economic status.	
MINUTES CERTIFICATION		
SECRETARY	JACKLINE WAHOME	Sign Date.....
CHAIRMAN	SGS KENYA	Sign Date.....

Public Meeting in the Precincts of the Market;

A public meeting where the PAPs and market committee members were invited by NaMSIP consultants and NaMSIP staff was held on Monday February 5, 2018 where issues of resettlement and environmental impacts were discussed. The PAPs assented to the relocation for the market to be constructed and it was confirmed to them that a relocation site has been identified and will be prepared for them taking

cognizance of any environmental management issues. The minutes and attendance sheets for this meeting are in the appendix.

All the attendance sheets, photographs and minutes of all the meetings held are attached in the annex of this report.

CHAPTER SIX

6. ANALYSIS OF ALTERNATIVE

Introduction

Regulation 18(1) of Legal Notice 101 specifies the basic content of an Environmental Impact Assessment Study Report subsequent to which, subsection (i) requires an analysis of alternatives including project site, design and technologies and reasons for preferring the proposed site, design and technologies.

This section analyses the project alternatives in terms of site, technology and waste management options.

6.1. The No Project Alternative

The No Project option in respect to the proposed project implies discontinuation of the project proposal hence the status quo is maintained. The result is the site being retained in its existing form. 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 have the greatest implications on the socioeconomic environment of the area and surrounding communities. This will involve several losses both to Nairobi County and the community as a whole as the residents in the area continue to access the overcrowded market. The No Project Option is the least preferred from the socio-economic and partly environmental perspective due to the following factors:

- The economic status of Kenyans and the local people would remain unchanged.
- The existing market markets will continue being over crowded because they are no other alternatives
- No employment opportunities will be created for local citizens who will work in the project area. Increased urban poverty and crime in Kenya.
- Development of infrastructural facilities (roads and associated infrastructure) will not be undertaken.

From the analysis above, it becomes apparent that the No Project alternative is no alternative to the local people, Kenyans, and the Government of Kenya.

6.2. 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. The railway station works will be made using locally sourced materials that meet the Kenya Bureau of Standards requirements.

The consultant presented three options for QW construction materials which are:

- Option 1. Traditional material. This is primarily represented by concrete structures, and concrete or clay bricks
- Option 2. Steel frame and precast concrete/granite panels
- Option 3. Steel frame and thermo-acoustic aluminium panels

The construction materials selected for the modules by the Client is Option 2 as outlined below:

- Concrete foundation
- Metallic structures for columns, beams and roof
- Thermo-acoustic panel for the roof
- Precast concrete panels
- Security windows
- Metallic doors and louvers
- Granite tiles in the floor and/or concrete finishing non-skid with hardener in the floor

These materials were selected for these advantages:

- Use of recycled materials
- Reduction in noise levels at construction sites
- Reduction in the amount of construction waste
- Reduction in transport cost
- Reduction in site disturbance
- Savings in construction time and cost

6.3. Solid waste management alternatives

A lot of solid wastes will be generated from the proposed project. An integrated solid waste management system is recommendable. First, the proponent will give priority to reduction at source of the materials. This option will demand a solid waste management awareness programme in the management and the staff. Recycling and reuse options of the waste will be the second alternative in priority. This will call for a

source separation programme to be put in place. The third priority in the hierarchy of options is combustion of the waste that is not recyclable. Finally, the proponent will need to establish agreement with Nairobi County Government to ensure regular waste removal and disposal in an environmentally-friendly manner. In this regard, a NEMA registered solid waste handler would have to be engaged. This is the most practical and feasible option for solid waste management considering the described options.

CHAPTER SEVEN

7. ENVIRONMENTAL AND SOCIAL IMPACTS ASSESSMENT AND MITIGATION MEASURES

7.1. Introduction

This chapter outlines the potential negative and positive impacts that will be associated with the project. The impacts will be related to activities to be carried out during construction of the project and the operation stage of the project. The operational phase impacts of the project will be associated with the activities carried out within the premises. In addition, closure and decommissioning phase impacts of the project are also highlighted.

The impacts of the project during each of its life cycle stages (construction, operation and decommissioning) can be categorized into: impacts on the biophysical environment; health and safety impacts and socio-economic impacts.

7.2. Approach

The process involved in assessing the potential impacts of the project used the following steps:

Prediction: What will happen to the environment as a consequence of the project?

Evaluation- will it have beneficial or adverse effects? How big is the change expected to be? How important will it be to the affected receptors?

Mitigation- if the impact is of concern, can anything be done to avoid, minimize, or offset the impact? Or to enhance potential benefits?

Assessment of Residual impact-After mitigation, is the impact still of concern?

7.3. Anticipated Positive Project Impacts

Employment creation

This project is anticipated to create employment opportunities for many people within Kiambu County. Direct Job creation will begin from the construction phase of the project whereby the locals will be employed to undertake both informal and formal jobs at the construction site. The socio-economic survey carried out for this project indicated that majority of the traders are in their youthful age. This shows that the market will attract more youth to venture into trade business and hence reduce the number of the unemployed population in the society.

Source of revenue to the government

The County government can source for revenue from the traders through collection of levies. This contribution enables the County government to maintain the market and carry out other developments within the County.

Socialization

Socialization and interactions realized among traders within the market encourages sharing and dissemination of important and helpful information among people of the same social groups and interests.

Permanent working location

Having the modern market will give the traders an opportunity to have permanent and organized working locations. This encourages stability in business undertakings hence more income generation.

Improved public health

Construction of the modern market will improve the state of public health for the market and its vicinity as the project will entail provision of good drainage system, adequate water provision, sanitary facilities, and organized waste management systems.

Reduced Congestion

The upcoming development will enable reduction of congestion as currently witnessed in the market. All the traders will be accommodated in the new market building.

Economic growth

Construction of the market is likely to spur economic growth in the area such as development of other business activities including; banking, transportation and residential among others.

Solid Waste Management

Solid waste management will be a shared responsibility among all the stakeholders who are the County government, generators, shoppers, contracted and licensed waste handlers, owners and occupiers of premises. Traders will be provided with separate collection bins for biodegradable and non-biodegradable waste at the new facility. Waste from such bins shall be collected on daily basis by the County workers for proper disposal.

Traders will also be provided with bins near their merchandising points to ensure waste generated is collected at garbage stations or transfer points and later disposed at the main collection points for further disposal by the County government.

Shield against adverse weather conditions

The construction of a modern market will ensure traders carry out their businesses without worry of extreme weather such as vulnerability to rainfall and heat from the sun since the market will have a roof and wall around it.

7.4. Anticipated Negative Project Impacts and Mitigation Measure

Biodiversity and vegetation loss

The project will have a direct impact to the existing biodiversity in the market centre since the construction phase will involve removal of the vegetation cover and trees planted in the market. However, this development will have minimal impact to the biodiversity because the area is a business area as categorised by Kiambu County Government.

Mitigation

With the rating of low medium impact, the Proponent is advised to compensate the loss of biodiversity by planting flowers and other aesthetic plants once the project is complete.

Soils and Geology disturbance

Since the construction phase will involve use of heavy plant machinery and excavations, soil disturbance is bound to happen. Therefore, the Contractor should put in place mitigation measures to aim at minimum soil disturbance and soil erosion. These measures will include clearing the project site of excavated materials or protect excavated sections from storm water, avoid excavation through flood plains or into stream banks, creating proper channels for waste water and solid waste disposal, develop emergency measures and procedures for protection of soils.

Mitigation

The impact rating is low, however the Proponent through the Contractor should ensure that Excavations are undertaken safely in that shoring and good slope banking is put in place and by adhering to all safety rules.

Depletion of Water Resources during Construction phase

Construction works demand high level of water utilization. This high water demand will in turn impact to the water supply in the County. The impact will be reduced water supply to other adjacent areas that shares the same water infrastructure.

Mitigation

The Impact rating is low. The Contractor is advised to consult with Ruiru Juja Water and Sewerage Company to get permit for their share allocation of water. This consultation and collaboration with water supplier will be encouraged so that water demand conflict will not arise. The Contractor is also advised to install water storage tanks and other water saving technology at the site to save on water usage.

Soils and groundwater Contamination

The Proponent and Contractor will prepare a hazardous substance control systems and emergency response plans 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 construction, and will include an emergency response programme to ensure quick and safe cleanup of accidental spills.

Mitigation

The following mitigation measures should be undertaken:

- Pave and shield the waste collection area from direct sunlight and rains;
- Place all oily and contaminated wastes on paved surfaces;
- Dispose offsite oily waste appropriately;
- Obtain spill kits for use in case of accidental spillages on site;
- Obtain portable secondary spill containments for use on site

Air pollution (Dust generation)

The construction activities often result in increased dust and gas emission. These pollutants emanate from movement of construction machinery and trucks as well as dust generated during construction.

Mitigation

- Practice prevention measures such as dampening dust by use of water (sprinkling water on surfaces that produce dust or covering them);
- Provide PPEs such as nose masks to the workers on the construction site;
- Control over areas generating dust particles. Such areas should be regularly cleaned;

- Workers should be encouraged to go for regular health check-ups to ascertain their health standards;
- Regular air quality tests to enhance air quality monitoring;
- Wet sweeping of the surfaces that produces a lot of dust particles;
- Establishment of optimum green spaces in the compound particularly at the perimeter fence as the vegetation helps in extracting pollutants from the air.

Air pollution (Generation of exhaust emission)

The following measures are recommended to mitigate impact of air pollution associated with exhaust emissions;

- Maintaining equipment appropriately;
- Keeping vehicle idling time to the very minimum.
- Use of alternative fueled construction equipment where feasible.

Noise and excessive Vibration generation

Noise refers to unwanted sound that can affect job performance, safety and health. Physical impacts may include; loss of hearing, pain, nausea and interference with communications when the exposure is severe. Psychological effects could be disruption of concentration and cause of annoyance. Construction activities tend to cause noise which affects the immediate environment and even disrupt other nearby operations. The noise will affect small animals and birds which are sensitive to noise.

Mitigation

- Construction activities should be carried only during the day when most the neighbours are active or carrying on with their normal day chores. The appropriate time could be between 0800hrs to 1800hrs.
- Construction vehicle's drivers and machine operators should be sensitized to adopt a habit of switching off engines of their vehicles or machinery when they are not in use.
- Regular maintenance of the construction machinery is highly encouraged to reduce the noise resulting from friction.
- The Proponent should provide a well-marked billboard at the construction site gates. This is meant to notify the public of the construction activity and timings.
- Unnecessary hooting should be avoided at all costs by the construction vehicles and even during project occupation.
- Personal protective equipment and /materials such as earmuffs and earplugs should be provided to the workers when operating noisy machinery and in a noisy

environment. This measure ensures physical barrier that reduces inner noise levels and guard against hearing loss.

Construction solid/liquid wastes generation

Construction operations will generate solid wastes within the site. The wastes may include; rods of metal, pieces of iron sheets, broken glasses, pieces of wood, empty containers and broken stones.

Mitigation

- The Proponent should liaise with private waste handlers and the Kiambu County Government to have a sound waste handling and disposal.
- The wastes should be properly segregated and separated to facilitate recycling of some useful waste materials. For example; broken stones can be used for backfills. Integrated solid waste management system may also be adopted through hierarchy of options like source reduction, recycling, composting and re-use.
- The Proponent should ensure that measures are put in place to ensure that construction materials required for the project are carefully budgeted to ensure the amount of construction materials left are kept to the minimal level possible.
- All the solid wastes should be collected by NEMA licensed waste collectors and dumped in NEMA recognized dumpsite
- E portable Human waste will be discharged into toilets and disposed appropriately by the mobile toilet handler.

Health and safety Impacts

Construction activities such as excavation and concreting can pose occupational hazards and risks to construction workers and the general public living and working in the neighbourhood of the construction site. They can cause respiratory infections and injuries to limbs and body due to exposure to, dust and combustion gases, operation of equipment and handling of construction materials. Accidents may occur during construction as a result of workers falling from heights or being hit by falling construction materials or tools.

Dust and combustion gases can irritate the eyes causing trachoma and respiratory problems. While the operation of construction equipment and handling of materials can result in injuries to the workers especially in the absence of appropriate protective devices. The health of the site workers may be further compromised by the food which

is often supplied by mobile individuals with no licenses to handle food and some of the foodstuffs may be prepared in unhygienic manner.

Mitigation

- Depending on the occupational safety and health hazards encountered while performing assigned tasks, workers may require using properly fitting personal protective equipment (PPE) to avoid injuries and illness. They (workers) must be provided with full protective gear. These include working/safety boots, overalls, helmets, goggles, earmuffs, masks, gloves etc.
- Adapt effective emergency response plans. A good start of learning how to respond to an emergency is through certification in Basic First Aid. Regular drills and emergency situations should be followed to impart the anticipated insight and awareness to the workers.
- A first aid kit should be provided within the site. This should be fully equipped always and should be managed by qualified persons.
- Safety awareness may be gained through regular safety training or personal interest in safety and health.
- Local individuals preparing food for the workers at the site must be controlled to ensure that food is hygienically prepared. Allow only authorized food vendors to supply food for the workers in the site
- The Contractor should have workmen's compensation cover. It should comply with Workmen's Compensation Act, as well as other Ordinances, Regulations and Union Agreements.
- Workers should always be sensitized on social issues such as drugs, alcohol, diseases etc.

Disruption of water supply

Disruption of water supply can occur during construction phase. During excavation activities, the underground water pipes supplying water to other businesses and residents may be accidentally broken.

Mitigation

Contractor should promptly contact Ruiru Juja Water and Sewerage Company immediately if any water pipe is damaged during construction to prevent prolonged water disruptions to neighboring businesses and residents.

Increased surface runoffs

Increase in the runoffs emanating from expansive roof tops and paved grounds shall be mitigated. These runoffs often lead to flooding and overflow of the drainage system.

Mitigation

- Construct gutters along the roofs for rainwater harvesting and provide tanks for water storage;
- Construct efficient drainage systems within the market.

Landscape and Visual destruction

At the initial stages of construction, excavators and landscape distortion can be an eye sore to the passerby.

Mitigation

- The Contractor shall put up a perimeter fence using non-transparent material to prevent people from accessing the site.
- The Proponent shall beautify the building and the site after its completion by painting it and planting aesthetic plant round it

Hazardous materials use/storage

There may be the need to use hazardous materials for construction. These materials can lead to minor or major destructions to life, soils and water. They may include paint; reacting chemicals among others.

Mitigation

- Ensure that all chemicals used in construction are appropriately labeled or marked and that material safety data sheets containing essential information regarding their identity, suppliers' classification of hazards, safety precautions and emergency procedures are provided and are made available to employees and their representatives;
- Keep a record of all hazardous chemicals used at the premises, cross-referenced to the appropriate chemical safety data sheets;
- There should be no eating or drinking in areas where chemicals are stored or used

Food poisoning

Construction workers may contract food poisoning by buying food from food vendors. This may lead to reduces work personnel and may lead to delay of works and increased expenses for training new workers.

Mitigation

- Allow only authorized food vendors to supply food for the workers in the site;
- Sensitize workers on the possibility of food poisoning from the vendors

Poor sanitation

Poor sanitation may be realized during construction when construction workers do not have access to toilets and water for washing hands thereafter.

Mitigation

- Provide Suitable, efficient, clean, well-lit and adequate gender specific sanitary conveniences for construction workers;
- Provide water and soap for washing hands after visiting the toilets.

Traffic snarl up and accidents

Activities related to construction works and operation will undoubtedly induce uncharacteristic levels of additional vehicular traffic at the site and roads leading to the site and market respectively. Related issues of vehicle congestion and reckless driving by truck drivers delivering construction materials and supplies to the site and market will be sources of potential accidents to road users and pedestrians. Disturbance of normal living conditions to the local population and business people due to the increased traffic in the area will also be expected especially during the construction period.

Mitigation measures during construction

The Proponent shall implement the following measures to minimise inconveniences and danger to proximate residents through increased road traffic and dust, and reduced access to worksites:

- Determine the main access and egress points for the site throughout the project duration, along with scheduled changes in these access and egress points, if applicable. These points need to be shown on the site layout (i.e., site setup) drawings.
- Proper traffic control signage should be installed. This includes road signage to be erected near all the entrances and junctions to control construction traffic
- Delivery of materials should be planned at night when there is minimal traffic

- Any excavated materials should be hauled at night or timed during traffic off-peak periods
- Prepare a plan for communication with residents and businesses surrounding the construction site. Effective communication with local stakeholders is essential to minimise the inconvenience to the surrounding community
- The Contractor shall prepare a traffic management plan to be approved by the RE
- The Contractor's vehicles and equipment must be in proper working condition and have registration plates, and numbering.
- The Contractor shall ensure proper driving discipline by its employees, and sanctions those in breach.
- Excavated sites, embankments, and dangerous locations are protected with proper safety barriers, tape and warning signs.
- Maintain a log detailing every violation and accident on site or associated with the project work activities, including the nature and circumstances, location, date, time, precise vehicles and persons involved, and follow-up actions with the police, insurance, families, community leaders, etc
- Implement grievance resolution mechanism

Mitigation measures during Operation

- Make the necessary arrangements for coordinating and controlling delivery vehicles
- Make arrangements with the traffic police and County personnel to manage traffic in the area to mitigate against traffic accidents and traffic jam built up at the entry and exit points of the market
- Delivery of supplies should be limited to off-peak hours when the market is not operational to minimize traffic jams in the area.

Socio-Economic Impacts

Since the market will be upgraded into a modern type of indoor market, the existing open-air market will be closed and relocated temporarily. The temporary closure of the open-air market will impact negatively on the economy of the traders, farmers and inconvenience the customers/residents. In the long run, the new modern type market will bring positive impacts to the people of the town and the surrounding areas. They will be able to do trade in the new market and access other services such as sanitation, water and will be sheltered from the sun and rain.

Mitigation

- Relocate the market to a suitable location nearby; the County government can provide land or hire a piece of land temporarily as the market building is being constructed.
- Give priority to the currently existing traders in the market to avoid conflict with new traders.

7.1.1. Housekeeping

During construction, organization of the construction area is important to ensure prevention of accidents and incidences within the site. Clear gangways and pathways enable faster movements even during normal working time and during response to emergencies.

Mitigation

Ensure that there is a well-organized housekeeping plan in place at the construction site.

Crime Management, Child protection, Gender equity and sexual harassment

The laws of Kenya prohibit Contractors from "employing children in a manner that is economically exploitative, hazardous, and detrimental to the child's education, harmful to the child's health or physical, mental, spiritual, moral, or social development. It is also important to be vigilant towards potential sexual exploitation of children, especially young girls. The Contractor should adopt a 'Child Protection Code of Conduct'; that all staff of the Contractor must sign, committing themselves towards protecting children, which clearly defines what is and is not acceptable behavior.

Crimes might occur in the project area during the construction and operation such as stealing of construction materials or individual property, fighting, petty crimes such as pick pocketing, drug abuse and alcoholism among others.

There is also potential that gender inequality might occur during project construction through unequal distribution of work, discrimination against women, and unequal pay for women, lack of provision of separate facilities for women, among others. Sexual harassment against women might also happen because of mixing of women and men at the construction site.

Mitigation Measures (design)

- Proper design incorporating lighting to enhance security at the market
- Provision for fencing along the property boundary should be part of the design to control entry and exit points

Mitigation measures during construction

- Ensure no children are employed on site in accordance with national labor laws

- Ensure that any child sexual relations offenses among Contractors' workers are promptly reported to the police
- The client and the Contractor shall adopt a 'Child Protection Code of Conduct' which sets stringent standards for personal behavior to avoid child exploitation and abuse.
- The Contractor shall require his employees, sub-Contractors, sub-Consultants, and any personnel thereof engaged in construction works to individually sign and comply with this Code of Conduct.
- Removing any employee who persists in any misconduct or lack of care, carries out duties incompetently or negligently, fails to conform to any provisions of the contract, or persists in any conduct which is prejudicial to safety, health, or the protection of the environment.
- Taking all reasonable precautions to prevent unlawful, riotous or disorderly conduct by or amongst the Contractor's personnel, and to preserve peace and protection of persons and property on and near the site.
- Prohibiting alcohol, drugs, arms, and ammunition on the worksite among personnel.
- The Contractor and Supervision Consultant should register in a log all events of a criminal nature that occur at the worksite or are associated with the civil works activities.
- The Contractor and Supervision Consultant should report all activities of a criminal nature on the worksite or by the Contractor's employees (whether on or off the worksite) to the police and undertake the necessary follow-up. Crime reports should include nature of the offense, location, date, time, and all other pertinent details.
- Sensitize the construction workers, locals, and security to be on the lookout on suspicious activities near the site

The Contractor's responsibility for workers' conduct within the worksite should include but not limited to:

- Contractor to prepare and enforce a "No Sexual Harassment Policy" in accordance with national law where applicable
- Contractor and implementing agency to prepare and implement a Gender Action plan to include at minimum, in conformance with local laws and customs, equal opportunity employment, gender sensitization

- Provision of gender disaggregated bathing, changing, sanitation facilities
- Grievance redress mechanisms including non-retaliation should be set up for the workers
- Liaise with the administration units (County and sub County governments, Police, DO, chiefs, etc.) to provide regular surveillance and patrols to protect workers and shoppers during operation
- The market management should hire a security firm to manage security within the market

Complaints and Grievances/Social Conflict

During construction, the neighbouring community and traders may have complaints and grievances regarding the ongoing activities. There is also potential for social unrest among the local population if they are not considered for employment. This can bring negative publicity during construction including stoppage of work and can delay the projects progress.

The development of the market as well as allocation of space for doing business has been discussed through public consultation, and there are many expectations on who will occupy the stalls when the development is completed. Against the background of this knowledge and expectation, there is a risk of dissatisfaction if procedures of allocation of stalls and spaces are not adequately applied, or if they are seen to be applied in an inequitable manner.

Mitigation

- Provide grievance redress mechanism for the public and traders;
- Advice the public and traders on where to report grievances;
- Consider prioritizing the local manpower for both skilled and unskilled labour.
- Adhere to the market policy in allocation of stalls and spaces to traders;
- Implement proposed grievance resolution mechanism

Increased HIV/AIDs prevalence and other diseases

Construction sites in developing countries are potentially primary centres of HIV-AIDS because construction sectors provide entry-level local jobs, which may be crucial to the survival of youth-headed households and extended families.

Mitigation

- HIV-AIDS awareness methods used in campaign to increase understanding about the disease;

- Raising awareness about HIV/AIDS;
- Promote the benefits of abstinence / avoidance;
- Distribute condoms to construction workers;
- Encourage workers to go for HIV voluntary counseling, testing and referral services;
- Monitoring of outcomes, in collaboration with National HIV/AIDS Authorities.

7.2. Operation Phase Impacts

7.2.1. Poor Solid and liquid waste

The market building after completion and upon occupation will generate solid and liquid wastes. The efficient management of the solid waste generated by the project during the operation phase rests on the hands of the Kiambu County Government

Mitigation

- Wastes should be disposed off in a regular and an appropriate manner. It is recommended that the Proponent should put measures in place to ensure that the wastes are disposed of efficiently through reuse, recycling and proper disposal procedures
- The Proponent should provide waste handling facilities such as waste bins for holding wastes temporarily before disposal by appropriate waste handlers.
- The Proponent should ensure that the market is connected to the septic tank to ensure proper discharge of liquid waste.

Increased Energy consumption and demand

The building will be connected to the electric line which is already available in the area. However; increase in energy consumption will be experienced in the existing electric supply infrastructure.

Mitigation

- The Proponent shall install energy-efficient system within the building for instance the use of energy saving bulbs. This will promote energy conservation during the operational phase of the project.
- The occupants of the building will be sensitized to ensure energy efficiency in their commercial operation.
- The above measures will be complemented by monitoring energy use during the operation of the market and set targets for efficient energy use.
- Maintenance of regular checks of the electrical systems and appliances.

- Switching off security and internal lights during the day when natural lighting can be used.

Occupational Health and Safety Concerns

The market premise should be maintained at its optimum useful state and high standards of hygiene maintained to avoid any disease outbreak. All electrical installations should be properly fixed and maintained to avoid any risk of fire outbreak.

Mitigation

- Local individuals preparing food for at the market must be controlled to ensure that food is hygienically prepared and served.
- Adapt effective emergency response plans. A good start of learning how to respond to an emergency is through certification in Basic First Aid. Regular drills and emergency situations should follow to impart the anticipated insight and awareness to the workers.
- A first aid kit should be provided within the market. This should be fully equipped always and should be managed by qualified persons.
- Safety awareness may be gained through regular safety training or personal interest in safety and health.
- Traders should be sensitized on social issues such as drugs, alcohol, diseases etc.

Fire Outbreak

The anticipated occupants/ traders are likely to use LPG Gas cylinder, electricity and charcoal as their source of cooking fuel. The occupants/ traders are also likely to store flammable materials since the premise is a trading hub dealing with different good. Therefore, the risk of fire outbreak is likely and should be prevented as much as possible.

Mitigation

- Installation of firefighting equipment, which must be strategically placed
- All electrical systems must undergo regular checks
- If appliances or equipment that can cause fire like petroleum and liquid gas may be used in the shops/supermarket/restaurant/hardware, then the occupants/ traders must be sensitized on the fire risks they are exposed to
- Highly inflammable paints should be avoided in the kitchen walls and other areas where cooking activities are anticipated.

Blockage of drainage systems

The plumbing system and drainage might be blocked if proper use and maintenance is not exercised by the occupants/traders

Mitigation

- The Proponent should ensure that unwanted materials such as sticks and cloths are not allowed into the drainages. Special bins for handling sanitary materials or clothes should be provided in the toilets.
- Regular maintenance of the drainage should be done to avoid blockages.

Water Pollution

During the operation phase, water pollution may occur when market users litter the drainages, channeling contaminated water to the drainage systems and disposal of liquid waste inappropriately.

Mitigation

- Avoid channeling contaminated water onto the public drainage systems.
- Channel unrecyclable water into the public sewer line. There is no drainage system within the market even though a sewer main line belonging to NCC exist a short distance from the market. There is need for a drainage system within the market to be connected to the main sewer line
- Dispose market waste appropriately

Depletion of Water Resources during Operation phase

Operation of the market will lead to a higher demand of water by the market users. This demand may lead to depletion of the water from the water service provider and at times water rationing will be required.

Mitigation

- Install water tanks and other water saving technology at the site to save on water usage;
- Train market users on water saving techniques;
- Carry out rainwater harvesting to supplement tapped water.

Air pollution (Dust; Source emissions; odour/foul smells)

Air pollution may occur due to operation activities at the market. These include piling of solid waste for a long time, rotting food stuffs especially vegetables and meats, use of sanitary facilities without proper cleaning, burning waste on site, and source

emissions from the generators as well as occurrence of uncovered manholes at the market.

Mitigation

- Clean and dust away all market areas regularly;
- Solid waste should be regularly removed from the market collection points
- Carry out proper maintenance of generators used on site
- Manholes should be covered using airtight covers in the sewerage lines to reduce any air pollution inform of foul smell; There is no drainage system within the market even though a sewer main line belonging to NCC exist a short distance from the market. There is need for a drainage system within the market to be connected to the main sewer line
- Frequently (Hourly) clean the sanitary facilities by use of detergents;
- Unnecessary combustion of materials within the compound should be avoided.
- All rotting vegetables and meat must be removed from the market and disposed of appropriately

Accidents and incidence occurrence

Accidents and incidences may occur during operations of the project. Occurrence of such incidences may include falling, being knocked down by vehicles, damage to goods and property.

Mitigation

- Ensure that provisions for reporting incidents, accidents and dangerous occurrences during operations using prescribed forms obtainable from the local Occupational Health and Safety Office (OHSO) are in place;
- Provisions must be put in place for the formation of a Health and Safety Committee, in which the County Government and the traders are represented;
- Train employees on how to respond to incident and accident occurrences.

HIV/AIDS prevalence

HIV-AIDS prevalence is likely to increase among market traders when many youths get self-employed and earn income. Without proper campaign on prevention, the spread of HIV can be rampant within traders.

Mitigation

- Awareness methods used in campaign to increase understanding about the disease;
- Raising awareness about HIV/AIDS;

- Promote the benefits of abstinence / avoidance;
- Availing condoms to traders;
- Encourage traders to go for HIV voluntary counselling, testing and referral services;
- Monitoring of outcomes, in collaboration with National HIV/AIDS Authorities

7.5. Decommissioning phase impacts

Solid wastes (Scraps and other Debris Onsite)

Demolition works generates a lot of solid wastes. These wastes range from; wood, tiles, waste metals and stones amongst others.

Mitigation

- The Proponent should liaise with private waste handlers and the Kiambu County Government to have a sound waste handling and disposal.
- The wastes should be properly segregated and separated to facilitate recycling of some useful waste materials. For example; broken stones can be used for backfills. Integrated solid waste management system may also be adopted through hierarchy of options like source reduction, recycling, composting and re-use.
- All the solid wastes should be collected by NEMA licensed waste handlers and dumped in NEMA recognized dumpsite.

Air, Water and Soil Pollution

Demolitions also generate a lot of waste that can contaminate water, air or soil. These wastes may include liquids, dust or waste water.

Mitigation

Solid waste and liquid waste resulting from demolition or dismantling works will be managed as described in the construction phase

Occupational Health and Safety Concerns

The decommissioning phase may cause accidents; inhalation of dust; generation of noise and occupational incidences like fall.

Mitigation

- Depending on the occupational safety and health hazards encountered while performing assigned tasks, workers will use properly fitting personal protective equipment (PPE) to avoid injuries and illness. Workers must be provided with full

protective gear. These include working/safety boots, overalls, helmets, goggles, earmuffs, masks, gloves etc.

- A first aid kit should be provided within the site. This should be fully equipped at all times and should be managed by qualified persons.
- Local individuals preparing food for the workers at the site must be controlled to ensure that food is hygienically prepared.
- The Contractor should have workmen's compensation cover. It should comply with Workmen's Compensation Act, as well as other Ordinances, Regulations and Union Agreements.
- Workers should always be sensitized on social issues such as drugs, alcohol, diseases etc.
- Grievance redress mechanisms including non-retaliation should be set up for the workers

Cumulative impacts

Cumulative impacts are those that result from the successive, incremental, and/or combined effects of an action, project, or activity. For practical reasons, the identification and management of cumulative impacts are limited to those effects generally recognized as important based on scientific concerns and/or concerns of affected communities[1]. Cumulative impacts can only occur where, following the implementation of mitigation, significant residual impacts are predicted by the ESIA process.

The cumulative impacts considered in this project include the following;

- Air quality,
- Water quality,
- Waste management
- Noise impacts
- Traffic
- Social economics

Assessment of the impacts

The ESIA assessment looked at the likelihood of an impact having a residual impact that can build up or interact with other impacts from other market projects after the

[1] IFC), 2013, Good Practice Handbook Cumulative Impact Assessment and Management: Guidance for the Private Sector in Emerging Markets

implementation of the mitigation measures proposed in this report. The impact was then rated likely or unlikely. The distances between the markets were also taken into consideration. The distance of other proposed markets to Juja market is set out in table 7-1 below.

Table 7-1 : The distance of Juja Market in reference to other fourteen markets on a straight line

	Market	Approximate distance to Juja Market
1.	Muthurwa	22.28 Km
2.	Jogoo Road	27.58 Km
3.	Githurai	16.01 Km
4.	Kiambu Market	22.28 Km
5.	Mwariro	20.40 Km
6.	Kikuyu	42.25 Km
7.	Karandini	36.11 km
8.	Ngong	49.13 Km
9.	Ole Kasasi	42.76 Km
10.	Kitengela	42.07 KM
11.	Kihara	30.66 Km
12.	Ruiru	8.60 Km
13.	Madaraka	11.70 Km
14.	Tala	38.90 Km

The following tables look at the significance of an impact to have residual cumulative impact. The impacts are rated as negligible, minor or moderate.

Residual cumulative impact of air quality

No significant local air quality effects are predicted following the good construction practice, which incorporates the implementation of the identified mitigation measures in the ESMP

Phase	Significance (Pre-mitigation)	Residual Significance (Post-mitigation)
Construction	negligible	negligible
Operation	negligible	negligible

Residual cumulative impact of water quality

No significant impacts on the local water environment are predicted with the implementation of proposed mitigation measures. Therefore, in reference to the fifteen markets, interaction of the impacts to produce cumulative impact is negligible.

Phase	Significance (Pre-mitigation)	Residual Significance (Post-mitigation)
Construction	minor	negligible
Operation	minor	negligible

Residual cumulative impact of Waste management

In waste management, cumulative impact to the waste services could be impacted if mitigation measures are not implemented and the impact significance could be minor. Therefore, following the implementation of mitigation measures cumulative impact are localised and impossible to spread and combine to produce any significant cumulative impact

Phase	Significance (Pre-mitigation)	Residual Significance (Post-mitigation)
Construction	minor	negligible
Operation	negligible	negligible

Residual cumulative impact of Noise quality

For the proposed market project, the noise generation is predicted to be localized. In addition to distance between the markets it is impossible for the noise level to combine and produce significant cumulative impact.

Phase	Significance (Pre-mitigation)	Residual Significance (Post-mitigation)
Construction	negligible	negligible
Operation	negligible	negligible

Residual cumulative impact of traffic congestion/interruption

Due to the geographical location of the markets and the fact that all the markets are not going to be constructed at the same time. It's unlikely that any significant cumulative traffic impacts arising from the market improvement projects. In addition, the haulage routes and access roads for the markets are different and widespread; therefore, no significant impact will arise following the implementation of the localized mitigation measures

Phase	Significance (Pre-mitigation)	Residual Significance (Post-mitigation)
Construction	minor	negligible
Operation	negligible	negligible

Cumulative impact on socio economic

Cumulative impacts on socio economic as a result of all the fifteen markets being built at the same time is likely to have positive impacts to the socio economic of the metropolitan region. Some of the benefits include the following;

- Increased number of people employed in the building sector as casual/permanent during the construction and as traders or business assistants during operation phase
- Improved markets will reduce produce loses because of the improved storage conditions and working condition and increase profitability of the businesses in the markets
- The County revenue tax will increase due to the increase of number of traders in the market.
- The quality of life of both the traders and the customers will improve from trading and buying commodities in modern and hygienic conditions

Conclusion

The possibility of the interaction of the anticipated impact is unlikely to produce any cumulative impact due to the distance between the 15 markets and their geographic location. In addition, the markets will not be constructed at the same time, which make the interaction of the impacts unlikely or even produce any cumulative impacts.

CHAPTER EIGHT

8. ENVIRONMENTAL AND SOCIAL MANAGEMENT AND MONITORING PLAN (ESMMP)

8.1. Significance of ESMMP

The purpose of the Environmental/Social Management & Monitoring Plan is to initiate a mechanism for implementing mitigation measures for the potential negative environmental impacts and monitor the efficiency of these mitigation measures based on relevant environmental indicators. The EMMP assigns responsibilities of actions to various actors and provides a timeframe within which mitigation measures can be implemented, supervised and monitored. Further, it provides a checklist for project monitoring and evaluation. The objectives of the ESMMP are:

- To provide evidence of practical and achievable plans for the management of the proposed project.
- To provide the Proponent and the relevant Lead Agencies with a framework to confirm compliance with relevant laws and regulations.
- To provide community with evidence of the management of the project in an environmentally acceptable manner.

The ESMMP outlined below will address the identified potential negative impacts and mitigation measures on the following project stages:

- Pre-construction and Construction Phases ESMMP
- Operation Phase ESMMP and
- Decommissioning Phase ESMMP.

Once all the operational activities have ceased, it is necessary to highlight the basic mitigation measures that will be required during the decommissioning phase of the project. Thus, the crucial objectives, mitigation measures, allocation of responsibilities, time frames and costs pertaining to prevention, minimization and monitoring of all potential impacts associated with the decommissioning and closure phase of the project.

8.2. Environmental and Social Management and Monitoring Plan

ESMMP is a detailed summary of the impacts and the proposed mitigation measures. It further specifies who is responsible for implementation of the proposed actions and the cost involved in the action. It describes monitoring schedule and the parameter to be monitored. The following table 8-1 outlines the ESMMP for the market

Table 8-1*:* Environmental and Social Management and Monitoring Plan (Table)

Project Environmental and Social Impact	Proposed Mitigation and Aspects for Monitoring	Responsibility for intervention and monitoring during design, construction and defects liability period	Parameters for Monitoring/ Indicators (c) – construction (o) - operations	Timing - Recommended frequency of monitoring	Estimated Mitigation & Monitoring costs to be included in the BoQ (Ksh)
Loss of vegetation	**CONSTRUCTION PHASE** ♦ Minimize clearing of unnecessary areas at the construction site ♦ Replant vegetation through landscaping upon completion **OPERATION PHASE** ♦ Replenish vegetation at the open areas of the market regularly ♦ Proper maintenance of trees and other vegetation at the market	Design Engineer, Project Engineer and Contractor	(c) check and follow specifications in the drawings and plans (c) Minimal clearance of vegetation and soil stripping	Continuous during construction & operation phases	Included in the BoQ under excavations Bill No 2
Soil erosion	**CONSTRUCTION PHASE** ♦ Construct efficient drainage structures (culverts, miter drains, scour checks etc.) ♦ Control earthworks through cascading gabions and distribution channels for storm water ♦ Protect excavated sections of the route of storm water during heavy rains ♦ Provide erosion channels to natural drains and drainage system to minimize erosion ♦ Design to incorporate existing drainage pattern and avoid disturbing the same	Design Engineer, Project Engineer and Contractor KCG	(c) and (o) Soil erosion levels	During rainy seasons	Included in the BoQ under Drainage Structures Bill No 2 Normal maintenance budget of the market during operation

Project Environmental and Social Impact	Proposed Mitigation and Aspects for Monitoring	Responsibility for intervention and monitoring during design, construction and defects liability period	Parameters for Monitoring/ Indicators (c) – construction (o) - operations	Timing - Recommended frequency of monitoring	Estimated Mitigation & Monitoring costs to be included in the BoQ (Ksh)
	OPERATION PHASE ♦ Regular cleaning and proper maintenance/repair of drainage structures				
Disruption of Public Utilities	**DESIGN and CONSTRUCTION PHASE** ♦ Design to incorporate existing public utilities and avoid disturbing the same ♦ Contractor to generate utility management plan ♦ Contractor to minimize damage to public utilities	Project Engineer and Contractor Utilities providers	♦ (c) Down time of utilities affected ♦ Complaints from the local residents ♦ No of disruptions	(c) daily	Budget under provisional sums of Utilities Bill No 1, Item E Ksh 6,000,000
Disruption of Businesses or livelihood	**Construction Phase** ♦ Have a Resettlement Action Plan to temporary solve disruption of business as the trader await the construction of the market to be complete	The Proponent	(C) Implementation of the RAP Monitor grievance or complaint recorded by local leader/market official/leaders	Before construction starts	Budget provided after RAP development
Air Pollution	**CONSTRUCTION PHASE** ♦ Speed control of vehicles accessing the site ♦ Construction of bumps along the road near the market ♦ Regular watering of access roads and work sites	Project Engineer, Contractor, Traffic police	(c) inspection / observation • Dust levels (particulate matter)- the levels may exceed the baseline	daily/random	Equipment - costs build in the planning and administration costs of the contractor equipment

Project Environmental and Social Impact	Proposed Mitigation and Aspects for Monitoring	Responsibility for intervention and monitoring during design, construction and defects liability period	Parameters for Monitoring/ Indicators (c) – construction (o) - operations	Timing - Recommended frequency of monitoring	Estimated Mitigation & Monitoring costs to be included in the BoQ (Ksh)
	♦ Proper maintenance of construction equipment per the manufacturer requirements		levels (40 µg/m^3) presented in table 4-1 of this report but should be within the limits set out in the First Schedule of EMC (Air Quality) Regulations, 2014. At the project site boundary, the 24hour and annual time weighted average should not exceed 70 and 50 µg/m^3 respectively. • Exhaust fumes from the vehicles- the emission levels should not exceed the levels prescribed under Kenya Standards		

Project Environmental and Social Impact	Proposed Mitigation and Aspects for Monitoring	Responsibility for intervention and monitoring during design, construction and defects liability period	Parameters for Monitoring/ Indicators (c) – construction (o) - operations	Timing - Recommended frequency of monitoring	Estimated Mitigation & Monitoring costs to be included in the BoQ (Ksh)
			(KS1515:2000 on vehicular emission) e.g. CO shall not exceed 0.5 per cent volume and hydrocarbons (HC) concentrations shall not exceed 0.12 per cent volume (1200ppm) ♦ Maintenance levels of plant and equipment		
Noise pollution	**CONSTRUCTION PHASE** ♦ Regular Sensitization of workforce and residents on potential noise levels ♦ Controlled operation of construction plant and equipment ♦ No blasting shall be done on site	Project Engineer and Contractor	Inspection / observation • Construction noise and vibration levels at the construction site should be within the limits prescribed in EMC (Noise and Excessive Vibration Pollution (Control) Regulations 2009 or no more than baseline levels presented in table 4-1 of this report. The regulatory limits are as follow: • Noise levels- as provided in the Second	daily/random	Costs build in the planning and administration costs of the contractor

Project Environmental and Social Impact	Proposed Mitigation and Aspects for Monitoring	Responsibility for intervention and monitoring during design, construction and defects liability period	Parameters for Monitoring/ Indicators (c) – construction (o) - operations	Timing - Recommended frequency of monitoring	Estimated Mitigation & Monitoring costs to be included in the BoQ (Ksh)
			Schedule of the above regulations the levels should not exceed Leq 60 and 30 dB(A) in diurnal and nocturnal schedules respectively. • Vibration levels do not exceed 0.5 centimeters per second beyond any source property boundary or 30 meters from any moving source. ♦ Number of Complaints from the residents		

Project Environmental and Social Impact	Proposed Mitigation and Aspects for Monitoring	Responsibility for intervention and monitoring during design, construction and defects liability period	Parameters for Monitoring/ Indicators (c) – construction (o) - operations	Timing - Recommended frequency of monitoring	Estimated Mitigation & Monitoring costs to be included in the BoQ (Ksh)
Water Resources Usage	**CONSTRUCTION PHASE** ♦ Develop water abstraction plan to minimize conflict with local residents ♦ Manage use of piped water and other water sources mainly used by local people ♦ Abstraction licenses should be obtained from the required authority (WARMA)	Project Engineer and Contractor WARMA	♦ Inspection /method of waste collection ♦ Complaints from the neighbouring communities or the authorities ♦ Amount of water abstracted	(c) monthly	costs build in the planning and administration costs of the contractor
	OPERATION PHASE ♦ Monitor water wastage and usage during operational stages of the market ♦ Install pressure taps that minimize and time usage ♦ Repair damaged taps and toilets to minimize waste	KCG	♦ Inspection ♦ Amount of water used ♦ Repairs and damaged water facilities	(o) monthly	Normal maintenance budget
Water Pollution	**DESIGN and CONSTRUCTION PHASE** ♦ Incorporate erosion control measures during construction at the site ♦ No oils and fuels should be stored on the construction site – small works	Project Engineer and Contractor Sub-County Health & Environmental Officer, NEMA, WARMA	♦ Inspection ♦ Discharge into water bodies ♦ Complaints from the neighbouring	(c) daily (o) regularly	Costs build in the planning and administration costs of the contractor &

Project Environmental and Social Impact	Proposed Mitigation and Aspects for Monitoring	Responsibility for intervention and monitoring during design, construction and defects liability period	Parameters for Monitoring/ Indicators (c) – construction (o) - operations	Timing - Recommended frequency of monitoring	Estimated Mitigation & Monitoring costs to be included in the BoQ (Ksh)
	♦ Maintenance, re-fueling and cleaning of equipment should NOT be done at construction site by the contractor – but in a licensed garages outside the site area ♦ The design will incorporate oil sumps at the parking areas to isolate oil spills from parked vehicles that might spill to the storm drains ♦ No solid waste, fuels or oils shall be discharged on land surface, into drains or streams **OPERATION PHASE** ♦ Monitor oil spills and other leakages at the at garages, parking lots, and delivery areas ♦ Regular cleaning of oil sumps and storm water drains	KCG	communities or the authorities		Maintenance costs of the market
Traffic safety	♦ Contractor to prepare a Traffic Management Plan for approval to address the following issues; ♦ Initiation of a safety program and measures by creating awareness and educational campaigns for workers and local communities ♦ Installation of appropriate road signage, speed signs, and other	Project Engineer and Contractor Local Police, KCG	Inspection and accident reports (c) & (o) - No of accidents (c) & (o) - Complaints from the local people (c) Adherence of insurance and traffic Act requirements	Monthly	Costs build in the planning and administration costs of the contractor Contract clause No 18

Project Environmental and Social Impact	Proposed Mitigation and Aspects for Monitoring	Responsibility for intervention and monitoring during design, construction and defects liability period	Parameters for Monitoring/ Indicators (c) – construction (o) - operations	Timing - Recommended frequency of monitoring	Estimated Mitigation & Monitoring costs to be included in the BoQ (Ksh)
	warning signs at the site and access roads ♦ Copies of insurance policies for the contractor's drivers and vehicles should be provided to the Supervision Consultant. ♦ The contractor's vehicles and equipment must be in proper working condition and have registration plates, and numbering. ♦ The contractor ensures proper driving discipline by its employees, and sanctions those in breach. ♦ Excavated sites, embankments, and dangerous locations are protected with proper safety barriers, tape and warning signs. ♦ Maintain a log detailing every violation and accident on site or associated with the project work activities, including the nature and circumstances, location, date, time, precise vehicles and persons involved, and follow-up actions with the police, insurance, families, community leaders, etc. (including during operation stages)				
Settlement/Induced settlement changes	**CONSTRUCTION PHASE**	KCG, Local sub-county Authorities	Inspection/observation	monthly	No direct costs

Project Environmental and Social Impact	Proposed Mitigation and Aspects for Monitoring	Responsibility for intervention and monitoring during design, construction and defects liability period	Parameters for Monitoring/ Indicators (c) – construction (o) - operations	Timing - Recommended frequency of monitoring	Estimated Mitigation & Monitoring costs to be included in the BoQ (Ksh)
	♦ Ensure the site is fenced off to discourage informal settlement and trading around the premises ♦ Discourage informal business settlement near the market		Number of informal business set up near the project		
Social Issues - employment	**CONSTRUCTION PHASE** ♦ Utilization of local skilled and unskilled workers	Contractor, Project Engineer	(c) observation /reports ♦ Number/percentage of local workers from the local communities ♦ Complaints from local residents	Monthly	No direct costs to ESMMP, costs build in the planning and administration costs of the contractor
Workers and commuters health and sanitation	♦ Contractor to provide clean and adequate sanitation facilities for the workers at all times ♦ Contractor shall also provide clean drinking water at the construction site for his workers at all times **OPERATION PHASE** ♦ Project proponent to provide clean and adequate sanitation facilities for the commuters	Contractor, Project Engineer KCG	♦ Inspection/observation/ reports ♦ Number of sanitation facilities ♦ Sanitation facilities cleanliness ♦ Number of disease outbreaks	Daily Monthly reports	No direct costs to ESMMP, costs build in the planning and Administration costs of the contractor & Normal maintenance costs during operation
Security and Crime	♦ Proper design incorporating lighting to enhance security at the market ♦ Sensitize the construction workers, locals, and security to be on the	Contractor, Project Engineer Local police KCG	♦ Reporting ♦ Number of crimes reported	Monthly	No direct costs to ESMMP, costs build in the planning and

Project Environmental and Social Impact	Proposed Mitigation and Aspects for Monitoring	Responsibility for intervention and monitoring during design, construction and defects liability period	Parameters for Monitoring/ Indicators (c) – construction (o) - operations	Timing - Recommended frequency of monitoring	Estimated Mitigation & Monitoring costs to be included in the BoQ (Ksh)
	lookout on suspicious activities near the market ♦ Liaise with the administration units (County and sub county governments, Police, DO, chiefs, etc.) to provide regular surveillance and patrols to protect workers and commuters		(target =0)		administration costs of the contractor & Normal operational costs during operation
HIV/AIDS, STDs,	**CONSTRUCTION PHASE** ♦ Initiate a sensitization and awareness campaign on HIV/AIDS and STDs to be done to workers and local community; ♦ Reduce risk of transfer through provision of male and female condoms for all workers; ♦ Provide free STI and HIV/AIDS screening, diagnosis, counseling for workers and local people near the site	Contractor, Project Engineer Sub-county Health & Environmental Officer, local sub-county authorities	♦ observation / reports ♦ No of HIV/AIDs programs conducted by the contractor ♦ No of testing, counseling provided ♦ Prevalence of prostitution, HIV/AIDS and STDs in the area during construction period	Monthly	♦ HIV/AIDS awareness campaign ♦ HIV/AIDS prevention campaign Ksh 2,500,000 as per provided in the BoQ Bill No 1 , Item L
	OPERATION PHASE ♦ Maintain a continuous awareness program on health issues related to	Proponent Contractor	♦ Observation / reports	♦ Continuous	

Project Environmental and Social Impact	Proposed Mitigation and Aspects for Monitoring	Responsibility for intervention and monitoring during design, construction and defects liability period	Parameters for Monitoring/ Indicators (c) – construction (o) - operations	Timing - Recommended frequency of monitoring	Estimated Mitigation & Monitoring costs to be included in the BoQ (Ksh)
	STDs and HIV/AIDS at the market, e.g. installing posters at the market		♦ Information flow, dissemination and awareness on HIV/AIDs ♦ No of posters at the market	♦ Response to HIV/AIDS issues	
Solid Waste	**CONSTRUCTION PHASE** ♦ Establish a well-planned method of solid disposal of debris/ garbage at the camp site	Contractor and Project Engineer	Inspection ♦ Disposal methods of solid waste from the site ♦ Complaints on health and safety aspects related to construction activities ♦ Site cleanliness ♦ Amount of waste/debris on site	weekly	Costs build in the planning and administration costs of the contractor
	OPERATION PHASE ♦ Provision of disposal bins at designated areas at the market ♦ Regular collection and disposal of garbage by the project proponent ♦ Clean storm water drains to minimize clogging ♦ Provision of separate collection bins for biodegradable and non-biodegradable waste at the new facility.	KCG	♦ Inspection ♦ Accumulation of garbage at the market ♦ Complaints by commuters (target =0) ♦ Number of drainage areas clogged ♦ Facilities cleanliness	daily	KCG budget

Project Environmental and Social Impact	Proposed Mitigation and Aspects for Monitoring	Responsibility for intervention and monitoring during design, construction and defects liability period	Parameters for Monitoring/ Indicators (c) – construction (o) - operations	Timing - Recommended frequency of monitoring	Estimated Mitigation & Monitoring costs to be included in the BoQ (Ksh)
	♦ Traders to be provided with bins near their merchandising points to ensure waste generated is collected at garbage stations or transfer points and later disposed at the main collection points for further disposal by the county authorities. ♦ All the collection bins and collection points/stations shall be properly maintained on regular basis				
Occupational Health and Safety	The contractor to prepare a Health and Safety Plan that will include consideration of the following: **CONSTRUCTION PHASE** ♦ Provide medical and insurance cover for all workers ♦ Provide adequate and right safety tools, and enforce use of PPEs to all workers ♦ Appoint a fulltime OHS personnel ♦ Ensure provisions of first aid for staff , insurance, and access to ambulance service at all worksites, and arrangement to access local hospital/dispensary with qualified medical staff by workers	Project Engineer and Contractor Sub-county Health & Environmental Officer	♦ Inspection ♦ No of PPEs provided ♦ Workers OHS compliance (use and adequacy) ♦ Number of construction activities related accidents	Monthly	Standard conditions of contract for Insurance - Clause 18 of contract Bill No 1 ,Item A Health & Safety for Workers and Equipment – Approx. Ksh 1,000,000

Project Environmental and Social Impact	Proposed Mitigation and Aspects for Monitoring	Responsibility for intervention and monitoring during design, construction and defects liability period	Parameters for Monitoring/ Indicators (c) – construction (o) - operations	Timing - Recommended frequency of monitoring	Estimated Mitigation & Monitoring costs to be included in the BoQ (Ksh)
	♦ The site shall be fenced off and provided with security at the access gates to reduce potential accidents and injuries to the public				
Child protection	***CONSTRUCTION PHASE*** ♦ The contractor to have and enforce 'Child Protection Code of Conduct' ♦ Ensure no children are employed on site in accordance with national labor laws ♦ Ensure that any child sexual relations offenses among contractors' workers are promptly reported to the police	Contractor, Project Engineer,	♦ observation /reports/random checks ♦ Inspection of employees working at the site ♦ Labor Records by the contractor	Regularly	No Direct costs
Gender equity and Sexual harassment	***CONSTRUCTION PHASE*** ♦ Contractor to prepare and enforce a No Sexual Harassment Policy in accordance with national law where applicable ♦ Contractor and implementing agency to prepare and implement a Gender Action plan to include at minimum, in conformance with local	Contractor, Project Engineer,	♦ observation /reports Number of incidences (target =0) ♦ ♦ Number of women employed	monthly	No direct costs to EMMP, costs build in the planning and administration costs of the contractor

Project Environmental and Social Impact	Proposed Mitigation and Aspects for Monitoring	Responsibility for intervention and monitoring during design, construction and defects liability period	Parameters for Monitoring/ Indicators (c) – construction (o) - operations	Timing - Recommended frequency of monitoring	Estimated Mitigation & Monitoring costs to be included in the BoQ (Ksh)
	laws and customs, equal opportunity employment, gender sensitization ♦ Provision of gender disaggregated bathing, changing, sanitation facilities ♦ Grievance redress mechanisms including non-retaliation		♦ Labor Records by the contractor		
Loss of life, injury, or damage to people and private property	**CONSTRUCTION PHASE** ♦ Contractor shall maintain records and making reports concerning health, safety and welfare of persons, and damage to property, as the RE may reasonably require ♦ Insuring against liability for any loss, damage, death or bodily injury which may occur to any physical property or to any person which may arise out of the contractor's performance of the contract ♦ Insuring against liability for claims, damages, losses and expenses (including legal fees and expenses) arising from injury, sickness,	Contractor, Project Engineer,	Number of incidences reported (target=0)		No direct costs to EMMP, costs build in the planning and administration costs of the contractor Schedules, BOQ, Sect A, No 5

Project Environmental and Social Impact	Proposed Mitigation and Aspects for Monitoring	Responsibility for intervention and monitoring during design, construction and defects liability period	Parameters for Monitoring/ Indicators (c) – construction (o) - operations	Timing - Recommended frequency of monitoring	Estimated Mitigation & Monitoring costs to be included in the BoQ (Ksh)
	disease or death of any person employed by the contractor or any other of the contractor's personnel. ♦ The construction site shall be fenced off to prevent access to members of the public				
Chance Finds	The contractor should have and implement the Chance Finds Procedure set out in Appendix 2 in the event that cultural heritages is discovered	Contractor, proponent, KCG	Log of chance find; 100% implementation of Chance Finds Procedure	Constant monitoring during excavation	No cost implication
TOTAL APPROXIMATE COSTS OF ESMMP					**Kshs9,5000,000**

Table 8-2: ESMMP for Relocation and Return

Project Environmental and Social Impact	Proposed Mitigation and Aspects for Monitoring	Responsibility for intervention and monitoring during design, construction and defects liability period	Parameters for Monitoring/ Indicators (c) – construction (o) - operations	Timing - Recommended frequency of monitoring	Estimated Mitigation & Monitoring costs to be included in the BoQ (Kshs)
Loss of business shades	• Provide temporary appropriate structures at the relocation site.	Proponent County government	Temporary shade available for use in the relocation site	Before resettlement	RAP budget
	• Resettlement back to the improved market		Permanent stall allocation	After construction of the new market	RAP budget

Project Environmental and Social Impact	Proposed Mitigation and Aspects for Monitoring	Responsibility for intervention and monitoring during design, construction and defects liability period	Parameters for Monitoring/ Indicators (c) – construction (o) - operations	Timing - Recommended frequency of monitoring	Estimated Mitigation & Monitoring costs to be included in the BoQ (Kshs)
Loss of business income during the transition	• Provide notice to the PAPs in advance to relocate to the new temporary site • The structure in the relocation site should be ready for occupation before shifting the traders • Compensation of property and business lost	Proponent County go	Smooth transition at the shortest time possible Compensation of lost income	Throughout the transition period	RAP budget
Air Quality	**Construction period** **Mobile sources** • Machinery and vehicles operators should implement the manufacturer recommended engine maintenance programs • Drivers should be trained and guided on the benefits of driving practices that reduce both the risk of accidents and fuel consumption, including measured acceleration and driving within safe speed limits **Dust Particulate Matter (PM) control and mitigation measures**	Contractor Proponent	• (c) inspection / observation • Dust levels (particulate matter PM_{10} and $PM_{2.5}$)- the levels may exceed the baseline levels (40 µg/m^3) presented in table 4-1 of this report but should be within the limits set out in the First Schedule of EMC (Air Quality) Regulations, 2014. At the project site boundary, the 24hour and annual time weighted average should not exceed 70	Quarterly	administration costs of the contractor

Project Environmental and Social Impact	Proposed Mitigation and Aspects for Monitoring	Responsibility for intervention and monitoring during design, construction and defects liability period	Parameters for Monitoring/ Indicators (c) – construction (o) - operations	Timing - Recommended frequency of monitoring	Estimated Mitigation & Monitoring costs to be included in the BoQ (Kshs)
	• Use of dust control methods, such as covers, water suppression, or increased moisture content for open materials storage piles, or controls, including air extraction and treatment through a baghouse or cyclone for material handling sources, such as conveyors and bins; • Use of water suppression for control of loose materials on paved or unpaved road surfaces. Oil and oil by-products is not a recommended method to control road dust		and 50 $\mu g/m^3$ respectively.		
Noise and vibration	• Selecting equipment with lower sound power levels • Installing silencers for fans • Installing suitable mufflers on engine exhausts and compressor components • Installing acoustic enclosures for equipment casing radiating noise • Installing vibration isolation for mechanical equipment	Contractor Proponent	• Inspections • Construction noise and vibration levels at the construction site should be within the limits prescribed in EMC (Noise and Excessive Vibration Pollution (Control) Regulations 2009 or no more than baseline levels	Quarterly	administration costs of the contractor

Project Environmental and Social Impact	Proposed Mitigation and Aspects for Monitoring	Responsibility for intervention and monitoring during design, construction and defects liability period	Parameters for Monitoring/ Indicators (c) – construction (o) - operations	Timing - Recommended frequency of monitoring	Estimated Mitigation & Monitoring costs to be included in the BoQ (Kshs)
	• Limiting the hours of operation for specific pieces of equipment or operations, especially mobile sources operating through community areas • Re-locating noise sources to less sensitive areas to take advantage of distance and shielding • Reducing project traffic routing through community areas wherever possible • Developing a mechanism to record and respond to complaints		presented in table 4-1 of this report. The regulatory limits are as follow: • Noise levels- as provided in the Second Schedule of the above regulations the levels should not exceed Leq 60 and 30 dB(A) in diurnal and nocturnal schedules respectively. • Vibration levels do not exceed 0.5 centimetres per second beyond any source property boundary or 30 metres from any moving source. • Number of Complaints from the residents		
Inadequate Sanitation and Water Facilities	• Maintain the existing toilets before alternative sanitary facilities are availed • Provide alternative sanitary facilities such as temporary toilets • Provide water points for the market •	Proponent Contractor	Adequate sanitary facilities Adequate water points	Weekly/Monthly	Cost included in the relocation budget

Project Environmental and Social Impact	Proposed Mitigation and Aspects for Monitoring	Responsibility for intervention and monitoring during design, construction and defects liability period	Parameters for Monitoring/ Indicators (c) – construction (o) - operations	Timing - Recommended frequency of monitoring	Estimated Mitigation & Monitoring costs to be included in the BoQ (Kshs)
Garbage collection	• Provision of garbage collection point and provide notice for the same • Create awareness of garbage collection and cleanliness of the individual trading space • Garbage collection to resume as scheduled	Proponent County government	• No garbage build-up • No littering	Weekly/monthly	No additional cost
Conflict during resettlement or return to the new market	• The laid plan in the RAP report should be adhered to. • The market traders should be sensitised and notified in advance before relocation • Grievance Complaints procedure should be provided to all the traders through notice in the market place	Proponent County government Market committee	Zero complaints	Monthly	No additional cost
TOTAL APPROXIMATE COSTS OF RELOCATION + RETURN ESMMP					**10,976,600**

7.6. Grievance Redress Mechanisms (GRM)

Proper and strong Grievance mechanisms are very important in ensuring the stakeholders grievances and issues as they relate to the proposed project are addressed in a timely and appropriate manner, to enhance the relationship between the project proponent, contractor, and the stakeholders. It is therefore recommended that the project proponent should therefore put in place a GRM for the project to ensure any issues raised by stakeholders related to the project safeguards are addressed.

It is important to emphasize that grievance redress mechanisms are for all aspects of a project, not just environmental and social safeguards. The implementing agency should prepare and disseminate grievance redress guidelines for the project, including a hierarchy of reporting levels for redress, roles, and responsibilities. Public information about grievance redress should be posted in visible locations in project area of influence. Where needed, Grievance Redress Committees (GRCs) should be established, with the necessary authority, training and resources. Entities involved in grievance redress should keep proper records and logs. Project budgets should include resources for the establishment and operation of the Grievance Redress System. The implementing agency should on regular occasions review the GRM and verify that they are working properly.

A sample grievance process has been provided in Annex 3 of this report.

CHAPTER NINE

9. CONCLUSIONS AND RECOMMENDATIONS

9.1. Environment and Social Assessment Conclusions

The EIA study revealed that the proposed project has got both socioeconomic and environmental benefits and costs. It emerged that the benefits exceed the costs. Also, all the identified environmental impacts can be mitigated to a level of minimum or no significance throughout the project cycle. Further, none of the potential impacts would result to permanent irreversible damage on the ecosystem components.

9.2. Environment and Social Assessment Recommendation

Environmental monitoring is essential to track and sustain the effectiveness of the mitigation measures proposed in this report. An environmental monitoring plan has been prepared as part of the ESMP. The focus areas of monitoring cover air, noise, traffic management, water and energy resources, occupational health and safety, as well as local employment and economic impact of the project during construction and operation phases. The burden of implementing the mitigation measures largely lies with the Project Contractor under supervision by the Proponent. Key observations are that most adverse impacts are short-term and will disappear once civil works ends. The construction contract for the proposed project should bear relevant clauses binding the Contractor to institute environmental mitigation as recommended in this study. The core monitoring strategy for this project will be through site meetings, in which case, it is recommended that the County Environmental Officers be invited to such meetings. Other stakeholders such as the County Labour Officer should also attend such meetings to ascertain that measures towards securing the health and safety of workers have been put in place.

It is the duty of the Proponent to carry out annual environmental audits once it has been commissioned. This will be in compliance with the Environmental Management and Coordination Act, EMCA of 1999 and the Environmental Impact Assessment and Audit Regulations, Legal Notice No. 101 of 2003.

The tentative budget allocated for the proposed project is Ksh. 75 Million and an ESMMP cost of Ksh. 9,5000,000. It is the responsibility of the project Proponent to allocate this budget to facilitate diligent implementation of the mitigation measures and minimize potential negative impacts at construction and operational phases of the project.

The following are recommended for effective implementation of the mitigation measures for the project;

- All mitigation measures need to be specified in tender and contract documents, and must be included in the Engineering Drawings, Specifications and Bills of Quantities.
- Diligence on the part of the Contractor and proper supervision by the Project Engineer during construction and the initial operation phase is crucial for mitigating impacts.
- Periodic environmental and social monitoring is required by the project Proponent to ensure that mitigation measures have been implemented to prevent or avert any negative impacts of the project.
- The Contractor will be required to prepare a Construction Environment & Social Management Plan (CESMP) which shall be approved by the Proponent before beginning of works;
- The Proponent should set up proper and applicable Grievance Redress Mechanism (GRM) for the project to deal with grievances and issues on the project.

REFERENCE

1. Environmental Management and Co-ordination Amendment Act 2015 No5 of 2015
2. Nairobi Metro 203 first edition of 2008
3. Feasibility study report Juja market 2015
4. Kenya gazette supplement Acts 2000, Environment Management and Coordination Act Number 8 of 1999. Government Printer, Nairobi.
5. Kenya gazette supplement Acts Building code 2000 by Government Printer, Nairobi.
6. Kenya gazette supplement Acts *Land Planning Act (Cap. 303) Government printer, Nairobi.*
7. Kenya gazette supplement Acts *Local Authority Act (Cap. 265) Government printer, Nairobi.*
8. Kenya gazette supplement Acts Penal Code Act (Cap.63) *Government printer, Nairobi*
9. Kenya gazette supplement Acts *Physical Planning Act, 1999 Government printer, Nairobi.*
10. Kenya gazette supplement number 56. Environmental Impact Assessment and Audit Regulations 2003. *Government printer,* Nairobi.
11. Noise prevention and Control Rules 2005,Legal Notice no. 24,*Government Printers*, Nairobi
12. Kenya gazette supplement Acts *Public Health Act (Cap. 242) Government printer, Nairobi.*
13. Kenya gazette supplement Acts *Water Act, 2002 Government printer, Nairobi.*
14. Kenya Population and Housing Census, *2009,Kenya National bureau of statistics*
15. Environmental Management and Coordination (Waste Management) Regulations, 2006, *Government Printers*,
16. Operational Policy (OP)/Bank Procedure (BP) 4.01: Environmental Assessment, Operational Policy 4.04: Natural Habitats, 2001, Operational Policy 4.36: Forests, 2002, Operational Policy 4.12: Involuntary Resettlement, 2001

ANNEXES

Annex 1: Photos

Annex 2: SAMPLE CHANCE FIND PROCEDURES

Chance find procedures are an integral part of the project ESMMP and civil works contracts. The following is proposed in this regard:

If the Contractor discovers archeological sites, historical sites, remains and objects during excavation or construction, the Contractor shall:

- Stop the construction activities in the area of the chance find;
- Delineate the discovered site or area;
- Secure the site to prevent any damage or loss of removable objects. In cases of removable antiquities or sensitive remains, a night guard shall be arranged until the responsible local authorities or the Ministry of State for National Heritage and Culture take over;
- Notify the supervisor, Project Environmental Officer and Resident Engineer who in turn will notify the responsible local authorities and the Ministry of State for National Heritage and Culture immediately (within 24 hours or less).

Responsible local authorities and the Ministry of State for National Heritage and Culture would then be in charge of protecting and preserving the site before deciding on subsequent appropriate procedures. This would require a preliminary evaluation of the findings to be performed by the archaeologists of the National Museums of Kenya. The significance and importance of the findings should be assessed according to the various criteria relevant to cultural heritage, namely the aesthetic, historic, scientific or research, social and economic values.

Decisions on how to handle the find shall be taken by the responsible authorities and the Ministry of State for National Heritage and Culture. This could include changes in the layout (such as when finding irremovable remains of cultural or archeological importance) conservation, preservation, restoration and salvage.

Implementation for the authority decision concerning the management of the finding shall be communicated in writing by relevant local authorities.

Construction work may resume only after permission is given from the responsible local authorities or the Ministry of State for National Heritage and Culture concerning safeguard of the heritage.

Annex 3: Grievance Redress Process

Process	Description	Time frame	Other information
Identification of grievance	Face to face; phone; letter, e-mail; recorded during public/community interaction; others	1 Day	Email address; hotline number
Grievance assessed and logged	Significance assessed and grievance recorded or logged (i.e. in a log book)	4-7 Days	Significance criteria: Level 1 –one off event; Level 2 – complaint is widespread or repeated; Level 3- any complaint (one off or repeated) that indicates breach of law or policy or the ESIA provisions
Grievance is acknowledged	Acknowledgement of grievance through appropriate medium	7-14 Days	
Development of response	Grievance assigned to appropriate party for resolution Response development with input from management/ relevant stakeholders	4-7 Days 7-14 Days	
Response signed off	Redress action approved at appropriate levels	4-7 Days	Project staff at project proponent to sign off
Implementation and communication of response	Redress action implemented and update of progress on resolution communicated to complainant	10-14 Days	
Complaints Response	Redress action recorded in grievance log book Confirm with complainant that grievance can be closed or determine what follow up is necessary	4-7 Days	
Close grievance	Record final sign off of grievance If grievance cannot be closed, return to step 2 or refer to sector minister or recommend third-party arbitration or resort to court of law.	4-7 Days	Final sign off on by project proponent

GRIEVANCE ACKNOWLEDGEMENT FORM

GRIEVANCE ACKNOWLEDGEMENT FORM - CONFIDENTIAL

Date Received:……..

Grievance No:……

1. Complainant's details.

   Name: ……

   ID No: ……

   Address: ……

   Tel: .....

   Email: ……

   Signature: ……..

2. Complaint Raised

   1……

   2……

   3……

3. Receiving Officer

   Name: ……

   Designation: ……..

   Address: ……

   Tel: .....

   Email: ……

   Expected date of Grievance resolution: ……..
   Signature and Stamp: ……

This form must be returned to the Ministry of Transport, Infrastructure, Housing and Urban Development hand delivered to their offices or through Kiambu County.

GRIEVANCE RESOLUTION FORM

GRIEVANCE RESOLUTION AGREEMENT

Grievance No:……

1. Complainant's details.

   Name: ……

   ID No: ……

   Address: ……

   Tel: .....

   Email: ……..

   Signature: ……..

2. Complaint Raised

   1……

   2……

   3……

3. Agreed resolution.

   1……

   2……

   3……

I ……..hereby confirm that I will consider the complaint/grievance fully settled if the Conditions set out under item 3 here above are fully met.

Complainant Contractor / Resident Engineer

Name: …… …….	Name: ……..
Date: …….	Date: ……
Sign:	Sign: ……

Annex 4 **Public Participation Documents**

Attendance sheets for joint ESIA and RAP meeting held on site on February 5, 2018

IMPULSO

ECO PLAN MANAGEMENT LTD
Urban Planners and Environmental Consultants

5th February, 2018

PUBLIC TRADER'S CONSULTATIVE MEETING FOR THE PREPARATION OF RESETTLEMENT ACTION PLAN (RAP) FOR THE IMPROVEMENT OF JUJA MARKET

CONTRACT NUMBER- MoLHUD/NMED/NaMSIP/CONS-02/2014-2015

S/N	FULL NAMES	PLACE OF WORK/RESIDENCE/ PHYSICAL	POSITION	PHONE CONTACTS/EMAIL ADRESS	SIGNATURE
1.	Keino Irene	Impulso	RAP	0727220790	
2.	Jacqueline Kinyanjui	County Govt of Kiambu	Chief Officer - TRADE	0723635261	
3	Ekical Mueruri	County Govt of Ki.	Ass. Dir. - TRADE	0720924105	
4	[illegible]	CGK	DIRECTOR-TRADE	0726591357	
5	JOHN Mwaura	CGK	SCA - JUJA	0721567359	
6	[illegible]	NaMSIP	FUNTI Techs	0721-239140	
7	EUNICE muthoni	JUJA	Trader	0725770533	
8	Mary Njeri	JUJA	Trader	0712459819	
9	Lucy Wanjiku	JUJA	Trader	0724714566	Lucy
10	Nancy Wanjeri Mwaura	JUJA	trader	0727165442	
11	Rose Wangui Muturi	JUJA	Trader	0721490027	
12	GERALD MURIITHI	SCJA	Trader	0717833310	
13	PA Joseph Mburu	Juja	Trader	0723573290	
14	GEOFFREY KINYUA	JUJA	Trader	0703506358	
15	CHEGE NJAU	Juja	Trader	0726071375	

S/N	FULL NAMES	PLACE OF WORK/RESIDENCE/PHYSICAL	PHONE CONTACTS/EMAIL ADDRESS	SIGNATURE
16	Mary Mberi	Onions	0726352372	
17	Jacqueline Wambui	onions	0721761545	
18	TABITHA WANJIKU	viyazi	0723865920	
19	Jane Njoki	ovacado	0711856429	
20	BEATRICE WANG		0707189264	
21	Sala MUTETE		0707181182	
22	TERESIA WANJIKU		0712723566	
23	TERESIA NYAMBURA	[illegible] Ngeo	0720971652	
24	MERCY NJERI	Ovacadoes	0705055442	
25	ALICE WAMBUI	Onions	0714992022	
26	faith wanja	Karoti and viachi	0712497675	
27	ESTHER NJERI	Ovacadoes	0725513441	
28	Damaris Njeri	Ovacadoes	0716820376	
29	Alice Nyambura	Oranges	0727461952	Alice
30	ALICE Njeri	COLAS	0725066627	
31	PERIS KABURA	Hotel	0725820653	
32	HANNAH NJERI	Lemon	0729165229	
33	MARY NJERI	MAEMBE	0726-849635	
34	NANCY Wambui	Waru	0724920143	
35	VIRGINIA MWANGI	onions	0727 929466	
36	SARAH mbenge	oranges	0796 59 69 55	
37	Rachael Gachuma	Trader / Potatoes	0711585263	
38	Lucy Wanjiru	ovacado	0723 32 33 82	
39	Teresia Njeri	tomatoes	0702 536 121	

S/N	FULL NAMES	PLACE OF WORK/RESIDENCE/PHYSICAL	PHONE CONTACTS/EMAIL ADDRESS	SIGNATURE
40	John Kamau Maibun	JUJA – TRADER	0716773291	
41	FRANCIS Kagema	JUJA " "	0729234660	
42	Nancy Wairimu Mattari	JUJA " "	0729993796	
43	Jane Muregu	Juja	0717976614	
44	Mary M. Kamau	Juja	0742110382	
45	Lucia Wanjiku	Juja	0718556216	
46	ROSE DAVID	Juja	0706136816	
47	MARGARET WAMITI	Juja	0714497568	
48	MARTHA NDUTA	Juja	0708264956	
49	Serah Ngugi	Juja	0706597435	
50	Margaret Wanjiku	Juja	0727590798	
51	Monicah Wairimu	Juja	0716231(8)	
52	George Muiruri	Juja "	0726581713	
53	David Mwaka	JUJA	0707 422062	
54	Margaret Wambui	Juja	0710876760	
55	JOSEPH KIMUTAI	JUJA	0726 482150	
56	MURIITHI GEORGE	JUJA	0723 590-603	
57	PAUL NGANGA	"	0729607717	
58	MOSES MUKORA	"	0723139466	
59	Elizabeth Wanjiku	Juja	0726696208	
60	WINNIE WANGUI	Juja	0726774468	
61	ROSELINE MOKOBI	Juja	0700448886	
62	Lydia Muthoni	Juja	0728031579	
63	PETER MWANGI	Juja	0720656177	
64	Regina Wairimu	Juja	0728593475	
65	Anne Nyambura	Juja	0716505312	
66	JOHNS MWAURA	JUJA	0726186178	

NAMSIP PROJECT PUBLIC CONSULTATION ATTENDANCE LIST – KIAMBU COUNTY, JUJA MARKET 4/11/2016

	NAME	~~TYPE OF BUSINESS~~ STAKEHOLDER DESIGNATION	TELEPHONE NUMBER	SIGNATURE
1	Kevin Ndeti	Elec. Engineer, Scope Designs	0725968171	
2	Beatrice Nyori	SIA – SP	0786447992	
3	Victoria Wa-Muriuki	SIA – SP	0722616770	
4	Jesphat M Kinyajui	Village Chair Juja Farm	0722156921	
5	PETER MBUTHIA	WARD ADMIN - JUJA	0722324638	
6	DAVID muriuki	Member	0727426173	
7	Jane Wanjiku	Hotel at Juja market	0715801225	
8	RAKELI NYANGENDO	Greens	0710467310	
9	Jane Muriu	Greens & Fruits	0712976614	
10	Murithi Simon	Melon & Pawpaw	0723 590 603	
11	SIMON TEMPLER	COMMUNICATION & SOCIAL SPECIALIST	0724434667	
12	Risper Nyaitho	RAP Tech. Assistant - Impulso	0723896243	
13	Arch. Kenjo Phillip	Scope Design Systems	0723474660	
14	~~Scope Design Systems~~			
15	VICTOR K. WAIGURU	Scope Design Sys Ltd	0722773083	
15	BEATRICE KABIRU	NEMA NAMSIP.	0722502443.	
16	Keino Irene	Impulso-Ew Plan	0727220790	
17	Arch. Lawrence Mochama	NaMSIP/Nairobi Metropolitan	0727138007	

S/N	NAME	PLACE OF WORK/RESIDENCE/PHYSICAL	PHONE CONTACTS/EMAIL ADDRESS	SIGNATURE
97	PETER MAITHAKA	JUJA	0711914785	
98	SIMON MWANGUGA	JUJA	0714291771	
99	BEATRICE AKOTH	JUJA	0714263491	
100	John N Jorogo	JUJA	0723627150	
101	GERALD ICARA NJA	JUJA	0723757758	
102	Eunice wathinya	Juja	0717593841	
103	Daniel Mwangi	Juja	0710485550	
104	HENRY KIRATIA	JUJA	0729797727	
105	ROSEMARY KARIMI	JUJA	0725662924	
106	Hiram Njeri	Juja	0702616850	Njeri
107	JOHN BOSCO GITHINGO	JUJA		

Plates of CPP held on February 5, 2018

MINUTES OF PUBLIC CONSULTATION MEETING HELD ON 5TH FEBRUARY 2018

MEMBERS PRESENT – 134No. Attendees
(List Attached)

- Agenda
- Preliminaries
- Opening Remarks from the county Market Director
- Opening Remarks from Juja Market Chair
- Remarks from the County Engineer
- Remarks from the IMPULSO Representative
- Remarks from NaMSIP ESIA Consultant – Irene Muchoki
- Remarks from Juja MCA
- Remarks from Chief of Trade, Kiambu County
- Remarks from CEC Minister of Trade, Kiambu County
- Questions, comments and recommendations
- Closing Remarks
- Adjournment

Min 1/ Juja ESIA/5-02-18: Preliminaries

The meeting came to order at 11:30 am and began with opening prayers from one of the PAPs.

Min 2/ Juja RAP/5-02-18: Opening Remarks from the County Market Director

The county official, Mr Mwololo thanked all the Key Stakeholders in the meeting for heeding to the call to attend the meeting. He stated that the county has held several meetings with the PAPs as well as the Governor who passed by a few days ago to affirm his support for this project and confirmed that the market would be constructed very soon. He noted that the independent consultant SGS had come last year to conduct the public participation and consultations and market survey that are part of the ESIA report. Any participant who had any issues regarding environmental management was encouraged to raise them. Having explained the rationale of the meeting, he noted this meeting was called by NaMSIP to brief the PAPs on the status of the RAP as well as seek if there are any issues regarding environmental management for the project. It was also reported that the ESIA had also been prepared and required public participation and consultations to beef up the already conducted public participation.
He further requested the market chair to make his remarks.

He introduced the Sub county Administrator to the traders and other participants and invited him to greet them.

Min 3/ Juja ESIA/05-02-18: Remarks from the Sub County Administrator:

The Sub county administrator greeted the PAPs and advised the PAPs not to disturb the contractor and engineer when they take possession of the plot to commence construction of the market.

Min 4/ Juja ESIA/05-02-18: Opening Remarks from Juja Market Chair

The Market chair welcomed the PAPs to the meeting and confirmed that the PAPs will support the construction of the market.

Min 5/ Juja RAP/05-02-18: Opening Remarks from Eng Mugo

Eng Mugo introduced IMPULSO as the consultant undertaking the RAP and he also introduced the CEC Trade Ms. Isabela Wayaiki, the Chief officer Trade, Ms Jackline Kimwaki, Area MCA, Dr. Edward Ontita & Ms. Irene Muchoki consultants of NAMSIP. He noted that the tender documents are being evaluated to identify a suitable contractor by March this year. He stressed that World Bank is committed to support the project. He urged the PAPs to support the project and ensure smooth completion.

He noted that this meeting was held to brief the PAPs on the status of the RAP and ongoing ESIA process and brief on the timelines for construction of the market.

Min 6/Juja ESIA/05-02-18: Opening Remarks from IMPULSO

Ms. Irene Keino also thanked all the traders, their leaders and local administrators who attended the meeting for heeding to the call to attend the meeting. She explained the agenda, objective and significance of the meeting, indicating that Public Consultation And Participation is a best practice deeply enshrined in Kenya's Constitution in order to ensure that views from the key affected or interested parties to the development project, are collected in structured and well organized forum, recorded and their recommendations acted upon where feasible in improving the development proposal.

In the Juja, she indicated that the comments and recommendations from the traders and their leaders will be significant in improving the RAP Implementation and the ongoing ESIA process. She briefed the PAPs on the relocation site situated behind this market. She noted that the site will have provisions of sanitation and water facilities and solid waste collection proposal have been made. The market site and the surrounding area will be sufficiently drained to avoid the perennial floods witnessed over the years.

Min 7/ Juja ESIA/05-02-18: Remarks from Juja MCA:

The Juja MCA thanked the Bank for choosing to upgrade this market in his area. He noted that he will give full support in achieving this goal.

Min 8/ Juja ESIA/05-02-18: Remarks from Chief Officer of Trade and CEC Trade:

The Chief Officer Trade greeted the PAPs and welcomed them to the meeting. She noted that she was pleased to be part of this meeting.

Min 9/ Juja ESIA/05-02-18: Remarks from Chief Officer of Trade and CEC Trade:

The CEC Trade thanked the Market Director for organizing the meeting and all the participants for attending. She stated that the Governor supports the project and the county government will continue to ensure that this project is completed on time and smoothly. She advised the PAPs to support the consultants and NAMSIP during the RAP implementation process. She advised the PAPs that NAMSIP will hold future several meetings for the RAP implementation process firstly to disclose the RAP and validate the PAPs.

She introduced 4 Strathmore students who are conducting a research on the impacts on devolution in relation to county markets. She requested the Juja MCA and county staff to provide them with the relevant data and information. She requested the PAPs to allow the students to consult with them and enrich their research.

Min 10/ Juja ESIA/05-02-18: Questions, comments and recommendations from the traders and local leadership:

The PAPs inquired on a number of issues as listed below:

Issues	Responses
One PAP asked if Boda Boda riders will be provided with resting/ waiting shades.	Eng Mugo stated that the market will have a parking lot, an off loading and loading lot and some area may be reserved for the boda boda riders. The CEE Trade noted that consultations will be held to have a shade for the boda boda riders.
Another trader inquired if the design of the new market had provided for a cleaners room	Yes the design has provide for all facilities required to operate and maintain a conducive business and trading environment including sanitary facilities and a cleaners room
The area MCA asked if the new market design have provided for zoning of the markets according to the products handled	The designs have provide for zoning whereby retailers selling similar products will be grouped together

Issues	Responses
Another trader inquired when the relocation market will be constructed	The construction of the relocation site will be done first before the main market so as to facilitation the temporary relocation of traders from the current market. This will be done as soon as the client is through with the procuring of the construction works contract which will take approximately 2-3 months from now
Some PAPs requested that the designs should have a ramp for the disabled PAPs	Eng. Mugo stated that the designs include a ramp for disabled PAPs.
Another trader who sells food at the current market inquired if the new market will have a restaurant area and if so will it have water and sanitation area	The market design has provided for areas and stalls that handle cooked food. There will be water points at all suitable/ necessary areas within the market and each floor will have separated toilets for both men and women

Min 11/ Juja ESIA/05-02-18: Closing Remarks

The Market Director again thanked all in attendance for their positive response to attend and their contribution in the meeting.

Min 12/ /15-06-16: Adjournment

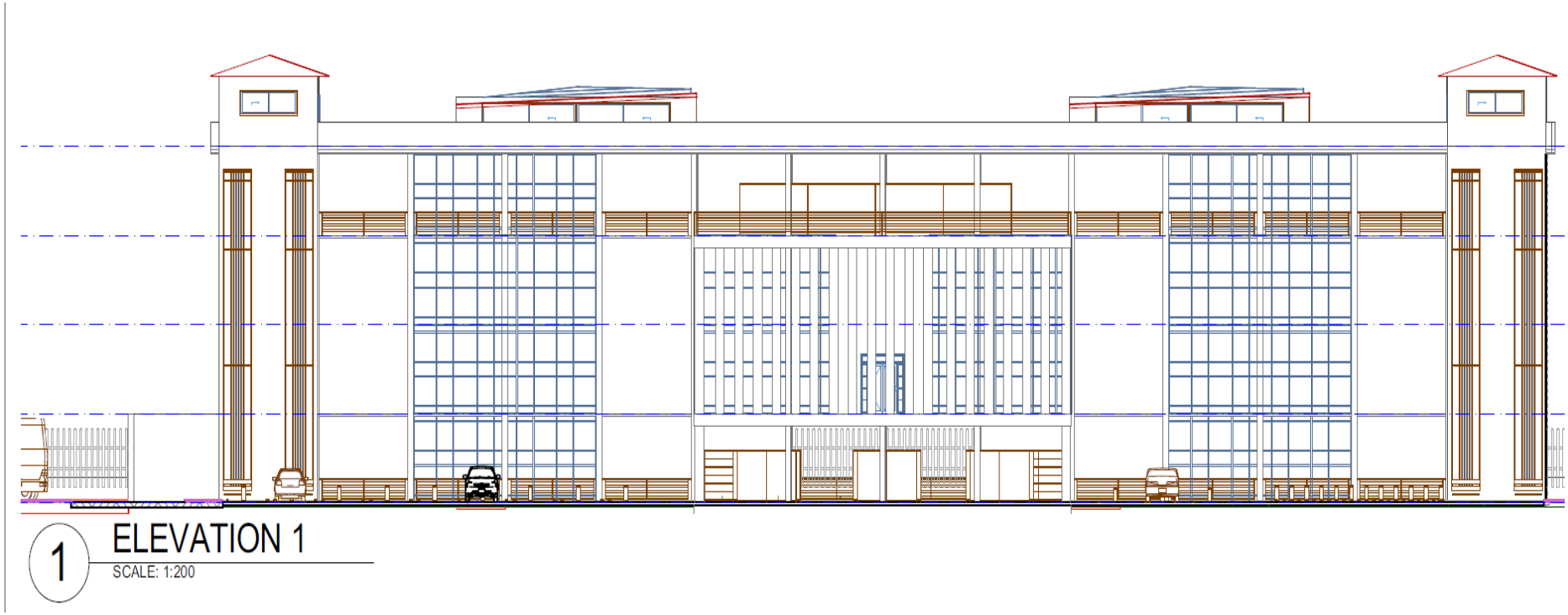
The meeting was adjourned at 11:00 pm with a word of prayer from one of the committee members.

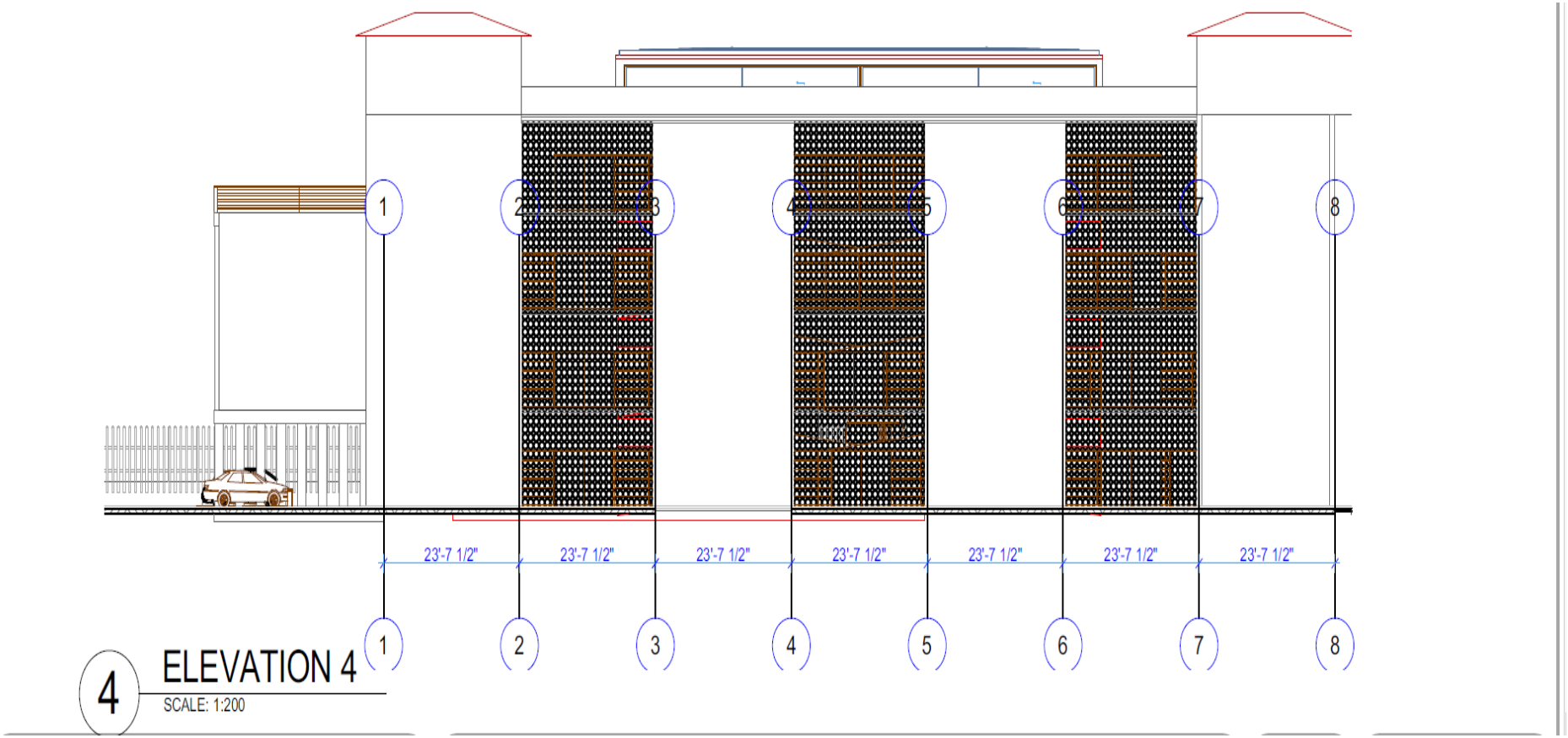
Name:_____Sign_____Date: _____

Annex 5: Location Plan

LOCATION PLAN

Annex 6: Plan Design





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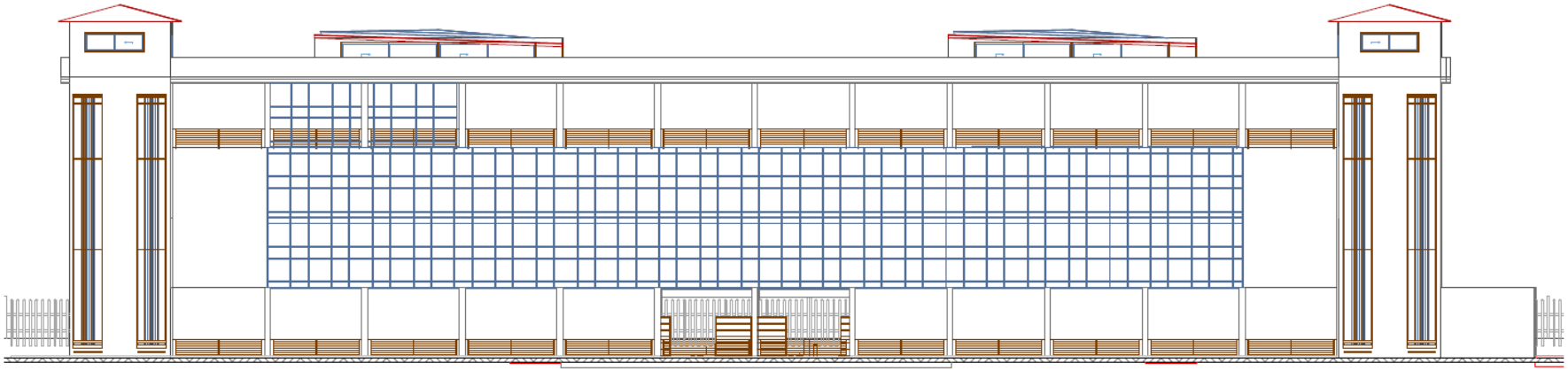

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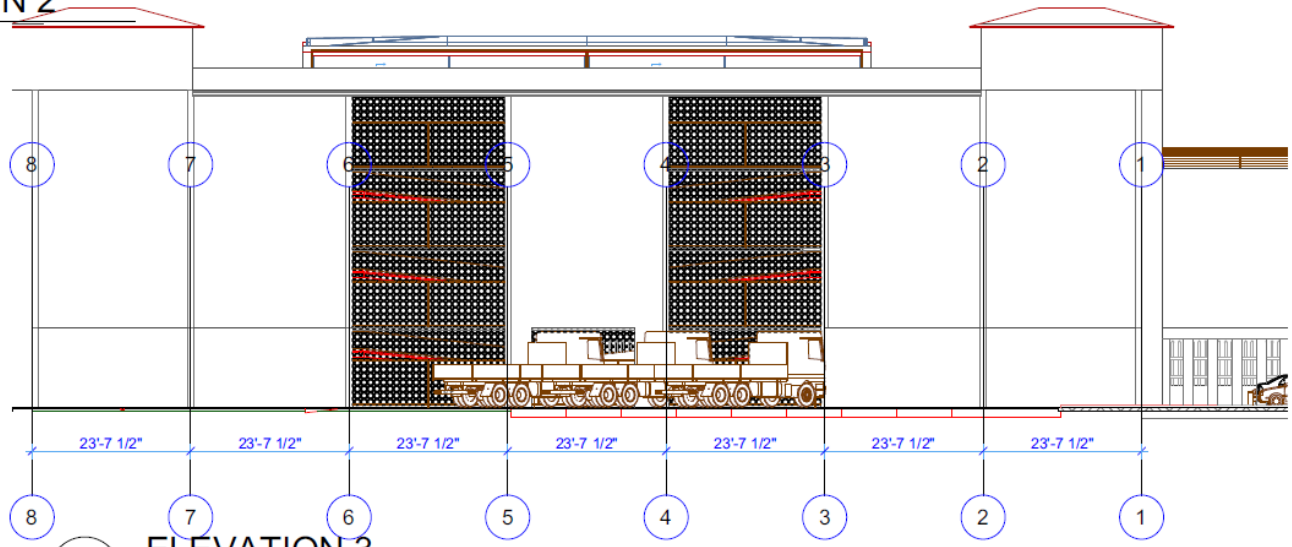

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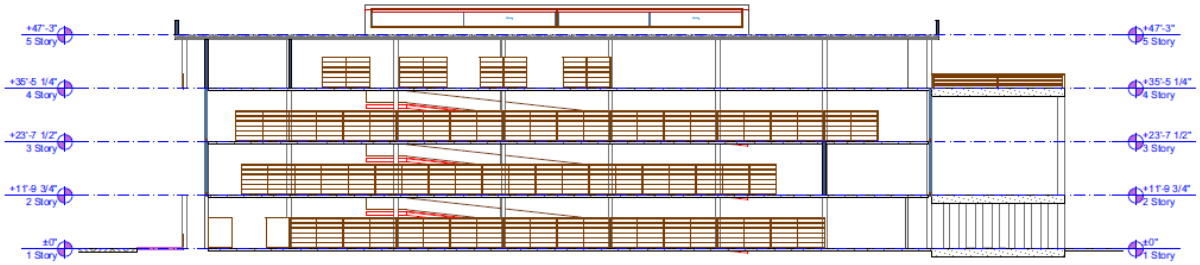

1 SECTION A
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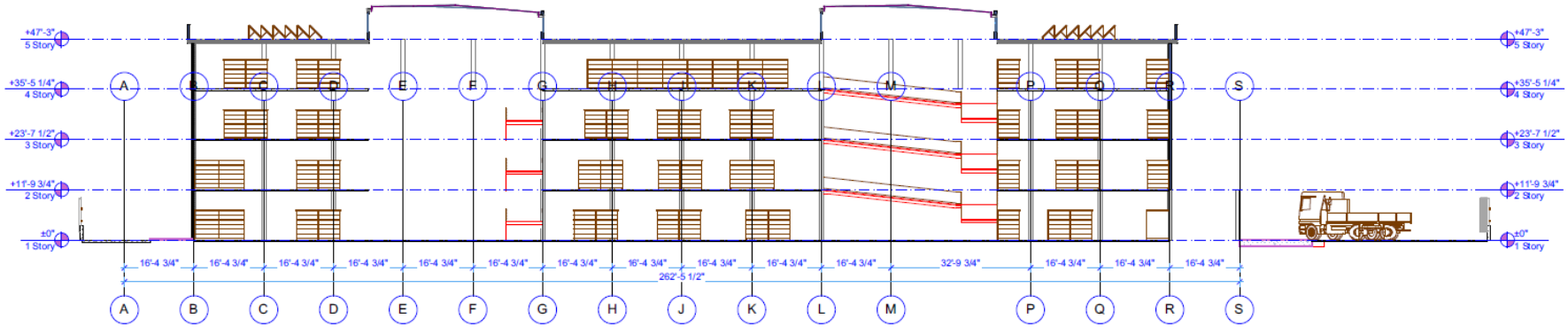

2 SECTION B
SCALE:

ANNEX 7: SITE RELOCATION REPORT JUJA MARKET

REPUBLIC OF KENYA

MINISTRY OF TRANSPORT, INFRASTRUCTURE, HOUSING AND URBAN DEVELOPMENT

STATE DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT

RELOCATION SITE REPORT

CONTRACT NUMBER- MoLHUD/NMED/NaMSIP/CONS-02/2014-2015

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Background to Nairobi Metropolitan Service Improvement Project

Nairobi Metropolitan Services Improvement Project (NaMSIP) is a World Bank Funded Project under the Department of Nairobi Metropolitan Region in the Ministry of Land, Housing and Urban Development. NaMSIP's mandate is to strengthen service delivery in the Nairobi Metropolitan Region (NMR) on various selected projects by investing in local infrastructure (markets, roads, street lighting, bicycle and pedestrian pathways, drainage, among others) and in providing large-scale metropolitan infrastructure in the areas of trade, solid waste management, transport, sewerage services, among others.

1.25 Rationale for Improvement of the Markets

The rationale for improvement of the markets is due to:

- Pressures for change, both within and outside the marketing system;
- Changing organizational structure of commerce – e.g. Increasing volumes of produce handled; alterations to commercial practices and trading patterns, such as the private sector taking over markets
- Changing operational practices within markets – e.g. Changes in user space requirements
- Demographic factors – e.g. Overall increase in population of the city and population shifts within cities
- Changing transportation patterns – e.g. Increased traffic growth and resulting congestion; shifts in transport mode (i.e. the proportion of different types of vehicles); changes in the capacity and size of delivery and distribution trucks
- Changes precipitated by new legislation and greater public awareness – e.g. New town planning controls and zoning regulations; new environmental impact and energy conservation controls; increasing Consumer-protection laws, including new public health, food quality and safety regulations
- To obtain an increased value for an asset, allowing higher rents and charges to be introduced;
- To use of an asset more effectively;
- To achieve reductions in overall costs (of maintenance, wages, services and other costs);
- To allow the adoption of new operating procedures and equipment; and
- To comply with statutory requirements (such as public health, safety and environmental standards).

1.26 Relocation Site

The construction of new markets will displace a number of traders from their current business areas during construction phase. These traders will need to be relocated to suitable sites as close as possible to the project area, with at least similar amenities. Reducing the distance from project area to the relocation site will help ensure that the PAPs will have lesser difficulty to meet their livelihood and other support systems.

The identification of several possible relocation sites and the demarcation of selected sites is a critical step for resettlement. For land based resettlement, the new site's productive potential and locational advantages should be at least equivalent to those of the old site.

Juja Market Relocation Site

The relocation site is part of the market that is currently unoccupied as traders trade on one side of the market. The relocation site belongs to the county government of Kiambu. The site is susceptible to floods and water logging though inexpensive reclamation work can be done to make it suitable for trading activities.

Figure 2: Location of Current Market

The site has a flat terrain and is unoccupied

Susceptible to floods and water logging

Plate 2: Proposed Relocation Area for Juja Market

Plate 2: Proposed Relocation Area for Juja Market

Plate 1: Newly developed Ablution block next to the Relocation site

Newly developed sanitation facilities for the market next to relocation site

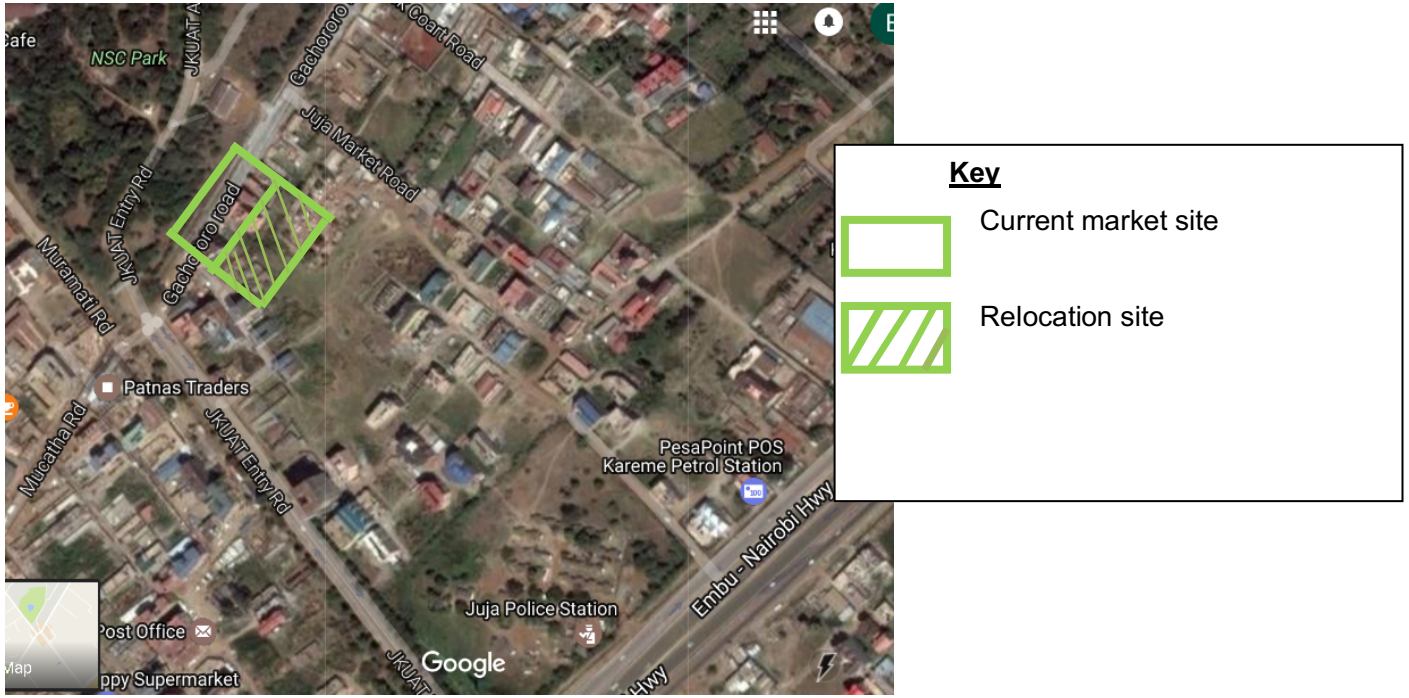

Figure 3: Location of Current Market and Proposed Relocation Area

Figure 4 Existing high Mast

Existing high Mast which will be maintained

1.26.1.1.1.1 Criteria Used for Site Selection

- The site selected is within the market thus relocation is close to the affected area. The selected site thus does not contravene zoning regulation of the area

- The site is easily accessible via existing roads and foot paths. The Market is accessed through Gachororo road off the main road leading to Jomo Kenyatta University
- The site is on a flat terrain with black cotton soil. It has smooth and even topography

1.27 Infrastructure and Services

The following interventions will be done to the proposed location before the traders can be relocated:

a. Clearing of vegetation on the site
b. Backfilling and compacting with murram to provide a good surface for trading
c. Improvement of storm water drainage to prevent stagnation of water on the site.
d. Provision of security lighting. This will be done by relocating the existing high mast light from where the proposed new market will be done.
e. Chain link fencing around the site and a gate.
f. There is an existing sanitation block which was done by the CDF. This will be retained as it does not interfere with the proposed market location.