Environmental and Social Impact Assessment Report for the Construction of Access Road to Limuru Railway Station in Kiambu County of Nairobi Metropolitan Region

REPUBLIC OF KENYA

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT STUDY REPORT FOR THE CONSTRUCTION OF ACCESS ROAD TO LIMURU RAILWAY STATION IN KIAMBU COUNTY OF NAIROBI METROPOLITAN REGION

March 30, 2015

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Certificate of Declaration and Document Authentication

This document has been prepared in accordance with the Environmental (Impact Assessment and Audit) Regulations, 2003 of the Kenya Gazette Supplement No.56 of 13th June 2003, Legal Notice No. 101.

This report is prepared for and on behalf of:

The Proponent
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Designation  -----------------------------
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Name  -----------------------------
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Signature  -----------------------------
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Date  -----------------------------

Lead Expert

Eng. Stephen Mwaura is a registered Lead Expert on Environmental Impact Assessment/Audit (EIA/A) by the National Environment Management Authority – NEMA (Reg. No. 7684), confirms that the contents of this report are a true representation of the Environmental and Social Impact Assessment of the proposed Construction of Access Road to Limuru Railway Station in Kiambu County of Nairobi Metropolitan Region. This report is issued without prejudice.

Lead Expert – Eng. Stephen Mwaura (NEMA Registration No. 7684)

Signature: ___________________

Date: ___________________
# ACRONYMS

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<thead>
<tr>
<th>Acronym</th>
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<tr>
<td>DONMED</td>
<td>Directorate of Nairobi Metropolitan Development</td>
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<td>EA</td>
<td>Environmental Audit</td>
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<td>ESIA</td>
<td>Environmental &amp; Social Impact Assessment</td>
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<td>EHS</td>
<td>Environment, Occupational Health and Safety</td>
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<td>EMCA</td>
<td>Environmental Management &amp; Coordination Act, 1999</td>
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<td>EMMP</td>
<td>Environmental Management &amp; Monitoring Plan</td>
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<td>EMS</td>
<td>Environmental Management System</td>
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<td>ISO</td>
<td>International Standards Organizations</td>
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<td>NaMSIP</td>
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EXECUTIVE SUMMARY

This Environmental & Social Impact Assessment (ESIA) project report was prepared as per the provisions of the Environmental Management and Coordination Act No. 8 of 1999, and more specifically to the Environmental Impact Assessment Regulations 2003. It is also in line with the World Bank Safeguards Policies and specifically OP4.01 (Environmental Assessment). These Safeguard policies are a set of instruments to ensure that the Bank supported lending operations minimize any adverse impacts on local people, their livelihoods, culture and the environment and are a mandatory mechanism for evaluating Bank financed projects during design, implementation and completion, mainly through environmental and social impact assessments.

More so, the ESIA is a way of promoting benign environmental management for sustainable development. It is for this reason that this ESIA was commissioned. The Lead Expert registered with NEMA was contracted by the proponent to undertake the study with the objective of identifying both the negative and the positive impacts of the proposed project and identify areas that are likely to be impacted on by the project in accordance with the laid down environmental legislation and guidelines, compile a systematic ESIA report that should contain among other issues, identification of key environmental aspects, recommendations on appropriate mitigatory measures to minimize or prevent adverse impacts and develop an environmental management plan outline.

The proponent aims to construct an access road to Limuru Railway Station in Kiambu County of Nairobi Metropolitan Region. The design for the construction works will include upgrading to bitumen standards of an earth road of about 1.14 kilometers leading to Limuru Railway Station from the tarmac road that enters Limuru town from the Nairobi-Nakuru Highway into Limuru Town. This will enable use by pedestrians and vehicles accessing and leaving the railway station. This project has been approved by Kiambu County.

The proponents are required to present this report in order to comply with the Environment Management Co-ordination Act 1999 and in particular part II of the Environmental (Impact Assessment and Audit) Regulations, 2003. This report has provided a summary statement of the likely environmental and social effects of the proposed project in the form of an Environmental Management & Monitoring Plan (EMMP).
Our investigation examined the potential impacts of the project on the immediate surroundings with due regard to all the phases from construction through to completion and operational phase. It encompassed all aspects pertaining to the physical, ecological, socio-cultural, occupational health and safety conditions at the site and its environs during and after construction. The study was based on laid down scientific qualitative procedures with the most recent methodologies and analysis required in ESIA and, strictly adheres to the relevant legislative framework governing the construction industry. Reference was also made to ESIA reports dealing with similar projects from other parts of the world.

Where possible, the ESIA team has provided annexes such as site photographs, plans and applications to local authorities to support our findings or show the depth of our investigations. The ESIA team found out that the proponent of the proposed project has proposed to follow the laid down regulations, standards, laws and structural drawings as put out and proposed by the relevant authorities and professionals respectively. Our conclusion is that the project is important for economic development of Limuru Town and has balanced environmental considerations and benefits. The ESIA team has given adequate measures to mitigate the negative impacts and a management plan proposed which the proponent should adhere to. The notable potential negative environmental impacts that were identified include among others:

i. Air pollution due to noise, vibration and dust;

ii. Ecological damage from the clearance of areas for road site preparation and storage of materials and machinery;

iii. Material sourcing and supply for the construction and maintenance works;

iv. Social disturbance caused by the construction and future maintenance, and

v. Any effects from uncontrolled storm-water run-off which is salient as the area has a gentle slope

These have to be mitigated sufficiently for the project to progress. The mitigation measures to manage these impacts are as identified in the EMMP in the report. Moreover, this project’s potential benefits and positive impacts far outweigh the negative impacts.
SCOPE OF ENVIRONMENTAL AND SOCIAL ASSESSMENT

This Environmental & Social Impact Assessment (ESIA) Report considers the following aspects and others that may prove of significance during the study.

1. Assess the project’s impacts on ecology. This will in essence cover:
   i. Impacts due to loss of vegetation cover
   ii. Surface run-off water, containment and flood control.

2. Assess social implications of the development within the locality, region and nationally will include:
   i. Economic implications of the development.
   ii. Security-threats, risk and enhancement.
   iii. Employment.
   iv. Impacts on livelihoods.
   v. Public health implications.
   vi. Demand and development of infrastructure and social amenities.

3. Assess the impacts of development on landscape and land use such as:
   (a) Determine the impact on change on civic shape, scenery, aesthetic modifications.
   (b) Examine the compatibility and complementarity of the development with the surrounding land uses.

4. Assess the impacts of the development on power demands, water demands, and access road congestion as well as possible impacts on surface run-off and ground water qualities and quantities, if any.

5. Develop an Environmental Management and Monitoring Plan (EMMP) that would mitigate the possible impacts on the environment.
CHAPTER ONE: INTRODUCTION

1.1. Background
The construction works are located in Limuru Township in Kiambu County within the jurisdiction of the Nairobi Metropolitan Region. The road to be upgraded covers approximately a length of 1.14Km and includes:

<table>
<thead>
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<th>Road Names</th>
<th>Length (m)</th>
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<tr>
<td>Alignment A</td>
<td>800m</td>
</tr>
<tr>
<td>Alignment B</td>
<td>140m</td>
</tr>
<tr>
<td>Alignment C</td>
<td>200m</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1,140</strong></td>
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These works will also incorporate walkways as part of the project to enable accessibility to the railway station by pedestrians. Currently existing is a dusty road (about 1.14 Kilometers) that will be constructed to bitumen standards and starts from the main tarmac road (Limuru Road) that enters Limuru Town from Nairobi-Nakuru Highway. This road winds from down, climbing with a gentle ascent into Limuru Town passing next to Limuru Railway Station on the right and winding round Limuru Slaughterhouse. This road to be upgraded has the following general GPS location coordinates:

Latitude: Degrees S1, Minutes 7, Seconds 14.5 (Decimals -1.1)
Longitude: Degrees E36, Minutes 38, Seconds 31 (Decimals 36.6)
Altitude: 2226 meters above sea level (masl)

1.2 Need for the Project
The broad aim of the project is to enhance mobility, accessibility and transport within the Limuru Market and Railway Station area. The project has laid emphasis on the provision of Non-Motorized Transport (NMT) facilities so as to encourage people living within the area to either walk or cycle to Limuru Railway Station. A location map of the project is part of this ESIA report. The project is also aimed at providing and improving access to Limuru Town, the Railway Station, schools in the vicinity, Limuru Market and Limuru Slaughter House. The road will provide an easy link from Limuru Sewerage Works and Limuru town as the works start at the gate of Limuru Sewerage Works along Limuru Road. The road will also provide a link of NMT facilities to the existing
pedestrian footbridge at the Limuru Railway Station. The proposed project is also aimed at providing and improving access to:-

a) Limuru Market
b) Limuru Slaughterhouse
c) Schools
   i. Top Kids Academy
   ii. Grace School
d) Limuru Town and the environs of the road

The project is also good news in terms of job creation. There are so many Limuru town dwellers that lack employment and they are going to benefit from this project. Many people are going to be employed during the planning stage of the project, the construction stage and when the project will be operational. The need therefore exists for providing flexible, modern and cost effective transport facilities to and from Limuru Railway Station.

1.3 Scope and Content of Project
The works shall include but not limited to: -

a) Site clearance and earthworks as necessary
b) Excavation to remove unsuitable materials
c) Filling with approved materials as specified
d) Hand packing with approved stone
e) Repairs to existing drainage structures
f) Improvement/construction to the drainage facilities
g) Sectional improvement/construction of sections of roads
h) Repairs and widening/or improvement/construction to footpaths and shoulders
i) Laying of Asphalitic concrete layer(s) to a consolidated thickness
j) Laying and/or replacement of kerbs and channel as specified and directed
k) Grading and/or improvement/construction of unpaved roads
l) Construction of road junctions abutting to these roads
m) Relocation and/or protection of other services including but not limited to water pipes, sewer pipes, street lighting, power and telephone services
n) Installation of Streetlights
o) Provision of NMT facilities
p) Provision of public parking facilities

The project assessment investigates and analyses the anticipated environmental and social impacts of the proposed development in line with the Environmental (Impact Assessment and Audit) 2003 regulations. Consequently, the report provides the following:

- The location of the project including the physical environment that may be affected by the project’s activities.
- The activities that shall be undertaken during the project construction, operation and design of the project.
- The materials to be used, products and by-products including waste to be generated by the project and the methods of disposal.
- The potential environmental and social impacts of the project and mitigation measures to be taken during and after the implementation of the project.
- An action plan for prevention and management of possible accidents during the project cycle.
- A plan to ensure the health and safety of the workers and the neighboring communities.
- The economic and social cultural impacts to local community.
- The project budget.
- Any other information that the proponent may be requested to provide by NEMA.

This report also seeks to ensure that all the potential environmental and social impacts are identified and that workable mitigation measures are adopted. The report also seeks to ensure compliance with the provisions of the EMCA 1999, and Environmental (Impact Assessment and Audit) Regulations 2003 as well as other regulations and especially World Bank Safeguards and mainly OP 4.01 (Environmental Assessment).

The report emphasizes the duties of the proponent and contractor during the construction phase as well as the operation phase of this project.

1.4 Duties of the Proponent

It will be the duty of the proponent to ensure that all legal requirements as pertaining to the development are met as specified by the law, including World Bank Safeguards and specifically OP4.01 (Environmental Assessment).

- The proponent shall hand over the site to the Contractor for implementation of the project.
- The proponent is also the one to fund the project.
• The proponent is also the one who has initiated the project and will also ensure its satisfactory implementation

1.5 Duties of the Contractor

• Prepare and maintain an approved Time and Progress chart, showing clearly the period allowed for each section of the work
• The contractor is to comply with all regulations and by-laws of the local Authority including serving of notices and paying of the fees.
• During the night, public holidays and any other time when no work is being carried out onsite, the contractor shall accommodate only security personnel.
• The contractor shall make good at his own expense any damage he may cause to public and private roads, drainages and pavements in the course of carrying out his work.
• The proponent shall define the area of the site, which may be occupied by the contractor for use as storage, on the site
• The contractor shall include all recommendations from ESIA into the contract.
• The contractor shall provide at his own risk, and cost all water required for use in connection with the works including the work of subcontractors, and shall provide temporary storage tanks, if required
• The contractor shall make his own arrangements for sanitary conveniences for his workmen. Any arrangements so made shall be in conformity with the public health requirements for such facilities and the contractor shall be solely liable for any infringement of the requirements.
• The contractor shall be responsible for all the actions of the subcontractors, if any, in the first instance.
• The contractor shall take all possible precautions to prevent nuisance, inconvenience or injury to the neighboring properties and to the public generally, and shall use proper precautions to ensure the safety of wheeled traffic and pedestrian.
• All work operations which may generate noise, dust, vibrations, or any other discomfort to the workers and/or guest of the client and the neighbors must be undertaken with care, with all necessary safety precautions taken.
• The contractor shall take all effort to muffle the noises from his tools, equipment and workmen to not more than 80dBA
The contractor shall upon completion of working, remove and clear away all plant, rubbish and unused materials and shall leave the whole site in a clean and tidy state to the satisfaction of the Proponent. He shall also remove from the site all rubbish and dirt as it is produced to maintain the tidiness of the premises and its immediate environs.

- No shrubs, trees, bushes or underground thicket shall be removed except with the express approval of the Proponent.

- No blasting shall be permitted without the prior approval of the Proponent and the local authorities.

- Borrow pits will only be allowed to be opened up on receipt of permission from the Proponent

- The standard of workmanship shall not be inferior to Kenya Bureau of Standards requirements and no materials for use in the permanent incorporation into the works shall be used for any temporary works or purpose other than that for which it is provided. Similarly, no material for temporary support may be used for permanent incorporation into the works.

All the materials and workmanship used in the execution of the work shall be of the best quality and description. Any materials condemned by the Proponent shall be immediately removed from the site at the contractors cost.

The premises should also be planned to be landscaped and with adequate drainage facilities. Environmental and social concerns need to be part of the planning and development process and not an afterthought; it is therefore advisable to avoid land use conflicts with the surrounding area. To avoid unnecessary conflicts that retard development in the project area, the proponent undertook this ESIA and incorporated environmental and social concerns as advised by the Authority. Finally, a comprehensive Environmental Management and Monitoring Plan (EMMP) is mandatory for a project of this magnitude and nature because large quantities of solid wastes are likely to be generated with temporary interference to the general public and services during project execution.
CHAPTER TWO: LEGAL, INSTITUTIONAL AND LEGISLATIVE FRAMEWORK

2.1 Environmental Management and Coordination Act No 8 of 1999

This project report has been undertaken in accordance with the Environment (Impact Assessment and Audit) regulation 2003, which operationalizes the Environment Management & Coordination Act (EMCA) 1999. The report is prepared in conformity with the requirements stipulated in the environmental management and coordination act no 8 of 1999 and the Environmental Impact Assessment and Audit regulations 2003 regulation 7(1) and the second schedule. Part II of the said act states that every person is entitled to a clean and healthy environment and has the duty to safeguard the same. In order to achieve the goal of a clean environment for all, new projects listed under the second schedule of Section 58 of EMCA No 8 of 1999 shall undergo an Environmental Impact Assessment. This includes development activities such as this new project. In addition to the legal compliance above, the following legal aspects have also been taken into consideration or will be taken into consideration before commencement of construction:

2.2 Occupational Health and Safety, OSHA, 2007

The said Act requires that before any premises are occupied or used a certificate of registration should be obtained from the chief inspector. The occupier must keep a general register with provision for health, safety and welfare of workers on site. For safety, fencing off of the premise and dangerous parts must be done. There should be provision for clean and sanitary working conditions. More so, there must be also provision of quality and quantity wholesome drinking water.

2.3 Physical Planning Act Cap 242

Part IX section 115 of the Act states that no person or institution shall cause nuisance or condition liable to be injurious or dangerous to human health section 116 requires that local Authorities take all lawful necessary and reasonable practicable measures to maintain their jurisdiction clean and sanitary to prevent occurrence of nuisance or condition liable to injuries or dangerous to human health.

2.4 Physical Planning Act, 1999

The said Act section 29 empowers the Local Authorities to reserve and maintain all land planned for open spaces, parks, urban forests and green belts. The same section allows for prohibition or control of the use and development of an area.
Section 30 states that any person who carries out development without development permission will be required to restore the land to its original condition. It also states that no other licensing authority shall grant license for commercial or industrial use or occupation of any building without a development permission granted by the respective local Authority.

2.5 Land Planning Act Cap 303
Section 9 of the subsidiary legislation (the development and use of land Regulations 1961) under which it requires that before the Local Authority submits any plans to the minister for approval, steps should be taken as may be necessary to acquire the owners of any land affected by such plans. Particulars of comments and objections made by the landowners should be submitted, which intends to reduce conflict of interest with other socio economic activities.

2.6 Building Code 2000
Section 194 requires that where sewer exists, the occupants of the nearby premises shall apply to the Local Authority for permit to connect to the sewer line and all the wastewater must be discharged in to sewers. The code also prohibits construction of structures or building on sewer lines.

2.7 Other Relevant Laws
2.7.1 EMCA (Waste Management) Regulations, 2006
These Regulations guides on the appropriate waste handling procedures and practices. It is anticipated that, the proposed project will generate large quantity of solid waste during construction which will need to be managed through reuse, recycling or appropriate disposal. It is therefore anticipated that, the amount of materials to be discarded as waste during the project implementation will be minimum. It is recommended that the proponent should put in place measures to ensure that construction materials requirements are carefully budgeted and to ensure that the amount of construction materials left on site after construction is kept minimal. It is further recommended that the proponent should consider the use of recycled or refurbished construction materials including those excavated from existing road. Purchasing and using recovered construction materials will lead to financial savings and reduction of the amount of construction debris disposed of as waste. To comply with the requirements of the regulations the proponent should undertake the following in addition to the above-mentioned recommendations;

i. Should not dispose any waste on the highway, street road, recreational area and public places;
ii. Segregate waste and group them according to their similarity for example plastics, toxic, organic etc;

iii. Ensure all waste is deposited in a designated dumping are approved by the local authority;

iv. All waste handlers engaged by the proponent should be licensed by NEMA and posses all relevant waste handling documents such as waste transport license, tracking documents, license to operate a waste yard, insurance cover, vehicle inspection documents among others;

v. Implement cleaner production principles of waste management strategy namely reduce, reuse and recycle;

vi. Label all hazardous wastes as specified in section 24 (1-3) of the regulation.

vii. The fourth schedule lists wastes considered as hazardous and solvents, emulsifiers/emulsion, waste oil/water and hydrocarbon/water mixtures. Road projects involve use of inputs which are likely to generate the mentioned wastes and thus will need to be handled as required by the regulations.

2.7.2 EMCA (Noise and Vibrations Control) Regulations, 2009

These Regulations provides guidelines for acceptable levels of noise and vibration for different environments during the construction and operation phase. Section 5 of the regulation warns on operating beyond the permissible noise levels while section 6 gives guidelines on the control measures for managing excessive noises and copy of the first schedule indicating the permissible noise levels for different noise sources and zones. The project team should observe the noise regimes for the different zones especially when working in areas termed as silent zones which are areas with institutions and worship places. These areas are permitted exposure to sound level limits of not exceeding 40 dB (A) during the day and 35 dB (A) at night. The regulation states that a day starts from 6.01 a.m. to 8.00 p.m. while night starts from 8.01 p.m. – 6.00 a.m. Construction sites near the silent zones are allowed maximum noise level of 60 dB (A) during the day and night levels are maintained at 35 dB (A). The time frame for construction sites are adjusted and the day is considered to start at 6.01 a.m. and ends at 6.00 pm while night duration from 6.01 p.m. to 6.00 a.m.

Part III of the regulation gives guidelines on noise and vibration management from different sources. Sections 11, 12 and 13 of the stated part give guidelines on noise and vibration
management from machines, motor vehicles and night time construction respectively. Section 15 requires owners of activities likely to generate excessive noise to conduct an ESIA to be reviewed and approved by NEMA.

It is anticipated that the proposed project will generate excessive noise and/or vibration due to demolition of the existing road. This noise will originate from the construction equipments, vehicles and the workers since the road neighbors homesteads and institutions in some sections and it is therefore recommended that the construction team develops mitigations to reduce noise propagation in the project area.

2.7.3 Way Leave Act Cap 292
Section 3 of the Act states that the Government may carry any works through, over or under any land whatsoever, provided it shall not interfere with any existing building or structure of an ongoing activity. 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.

2.7.4 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.

2.7.5 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. This Limuru Town project is under the provisions of the Act.

2.7.6 The National Environment Management Authority
The responsibility of the National Environmental Management Authority (NEMA) is to exercise general supervision and, co-ordination of all matters relating to the environment and to be the
principal instrument of government in the implementation of all policies relating to the environment. The Authority shall review the project report for the proposed project, visit the project site to verify information provided in the report and issue an ESIA license if it considers that all the issues relevant to the project have been identified and mitigation measures to manage them proposed.

2.8 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):

(a) Category A: A proposed project is classified as Category A if it is likely to have significant adverse environmental impacts.

(b) Category B: A proposed project is classified as Category B if its 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 mitigatory measures can be designed more readily than for Category A projects. This particular NaMSIP subproject has been categorized as B.

(c) 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 EA action is required for a Category C project.

(d) 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 this NaMSIP project.

Most of the proposed specific projects are in the areas of water supply, storm water drainage and sewerage, with road upgrading and floodlighting in some of the settlements. All of them will have
significant positive effects on the environment and livelihoods of the residents in the Nairobi Metropolitan Region. Adverse effects, if any, will be limited (some minor and temporarily limited noise and dust during construction). Only where drainage and sewage is concerned, measures will have to be taken to prevent indirect adverse effects; such effects could be outside of the project sites, i.e. the selected settlements, in the downstream area, to which drainage water and sewage will flow. Such effects can clearly be identified during the screening process and mitigated as described in EMMP.

The table below shows the applicability of World Bank Operational Safeguards as it applies to this construction of access road to Limuru Railway Station in Kiambu County of Nairobi Metropolitan Region.

<table>
<thead>
<tr>
<th>OP</th>
<th>Title</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.01</td>
<td>Environmental Assessment</td>
<td>Applicable. As a result of environmental and social screening, the project was identified as a Category B project due to its road rehabilitation and other activities, as described</td>
</tr>
<tr>
<td>4.04</td>
<td>Natural Habitats</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>4.09</td>
<td>Pest Management</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>4.10</td>
<td>Indigenous Peoples</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>4.11</td>
<td>Physical Cultural Resources</td>
<td>Not applicable. Site visits and inventories have not indicated the presence of any cultural (historical, archaeological) sites in the sample settlements. However, to manage “chance finds” an appropriate procedure is included in this ESIA. Such procedure to be followed by contractors during the construction phase.</td>
</tr>
<tr>
<td>4.12</td>
<td>Involuntary Resettlement</td>
<td>Not applicable</td>
</tr>
<tr>
<td>4.36</td>
<td>Forests</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>4.37</td>
<td>Safety of Dams</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>7.50</td>
<td>Projects on International Waterways</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>7.60</td>
<td>Projects in Disputed Areas</td>
<td>Not applicable.</td>
</tr>
</tbody>
</table>
CHAPTER THREE: DESCRIPTION OF THE PROJECT

3.1 Introduction and Project Objectives
Rapid urbanization has left Kenyan cities with huge unmet demand for critical infrastructure and basic services. This has constrained the productivity of businesses and negatively impacted the quality of life of residents. This un-coordinated urbanization has led to massive expansion of overcrowded and impoverished informal settlements; waste of many man hours in daily traffic jams due to lack of mass transport; uncollected solid waste, which end up blocking drainage systems, and contributing to periodic flooding; and sewage seeps into ground water, contaminating rivers and streams. Further, most major cities are financially fragile or insolvent, and have weak management structures, while key institutions lack adequate capacity.

Nairobi Metropolitan Services Improvement Project (NaMSIP) is part of a wide municipal development initiative by the Government and the development partners to address these problems. NaMSIP is an initiative of the Kenya Government with the support of the World Bank under the Country Partnership Strategy (CPS). The CPS emphasizes the themes of growth, equity, and environment, with a special emphasis on governance. NaMSIP contributes to the governance, growth, and improved environmental management agendas. It seeks to strengthen structures of governance in the metropolitan area, including the county administration and the new metropolitan authorities. NaMSIP contributes to the CPS’s growth objective by supporting design and implementation of critical urban services—including transport, sanitation, and solid waste management—that will allow the metropolitan area to meet the needs of businesses and residents. Investment in infrastructure also contributes to the growth agenda by improving the competitiveness of Kenya’s cities as places to live and invest.

NaMSIP is intended to improve services in the metropolitan area which are critical for economic development that include solid waste management, transport systems, storm water management, water supply and sanitation, disaster management and security/street lighting among many others. In addition, the implementation of the project will give the Ministry an opportunity to build its human resource and technical capacity in carrying out metropolitan-wide activities. NaMSIP is in line with the Government’s national development priorities and policies as well as ongoing public sector reform agenda. The project also supports strengthening of public sector management and accountability.
3.2 Project Description and Design

The proposed construction works are located in Limuru Town of Limuru Constituency in Kiambu County. The total project cost is approximately $1,400,000. Currently existing is a dusty road (about 1.14 Kilometers) that will be constructed to bitumen standards and starts from the main tarmac road that enters Limuru Town from Nairobi-Nakuru Highway, Limuru Road. It passes next to Limuru Railway Station on the right and winds round Limuru Slaughterhouse after passing the Railway Station. This road to be upgraded has the following general GPS location coordinates:

- Latitude: Degrees S1, Minutes 7, Seconds 14.5 (Decimals -1.1)
- Longitude: Degrees E36, Minutes 38, Seconds 31 (Decimals 36.6)
- Altitude: 2226 meters above sea level

The construction works are located in Limuru Township in Kiambu County within the jurisdiction of the Nairobi Metropolitan Region. The roads in this contract cover approximately a length of 1.14Km and include:-

<table>
<thead>
<tr>
<th>Road Names</th>
<th>Length (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alignment A</td>
<td>800m</td>
</tr>
<tr>
<td>Alignment B</td>
<td>140m</td>
</tr>
<tr>
<td>Alignment C</td>
<td>200m</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1,140</strong></td>
</tr>
</tbody>
</table>

3.3 Project Justification

The broad aim of the project is to enhance mobility, accessibility and transport within the Limuru Market and Railway Station area. The project has laid emphasis on the provision of Non-Motorized Transport facilities so as to encourage people living within the area to either walk or cycle to Limuru Railway Station. A location map of the project is enclosed in this screening report. The project is also aimed at providing and improving access to Limuru Town, the Railway Station, schools in the vicinity, Limuru Market and Limuru Slaughter House. The road will provide an easy link from Limuru Sewerage Works and Limuru town as the works start at the gate of Limuru Sewerage Works along Limuru Road. The road will also provide a link of NMT facilities to the existing pedestrian footbridge at the Limuru Railway Station.

3.4 Scope of Works

The works shall include but not limited to: -

a) Site clearance and earthworks as necessary
b) Excavation to remove unsuitable materials

c) Filling with approved materials as specified

d) Hand packing with approved stone

e) Repairs to existing drainage structures

f) Improvement/construction to the drainage facilities

g) Sectional improvement/construction of sections of roads

h) Repairs and widening/or improvement/construction to footpaths and shoulders

i) Laying of Asphaltic concrete layer(s) to a consolidated thickness

j) Laying and/or replacement of kerbs and channel as specified and directed

k) Grading and/or improvement/construction of unpaved roads

l) Construction of road junctions abutting to these roads

m) Relocation and/or protection of other services including but not limited to water pipes, sewer pipes, street lighting, power and telephone services

n) Installation of Streetlights

o) Provision of NMT facilities

p) Provision of public parking facilities

3.5 Description of the Project’s Construction Activities

3.5.1 Pre-construction investigations

The implementation of the project’s design and construction phase will start with thorough investigation of the site biological and physical resources in order to minimize any unforeseen adverse impacts during the project cycle.

3.5.2 Clearance works

Any wastes or debris arising from any clearing will be transported to licensed site for disposal.

3.5.3 Sourcing and transportation of construction materials

Construction materials will be transported to the project site from their extraction, manufacture, or storage sites using transport trucks. The materials to be used in construction of the project will be sourced from neighboring areas. Greater emphasis will be laid on procurement of construction materials from within the local area, which will make both economic and environmental sense as it will reduce negative impacts of transportation of the materials to the project site through reduced distance of travel by the materials transport vehicles.
3.5.4 Storage of materials
Construction materials will be stored on site. Bulky materials such as rough stones, ballast, sand and steel should be carefully piled / stacked on site. To avoid piling large quantities of materials on site, the contractor should order bulky materials such as sand, gravel and stones in batches.

3.5.5 Excavation and foundation works
Excavation will be carried out to prepare the site for construction of foundations, pavements and drainage systems. This will involve the use of heavy earthmoving machinery, human effort and appropriate equipment.

3.5.6 Landscaping
To improve the aesthetic value or visual quality of the site once construction ceases, the contractor will carry out landscaping.

3.6 Description of the Project’s Operational Activities

3.6.1 General repairs and maintenance
The access road and culverts and other drainage appurtenances will be repaired and maintained by Kiambu County during their operational phases.

3.7 Description of the Project’s Decommissioning Activities

3.7.1 Demolition works
Upon decommissioning, the project components including pavements, drainage systems, parking areas and perimeter fence will be demolished. This will produce a lot of solid waste, which will be reused for other construction works or if not reusable, disposed of appropriately by a licensed waste disposal company.

3.7.2 Site restoration
Once all the waste resulting from demolition and dismantling works is removed from the site, the site will be restored through replenishment of the topsoil and covered with the necessary vegetation.

3.8 Public Participation and Consultation
A public meeting (baraza) and interviews were carried out in the area of the project on Monday March 2nd, 2015 by the use of a presentation on the project and administration of questionnaires, to find out all the views from the surrounding community towards the proposed project. All the
representatives of the surrounding community had no objection to the project, with most commending the development as per the attached questionnaires. The public meeting had an attendance of thirty-five (see the sign-in sheet of this report) with the respondents filling in the questionnaires that are also part of this report. Afterwards, the ESIA team enquired on acceptance of the project and whether the project will cause any negative impacts on the following:

a) Local residents and their businesses; b) Ecology of the area; c) Human environment; d) Recreational and leisure facilities; e) Public health and safety; f) Effect on water resources and quality; g) Effect on the soils; h) Effect on road transport and; i) Waste disposal. The said parameters were directly mentioned to foresee which could have intense negative impact. Average results show impact to be moderate with most of the impacts being mitigatable.

However, from previous projects of same magnitude, some impacts even without concern of the residents are expected and their effects are discussed below. The residents including the political leadership of the area as well as the county government all support the project and are awaiting eagerly for its commencement. The minutes of the meeting are in this report and the issues raised are as addressed in the minutes.

### 3.8.1 Noise and Vibration

Little concern is over the possibility of high noise and vibration levels in the project site as a result of construction works. The sources of noise pollution will include transport vehicles, construction machinery and metal grinding and cutting equipment. However, the proponent will take appropriate steps to ensure the contractor minimizes noise impacts including provision of appropriate protective equipment to construction workers, planning and minimizing the frequency of materials transport, and ensuring that all equipment are well maintained. The construction works will also be carried out exclusively during the day.

### 3.8.2 Possibility of Increased Accidents during Works

The respondents feared that there could be incidences of accidents during construction works. The traffic along the highway would increase as well. There was need for the proponent to ensure that the contractor and authorities concerned are informed to provide safeguards against any accidents that may occur. Acceleration and deceleration lanes will be provided where required to manage traffic in the area.
3.8.3 Dust generation
There is possibility of generation of large amounts of dust within the project site and surrounding areas as a result of transportation of building materials, especially if the construction is done in dry weather. The proponent will ensure that dust levels at the site are minimized through sprinkling water in areas being excavated and along the tracks used by the transport trucks within the site. Additional mitigation measures presented in the EMMP will be fully implemented to minimize the impacts of dust generation.

3.8.4 Transport trucks
The heavy transport trucks that will be turning around the project site while delivering construction materials may cause traffic file-up. In addition to contribution of noise and emission of exhaust fumes around the premises, such trucks may slow down traffic flow. The contractor will put in place measures to address such concerns by ensuring that delivery trucks are well driven and managed. In addition, the mitigation measures outlined in the EMMP will be fully implemented to address environmental issues relating to construction trucks.

3.8.5 Aesthetics
Some of the respondents feared that the project will affect the area aesthetically through dumping. It was suggested that the proponent should ensure high hygiene standards within the premises and surrounding areas during construction and during the operation stages of the project. More so via the prescribed EMMP, the proponent shall put in place several measures aimed at ensuring high standards of hygiene and housekeeping within the premises and surrounding areas.
CHAPTER FOUR: BASELINE INFORMATION OF THE STUDY AREA

4.1 Introduction
Limuru is a town located about 30 miles from Nairobi and is in Kiambu County of central Kenya. The town is mostly known for the Bata shoe factory and most of the people of Limuru are mostly farmers with several engaged in small enterprises mainly in the town. Tea and horticulture farming is very prominent in the area. Early in the British colonial period (from the 1890s) Europeans settled in the area due to its proximity to Nairobi, the railway, its fertile land and pleasant weather. The native language of most people in Limuru is Kikuyu, with Swahili and English widely spoken. Most of the area of Limuru is now what was previously known as “the white highlands”, a rich agricultural land just south of the equator. The term “white highlands” derived from the British and other Europeans who realized the productive potential of this area and settled in large numbers with the support of the colonial government, establishing coffee and tea plantations, cereal farms and ranches. Altitude of the town is about 2226 meters. Limuru has a temperature of 28 °C (75 °F) year round. The road to be upgraded accesses the town and has the following general GPS location coordinates;
Latitude: Degrees S1, Minutes 7, Seconds 14.5 (Decimals -1.1)
Longitude: Degrees E36, Minutes 38, Seconds 31 (Decimals 36.6)

4.2 Climate
The project area experiences a highland equatorial type of climate with a mean annual rainfall in the region of 905 mm. The main rainfall seasons are, March to May and October to December. In between these periods the area is generally dry with occasional showers. The mean annual temperature ranges from minimum of 13°C to a maximum of 29°C. The coolest period is from June to September and the warmest period October to March.

4.3 Infrastructure
Due to a rapid urban growth of Limuru Town in Kiambu County, provision of basic infrastructure for all has become an important concern of development planners in Limuru. Basic infrastructural services that have deteriorated in the town due to such rapid increase in population and commercial business include: Solid Waste Management (SWM) system; water and sewage systems; drainage and flood protection; roads; mass transportation; electric installations; and telecommunications.
Greater environmental pollution, congestion and other problems have been the result of under-provision of such basic services and especially wastewater and sewerage management services. The town is well served, with good communication and transport network of road and railway and is just off the main Nairobi-Nakuru Highway, being accessed through Limuru Road branching off from this main highway.

4.4 Topography

The project road traverses a generally flat terrain with gentle slopes.

4.5 Economic Activities

Limuru Town is famous for Bata shoe factory in the town. The town is also the centre of small commercial enterprises. The major economic activities in the town and its vicinity are farming in tea and horticultural (fruits and vegetables) farming. Dairying is also a key activity in the area. Like most small upcoming towns, Limuru has crowded markets and trading areas, middle class suburbs, and big mansions for the rich and powerful. The town also has high unemployment, especially of the youth.

4.6 Key Challenges of Limuru Town

Wastes management especially liquid waste management is a key challenge of Limuru Town. Other challenges include transportation inefficiencies and solid waste management.
CHAPTER FIVE: ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT

5.1 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.

5.2 Negative environmental impacts of construction activities
5.2.1 Extraction and use of construction materials
Construction materials such as rough stone, ballast and bitumen required for construction of the roads project will be obtained from quarries and bitumen dealers and the structural steel for the bridge from steel dealers. Since substantial quantities of these materials will be required for construction of the roads, the availability and sustainability of such resources at the extraction sites will be negatively affected, as they are not renewable in the short term. In addition, the sites from which the materials will be extracted may be significantly affected in several ways including landscape changes, displacement of animals and vegetation, poor visual quality and opening of depressions on the surface leading to several human and animal health impacts.

5.2.2 Dust emissions
During construction, the project will generate substantial quantities of dust at the construction site and its surrounding. The sources of dust emissions will include excavation and leveling works, and to a small extent, transport vehicles delivering building materials. Emission of large quantities of dust may lead to significant impacts on construction workers and the local residents, which will be accentuated during dry weather conditions.

5.2.3 Exhaust emissions
The trucks used to transport various building materials from their sources to the project site will contribute to increases in emissions of CO₂, NO₂ and fine particulate along the way as a result of
diesel combustion. Such emissions can lead to several environmental impacts including global warming and health impacts. Because large quantities of building materials are required, some of which are sourced outside Nairobi, such emissions can be enormous and may affect a wider geographical area. The impacts of such emissions can be greater in areas where the materials are sourced and at the construction site as a result of frequent running of vehicle engines, frequent vehicle turning and slow vehicle movement in the loading and offloading areas.

5.2.4 Noise and vibration
The construction works, delivery of construction materials by heavy trucks and the use of machinery/equipment including bulldozers, generators, tippers and concrete mixers will contribute high levels of noise and vibration within the construction site and the surrounding area. Elevated noise levels within the site can affect project workers and the residents, passers-by and other persons within the vicinity of the project site.

5.2.5 Risks of accidents and injuries to workers
Because of the intensive engineering and construction activities including concrete work, among others, construction workers will be exposed to risks of accidents and injuries. Such injuries can result from slips and accidental falls, injuries from hand tools and construction equipment or cuts from sharp edges and risk of vehicular accidents.

5.2.6 Increased soil erosion
Excavation works associated with this project may lead to increased soil erosion at the project site and release of sediments into the drainage systems. Uncontrolled soil erosion can have adverse effects on any local water bodies.

5.2.7 Solid waste generation
Large quantities of solid waste will be generated as a result of clearances and excavations in the existing roads. In addition, additional solid waste will be generated at the site during construction of drainage systems and related infrastructure. Such wastes will consist of rejected materials, surplus materials, surplus soil, excavated materials, paper bags, empty cartons, empty paint and solvent containers, among others. Such solid waste materials can be injurious to the environment through blockage of drainage systems, choking of water bodies and negative impacts on human and animal health. This may be accentuated by the fact that some of the waste materials contain hazardous substances such as paints, cement, adhesives and bitumen, while some of the waste materials
including plastic containers are not biodegradable and can have long-term and cumulative effects on the environment.

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

5.2.9 Water use
The construction activities will require large quantities of water that will be supplied by the local water services provider. Water will mainly be used for concrete mixing, dust suppression and sanitary and washing purposes. Excessive water use may negatively impact on the water source and its sustainability.

5.2.10 Social disturbance
The construction works may cause disturbance to the local population with interactions of non-local workers with residential communities. The movement of trucks and other equipment in the project area during the works implementation will cause noise and dust if the works will be in dry weather. This noise and dust may also affect the schools in the vicinity of the construction works.

5.3 Positive environmental impacts of construction activities
5.3.1 Creation of temporary employment opportunities
Several employment opportunities will be created for construction workers during the construction phase of the project. This will be a significant impact since unemployment is currently quite high in Limuru and the surrounding areas.

5.3.2 Provision of market for supply of construction materials
The project will require supply of large quantities of construction materials most of which will be sourced locally in Limuru Town and the surrounding areas. This provides ready market for construction material suppliers such as quarrying companies, hardware shops and individuals with such materials.
5.3.3 Increased business opportunities
The large number of project staff required will provide ready market for various goods and services, leading to several business opportunities for small-scale traders such as food vendors around the construction site.

5.4 Negative environmental impacts of operational activities
5.4.1 Increased storm water flow
The pavements will lead to increased volume and velocity of storm water or run-off flowing across the area covered by the road. This will lead to increased amounts of storm water entering the drainage systems, resulting in overflow and damage to such systems in addition to increased erosion or water logging in the neighboring areas if not adequately mitigated.

5.5 Positive environmental impacts of operational activities
5.5.1 Revenue to national and local governments
Through payment of relevant taxes, rates and fees to the government and the local authority, the road project will contribute towards the national and local revenue earnings from those using the improved facilities.

5.6 Positive social impacts of operational activities
5.6.1 The operational activities after this project is commissioned will have several positive long-term social impacts that include the following:
(a) Improved access to lower income people (from informal settlements in the vicinity of the sub-project) to ride public transport
(b) Improved pathways (NMT) for cycling and walking for pedestrians
(c) Easier accessibility for all for the railway station
(d) Reduced pedestrian accidents from optimal use of the acceleration and deceleration lanes at the entry and exit of Limuru Town using the constructed road
(e) Improved drainage will reduce the flood damage and improve accessibility especially for pedestrian traffic and residents
(f) Improved accessibility will spur physical development in the area leading to increased jobs for the urban poor living in the town
(g) Improved lighting will increase trading hours for the businesses
(h) Cleaner and orderly environment
Improved safety and security for all

In a nutshell, the road being upgraded will be installed with street lights. This will lead to improved security in the area as well as increased time for doing business and hence increased income to inhabitants of the area. The road will also have NMT facilities thus reducing conflict between vehicles and pedestrians hence accidents.

5.7 Negative environmental impacts of decommissioning activities

5.7.1 Solid waste

Demolition of the roads, culverts and related infrastructure will result in large quantities of solid waste. The waste will contain the materials used in construction including concrete, metal, kerbs, bitumen, stones and ballast. Although demolition waste is generally considered as less harmful to the environment since they are composed of inert materials, there is growing evidence that large quantities of such waste may lead to release of certain hazardous chemicals into the environment. In addition, even the generally non-toxic chemicals such as chloride, sodium, sulphate and ammonia, which may be released as a result of leaching of demolition waste, are known to lead to degradation of groundwater quality.

5.7.2 Dust

Large quantities of dust will be generated during works. This will affect works staff as well as the neighboring residents.

5.7.3 Noise and vibration

The works will lead to significant deterioration of the acoustic environment within the project site and the surrounding areas.

5.8 Positive environmental impacts of decommissioning activities

5.8.1 Rehabilitation

Upon decommissioning the project, rehabilitation of the project site will be carried out to restore the site to its original status. This will include replacement of topsoil that will lead to improved visual quality of the area.

5.8.2 Employment Opportunities

Several employment opportunities will be created for demolition staff.
CHAPTER SIX: ANALYSIS OF PROJECT ALTERNATIVES

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

6.1 Relocation Option

Relocation option to a different site is not an option available for the project implementation as this project is to improve accessibility to an already established railway station, Limuru Railway station.

6.2 Zero or No Project Alternative

The No Project option in respect to the proposed project implies that the status quo is maintained. This option is the most suitable alternative from an extreme environmental perspective as it ensures non-interference with the existing conditions. This option will however, involve several losses both to the county and the community as a whole. Limuru Railway station will continue to remain inaccessible and this will not help maximize usage and utilization of this station. 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 the local people would remain unchanged.
- The railway station would remain under utilized.
- No employment opportunities will be created for local people who will work in the project area.
- Increased urban poverty and crime in Limuru
- Discouragement for investors and loaners
- Development of infrastructural facilities (roads, drainage 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.

6.3 Analysis of Alternative Construction Materials and Technology

The proposed project will be constructed using modern, locally and internationally accepted materials to achieve public health, safety, security and environmental aesthetic requirements. Equipment that saves energy and water will be given first priority without compromising on cost or
availability factors. The road-works will be made using locally sourced stones, cement, sand (washed and clean), structural steel and fittings that meet the Kenya Bureau of Standards requirements. The alternative technologies available include the conventional concrete roads, prefabricated concrete panels, or even temporary structures. These may not be desirable from a cost and durability perspective. The technology to be adopted will be the most economical and one sensitive to the environment.

6.4 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 the Kiambu County 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 delineated options.
CHAPTER SEVEN: IMPACTS MITIGATION AND MONITORING

7.1 Introduction

This chapter highlights the necessary mitigation measures that will be adopted to prevent or minimize significant negative environmental, health and safety impacts associated with the project during its construction, operation and decommissioning phases. Allocation of responsibilities, time frame and estimated costs for implementation of these measures are presented in the Environmental Management and Monitoring Plan (EMMP).

7.2 Mitigation of construction phase impacts

7.2.1 Efficient sourcing and use of raw materials
The contractor will source construction materials such as sand, ballast and hard core from registered quarry and sand mining firms, whose projects have undergone satisfactory environmental impact assessment/audit and received NEMA approval. Since such firms are expected to apply acceptable environmental performance standards, the negative impacts of their activities at the extraction sites are considerably well mitigated. To reduce the negative impacts on availability and sustainability of the materials, the contractor will only order for what will be required through accurate budgeting and estimation of actual construction requirements. This will ensure that materials are not extracted or purchased in excessive quantities. Moreover, the proponent will ensure that wastage, damage or loss (through run-off, wind, etc) of materials at the construction site is kept minimal, as these would lead to additional demand for and extraction or purchase materials. In addition to the above measures, the contractor shall consider reuse of construction materials and use of recycled materials. This will lead to reduction in the amount of raw materials extracted from natural resources as well as reducing impacts at the extraction sites.

7.2.2 Excavations
The existing earth road will have to be excavated to make for new road and associated facilities and the removed materials will be taken to licensed sites or reused.

7.2.3 Minimization of run-off and soil erosion
The contractor will put in place some measures aimed at minimizing soil erosion and associated sediment release from the project site during construction. These measures will include silt traps, barriers, vegetation planting, terracing and leveling the project site to reduce run-off velocity and
increase infiltration of rainwater into the soil. In addition, construction vehicles will be restricted to designated areas to avoid soil compaction within the project site, while any compacted areas will be ripped to reduce run-off. This is especially relevant to the area close to the parking lot at the station, which is located in the low lying area with standing water during the rainy season.

7.2.4 **Minimization of construction waste**

It is recommended that demolition and construction waste is properly collected, stored, recycled or reused to ensure that materials that would otherwise be disposed off as waste are diverted for productive uses. In this regard, the proponent is committed to ensuring that construction materials left over at the end of construction will be used in other projects rather than being disposed off. The proponent shall put in place measures to ensure that construction materials requirements are carefully budgeted and to ensure that the amount of construction materials left on site after construction is kept minimal. Additional recommendations for minimization of solid waste during construction of the project include:

- Use of durable, long-lasting materials that will not need to be replaced as often, thereby reducing the amount of construction waste generated over time.
- Provision of facilities for proper handling and storage of construction materials to reduce the amount of waste caused by damage or exposure to weather elements.
- Purchase of perishable construction materials such as paints incrementally to ensure reduced spoilage of unused materials.
- Use of building materials that have minimal packaging to avoid the generation of excessive packaging waste.
- Use of construction materials containing recycled content when possible and in accordance with accepted standards.

7.2.5 **Reduction of dust generation and emission**

Dust emission during construction will be minimized through strict enforcement of on-site speed controls as well as limiting unnecessary traffic within the project site. Traffic routes on site have to be sprinkled with water regularly to reduce amount of dust generated by the construction trucks.

7.2.6 **Minimization of exhaust emissions**

This will be achieved through proper planning of transportation of materials to ensure that vehicle fills are increased in order to reduce the number of trips done or the number of vehicles on the road.
In addition truck drivers will be sensitized to avoid unnecessary racing of vehicle engines at loading/offloading areas, and to switch off vehicle engines at these points.

7.2.7 **Minimization of noise and vibration**
Noise and vibration will be minimized in the project site and surrounding areas with strict adherence to designated working hours; and through sensitization of construction truck drivers to switch off vehicle engines while offloading materials. In addition, they will be instructed to avoid running of vehicle engines or hooting especially when passing through sensitive areas such as residential areas and schools. In addition, construction machinery shall be kept in good condition to reduce noise generation. It is recommended that all generators and heavy duty equipment be insulated or placed in enclosures to minimize ambient noise levels.

7.2.8 **Reduction of risks of accidents and injuries to workers**
The contractor will have to be committed to adherence to the occupational health and safety rules and regulations stipulated in Occupational Health and Safety Act, OSHA. In this regard, the contractor is committed to provision of appropriate personal protective equipment, as well as ensuring a safe and healthy environment for construction workers as outlined in the EMMP.

7.2.9 **Reduction of energy consumption**
The proponent shall ensure responsible electricity use at the construction site through sensitization of staff to conserve electricity by switching off electrical equipment or appliances when they are not being used. In addition, proper planning of transportation of materials will ensure that fossil fuels (diesel, petrol) are not consumed in excessive amounts. Complementary to these measures, the proponent shall monitor energy use during construction and set targets for reduction of energy use.

7.2.10 **Minimization of water use**
The contractor shall ensure that water is used efficiently at the site by sensitizing construction staff to avoid irresponsible water usage.

7.3 **Mitigation of operation phase impacts**
7.3.1 **Management of storm-water runoff**
The contractor will ensure that proper drainage is provided and regularly maintained for storm-water runoff management.
7.4 Mitigation of decommissioning phase impacts

7.4.1 Efficient solid waste management
Solid waste resulting from demolition or dismantling works will be managed as described above.

7.4.2 Reduction of dust concentration
High levels of dust concentration resulting from demolition or dismantling works will be minimized as described earlier.

7.4.3 Minimization of noise and vibration
Significant impacts on the acoustic environment will be mitigated as described.
CHAPTER EIGHT: ENVIRONMENTAL MANAGEMENT AND MONITORING PLAN

8.1 Significance of an EMMP

An Environmental Management and Monitoring Plan (EMMP) for developing projects is used to provide a logical framework within which identified negative environmental impacts can be avoided, mitigated and monitored. In addition the EMMP assigns responsibilities of actions to various actors and provides a timeframe within which mitigation measures and monitoring can be done. The EMMP is a vital output of an Environmental and Social Impact Assessment as it provides a checklist for project monitoring and evaluation. The EMMP outlined below will address the identified potential negative impacts and mitigation measures of the Project based on the chapters on Environmental and Social Impacts and Mitigation Measures of the Negative Impacts.

8.1.1 Pre-Construction & Construction Phases EMMP

The necessary objectives, activities, mitigation measures, and allocation of costs and responsibilities pertaining to prevention, minimization and monitoring of significant negative impacts and maximization of positive impacts associated with the construction phase of the project are as outlined below:
**Table 3: The EMMP for the Construction Phase of Access Road to Limuru Railway Station**

<table>
<thead>
<tr>
<th>Objective/Plan</th>
<th>Recommended Mitigation Measures</th>
<th>Responsible Party</th>
<th>Monitoring Mechanism</th>
<th>Approximate Cost (Kshs)</th>
</tr>
</thead>
</table>
| 1) Increased exploitation of raw materials | • Maximize sourcing of construction materials from suppliers who use environmentally friendly processes in their operations.  
• Ensure accurate budgeting and estimation of actual construction material requirements to ensure that the least amount of material necessary is ordered  
• Ensure that damage or loss of materials at the construction site are kept minimal through proper storage | Contractor | Throughout construction period | -                        |
| 2) Run off and soil erosion | • Apply soil erosion control measures such as leveling of the project site to reduce run-off velocity and increase infiltration of storm water into the soil, e.g. silt traps, barriers, tree planting.  
• Ensure that construction vehicles are restricted to existing graded roads to avoid soil compaction within the project site.  
• Ensure that any compacted areas are ripped to reduce run-off.  
• Through accurate estimation of the sizes and quantities of materials required, order materials in the sizes and quantities they will be needed, rather than cutting them to size, or having large quantities of residual materials. | Contractor | Throughout construction period | 10,000                  |
| 3) Solid waste generation | • Ensure that construction materials left over at the end of construction will be used in other projects rather than being disposed of.  
• Ensure that damaged or wasted construction materials will be recovered for refurbishing and use in other projects  
• Utilize opportunities for donating recyclable/reusable or residual materials to local community groups, institutions and individual local residents or home owners.  
• Use of durable, long-lasting materials that will not need to be replaced as often, thereby reducing the amount of construction waste generated over time  
• Provide facilities for proper handling and storage of construction materials to reduce the amount of waste caused by damage or exposure to the elements | Contractor | One-off | -                        |

42
<table>
<thead>
<tr>
<th>Objective/Plan</th>
<th>Recommended Mitigation Measures</th>
<th>Responsible Party</th>
<th>Monitoring Mechanism</th>
<th>Approximate Cost (Kshs)</th>
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</thead>
<tbody>
<tr>
<td></td>
<td><strong>Purchase of perishable</strong></td>
<td>Contractor</td>
<td>Throughout</td>
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<td></td>
<td><strong>construction materials such</strong></td>
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<td>construction period</td>
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<td><strong>as paints should be done</strong></td>
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<td><strong>incrementally to ensure</strong></td>
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<td><strong>reduced spoilage of</strong></td>
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<td><strong>unused materials</strong></td>
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<td></td>
<td><strong>Use construction materials</strong></td>
<td>Contractor</td>
<td>Throughout</td>
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<td><strong>that have minimal or no</strong></td>
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<td>construction period</td>
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<td><strong>packaging to avoid the</strong></td>
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<td><strong>generation of excessive</strong></td>
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<td><strong>packaging waste</strong></td>
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<td></td>
<td><strong>Reuse packaging materials</strong></td>
<td>Contractor</td>
<td>Throughout</td>
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<td></td>
<td><strong>such as cartons, cement</strong></td>
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<td>construction period</td>
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<td><strong>bags, empty metal and plastic</strong></td>
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<td><strong>containers to reduce waste at</strong></td>
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<td></td>
<td><strong>the site</strong></td>
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<td></td>
<td><strong>Dispose waste more responsibly</strong></td>
<td>Contractor &amp; Nairobi City Council</td>
<td>Throughout</td>
<td>10,000/month</td>
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<td></td>
<td><strong>by dumping at designated</strong></td>
<td></td>
<td>construction period</td>
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<td><strong>dumping sites or engaging</strong></td>
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<td><strong>the use of a registered waste</strong></td>
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<td><strong>disposal company or Kiambu</strong></td>
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<td></td>
<td><strong>County staff in Limuru Town</strong></td>
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<tr>
<td>4) Air/ Dust pollution</td>
<td><strong>Sprinkle water on</strong></td>
<td>Contractor</td>
<td>Throughout</td>
<td>10,000/month</td>
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<td></td>
<td><strong>graded access routes each day</strong></td>
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<td>construction period</td>
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<td><strong>to reduce dust generation by</strong></td>
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<td></td>
<td><strong>construction vehicles</strong></td>
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<td></td>
<td><strong>Sensitize truck drivers</strong></td>
<td>Contractor</td>
<td>Throughout</td>
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<td></td>
<td><strong>to avoid unnecessary racing of</strong></td>
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<td>construction period</td>
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<td><strong>vehicle engines at</strong></td>
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<td><strong>loading/offloading points and</strong></td>
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<td></td>
<td><strong>parking areas. Switch off or</strong></td>
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<td><strong>keep vehicle engines at these</strong></td>
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<td><strong>points</strong></td>
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<tr>
<td>5) Air pollution</td>
<td><strong>Ensure proper planning</strong></td>
<td>Contractor</td>
<td>Throughout</td>
<td>-</td>
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<td></td>
<td><strong>of transportation of materials</strong></td>
<td></td>
<td>construction period</td>
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<td></td>
<td><strong>to ensure that vehicle fills are</strong></td>
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<td></td>
<td><strong>increased in order to reduce the</strong></td>
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<td><strong>number of trips done per vehicle</strong></td>
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<td><strong>or the number of vehicles on the road</strong></td>
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<td></td>
<td><strong>Sensitize construction vehicle drivers and machinery operators</strong></td>
<td>Contractor</td>
<td>Throughout</td>
<td>-</td>
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<tr>
<td></td>
<td><strong>to switch off engines of vehicles or machinery not being used.</strong></td>
<td></td>
<td>construction period</td>
<td></td>
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<tr>
<td>6) Noise Pollution</td>
<td><strong>Sensitize construction drivers</strong></td>
<td>Contractor</td>
<td>Throughout</td>
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<td></td>
<td><strong>to avoid gunning of vehicle engines or hooting especially when passing through sensitive areas such as residential areas and schools</strong></td>
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<td>construction period</td>
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<td></td>
<td><strong>Ensure that construction machinery are kept in good condition to reduce noise generation</strong></td>
<td>Contractor</td>
<td>Throughout</td>
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<tr>
<td></td>
<td><strong>Ensure that all generators and heavy duty equipment are insulated or placed in enclosures to minimize ambient noise levels.</strong></td>
<td>Contractor</td>
<td>Throughout</td>
<td>-</td>
</tr>
<tr>
<td>7) Depletion of energy resources</td>
<td><strong>Ensure planning of transportation of materials to ensure that fossil fuels (diesel, petrol) are not consumed in excessive amounts</strong></td>
<td>Contractor</td>
<td>Throughout</td>
<td>-</td>
</tr>
<tr>
<td>Objective/Plan</td>
<td>Recommended Mitigation Measures</td>
<td>Responsible Party</td>
<td>Monitoring Mechanism</td>
<td>Approximate Cost (Kshs)</td>
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<tr>
<td>8) Exploitation of water resources</td>
<td>• Monitor energy use during construction and set targets for reduction of energy use.</td>
<td>Contractor</td>
<td>Throughout construction period</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>• Promote recycling and reuse of water as much as possible.</td>
<td>Contractor</td>
<td>Throughout construction period</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>• Organize collection of rainwater on site.</td>
<td>Contractor</td>
<td>Throughout construction period</td>
<td>-</td>
</tr>
<tr>
<td>9) Accidents</td>
<td>• Ensure that provisions for reporting incidents, accidents and dangerous occurrences during construction using prescribed forms obtainable from the local Occupational Health and Safety Office (OHSO) are in place.</td>
<td>Contractor</td>
<td>Continuous</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>• Ensure that the premises are insured as per statutory requirements (third party and workman’s compensation)</td>
<td>Proponent</td>
<td>Annually</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>• Develop, document and display prominently an appropriate SHE policy for construction works</td>
<td>Contractor</td>
<td>One-off</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>• Provisions must be put in place for the formation of a Health and Safety Committee, in which the employer and the workers are represented</td>
<td>Contractor</td>
<td>One-off</td>
<td>-</td>
</tr>
<tr>
<td>10) Hygiene</td>
<td>• Suitable, efficient, clean, well-lit and adequate gender specific sanitary conveniences should be provided for construction workers</td>
<td>Contractor</td>
<td>One-off</td>
<td>-</td>
</tr>
<tr>
<td>11) Medical Examinations</td>
<td>• Arrangements must be in place for the medical examination of all construction employees before, during and after termination of employment.</td>
<td>Contractor</td>
<td>Continuous</td>
<td>-</td>
</tr>
<tr>
<td>12) Machinery Safety</td>
<td>• Ensure that machinery, equipment, personal protective equipment, appliances and hand tools used in construction do comply with the prescribed safety and health standards and be appropriately installed maintained and safeguarded</td>
<td>Contractor</td>
<td>One-off</td>
<td>-</td>
</tr>
<tr>
<td>13) Injuries caused by machineries and equipments.</td>
<td>• Ensure that equipment and work tasks are adapted to fit workers and their ability including protection against mental strain</td>
<td>Contractor</td>
<td>Continuous</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>• All machines and other moving parts of equipment must be enclosed or guarded to protect all workers from injury</td>
<td>Contractor</td>
<td>One-off</td>
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<tr>
<td></td>
<td>• Arrangements must be in place to train and supervise inexperienced workers regarding construction machinery use and other procedures/operations</td>
<td>Contractor</td>
<td>Continuous</td>
<td>5,000 per training</td>
</tr>
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<td></td>
<td>• Equipment such as fire extinguishers must be examined by a government authorized person. The equipment may only be used if a certificate of examination has been issued</td>
<td>Contractor</td>
<td>Continuous</td>
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</tr>
<tr>
<td></td>
<td>• Reports of such examinations must be presented in prescribed forms, signed by the examiner and attached to the general register</td>
<td>Contractor</td>
<td>Continuous</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>• Ensure that materials (cement bags, aggregates, bitumen drums) are stored or stacked in such manner as to ensure their stability and prevent any fall or collapse</td>
<td>Contractor</td>
<td>Continuous</td>
<td>-</td>
</tr>
<tr>
<td>Objective/Plan</td>
<td>Recommended Mitigation Measures</td>
<td>Responsible Party</td>
<td>Monitoring Mechanism</td>
<td>Approximate Cost (Kshs)</td>
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<tr>
<td></td>
<td>▪ Conduct sensitization campaign for the public on risks related to construction sites.</td>
<td>Contractor</td>
<td>Twice (before construction begins) and a repeated after 1 month.</td>
<td>-</td>
</tr>
<tr>
<td>14) Poor storage of materials</td>
<td>▪ Ensure that items are not stored/stacked against weak walls and partitions</td>
<td>Contractor</td>
<td>Continuous</td>
<td>_</td>
</tr>
<tr>
<td></td>
<td>▪ All floors, steps, stairs and passages of the premises must be of sound construction and properly maintained</td>
<td>Contractor</td>
<td>Continuous</td>
<td>_</td>
</tr>
<tr>
<td>15) Emergencies.</td>
<td>▪ Design suitable documented emergency preparedness and evacuation procedures to be used during any emergency. Such procedures must be tested at regular intervals</td>
<td>Contractor</td>
<td>Every 3 months</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>▪ Ensure that adequate provisions are in place to immediately stop any operations where there is an imminent and serious danger to health and safety and to evacuate workers</td>
<td>Contractor</td>
<td>One-off</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>▪ Ensure that the most current emergency telephone numbers posters are prominently and strategically displayed within the construction site</td>
<td>Contractor</td>
<td>One-off</td>
<td>-</td>
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<td></td>
<td>▪ Provide measures to deal with emergencies and accidents including adequate first aid arrangements</td>
<td>Contractor</td>
<td>Continuous</td>
<td>-</td>
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<tr>
<td></td>
<td>▪ Sensitize the public on potential emergency situations</td>
<td>Contractor</td>
<td>Twice (before construction begins) and a repeated after 1 month.</td>
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<tr>
<td></td>
<td>▪ Provision must be made for persons to be trained in first aid, with a certificate issued by a recognized body.</td>
<td>Contractor</td>
<td>One-off</td>
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<tr>
<td></td>
<td>▪ Fire-fighting equipment such as fire extinguishers should be provided at strategic locations such as stores and construction areas.</td>
<td>Contractor</td>
<td>One-off</td>
<td>50,000</td>
</tr>
<tr>
<td></td>
<td>▪ Regular inspection and servicing of the equipment must be undertaken by a reputable service provider and records of such inspections maintained</td>
<td>Contractor</td>
<td>Every 3 months</td>
<td>5,000</td>
</tr>
<tr>
<td></td>
<td>▪ Signs such as “NO SMOKING” must be prominently displayed within the premises, especially in parts where inflammable materials are stored</td>
<td>Contractor</td>
<td>One-off</td>
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<td></td>
<td>▪ Enough space must be provided within the premises to allow for adequate natural ventilation through circulation of fresh air</td>
<td>Contractor</td>
<td>One-off</td>
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<tr>
<td></td>
<td>▪ Well stocked first aid box which is easily available and accessible should be provided within the premises</td>
<td>Contractor</td>
<td>One-off</td>
<td>-</td>
</tr>
<tr>
<td>Objective/Plan</td>
<td>Recommended Mitigation Measures</td>
<td>Responsible Party</td>
<td>Monitoring Mechanism</td>
<td>Approximate Cost (Kshs)</td>
</tr>
<tr>
<td>---------------</td>
<td>---------------------------------</td>
<td>-------------------</td>
<td>----------------------</td>
<td>------------------------</td>
</tr>
<tr>
<td>16) Food and toxins.</td>
<td>▪ 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</td>
<td>Contractor</td>
<td>One-off</td>
<td>_</td>
</tr>
<tr>
<td></td>
<td>▪ Keep a record of all hazardous chemicals used at the premises, cross-referenced to the appropriate chemical safety data sheets</td>
<td>Contractor</td>
<td>Continuous</td>
<td>_</td>
</tr>
<tr>
<td></td>
<td>▪ There should be no eating or drinking in areas where chemicals are stored or used</td>
<td>Contractor</td>
<td>Continuous</td>
<td>_</td>
</tr>
<tr>
<td></td>
<td>▪ Ensure that workers at the excavation sites and other dusty sites are adequately protected from inhalation of substantial quantities of dust through provision of suitable protective gear (e.g. nose masks)</td>
<td>Contractor</td>
<td>One-off</td>
<td>_</td>
</tr>
<tr>
<td>17) Provisions of PPE to Workers.</td>
<td>▪ Provide workers in areas with elevated noise and vibration levels, with suitable ear protection equipment such as ear muffs</td>
<td>Contractor</td>
<td>One-off</td>
<td>15,000</td>
</tr>
<tr>
<td></td>
<td>▪ Suitable overalls, safety footwear, dust masks, gas masks, respirators, gloves, ear protection equipment etc should be made available and construction personnel must be trained to use the equipment</td>
<td>Contractor</td>
<td>Once off</td>
<td>50,000</td>
</tr>
<tr>
<td></td>
<td>▪ Ensure that construction workers are provided with an adequate supply of wholesome drinking water which should be maintained at suitable and accessible points.</td>
<td>Contractor</td>
<td>One-off</td>
<td>5,000/month</td>
</tr>
<tr>
<td></td>
<td>▪ Provide and maintain adequate and suitable accommodation for clothing not worn during working hours for construction employees</td>
<td>Contractor</td>
<td>One-off</td>
<td>_</td>
</tr>
<tr>
<td></td>
<td>▪ Provide and maintain, for the use of all workers whose work is done standing, suitable facilities for sitting sufficient to enable them to take advantage of any opportunities for resting which may occur in the course of their employment</td>
<td>Contractor</td>
<td>One-off</td>
<td>_</td>
</tr>
<tr>
<td></td>
<td>▪ Ensure that conveniently accessible, clean, orderly, adequate and suitable washing facilities are provided and maintained in within the site</td>
<td>Contractor</td>
<td>One-off</td>
<td>_</td>
</tr>
<tr>
<td>18) Sanitary</td>
<td>▪ All work places must be kept in a clean state, and free from effluvia arising from any drain, sanitary convenience or nuisance</td>
<td>Contractor</td>
<td>Continuous</td>
<td>_</td>
</tr>
<tr>
<td></td>
<td>▪ Accumulations of dirt and refuse should be cleaned daily from the floors, benches, staircases and passages</td>
<td>Contractor</td>
<td>Daily</td>
<td>_</td>
</tr>
</tbody>
</table>
Insecurity

- Ensure the general safety and security at all times by providing day and night security guards and adequate lighting within and around the Construction site.

- Conduct sensitization campaign for the public on risks related to construction sites.

The key responsibilities regarding compliance to the above EMMP rest on the Contractor. However, it is important that the project proponent ensures adequate monitoring and evaluation for the Contractor for no non-conformances.

8.1.2 Operational Phase EMMP

The necessary objectives, activities, mitigation measures, and allocation of costs and responsibilities pertaining to prevention, minimization and monitoring of significant negative impacts and maximization of positive impacts associated with the operational phase the project are outlined below.

Table 4: EMMP for the Operational Phase of the Project

<table>
<thead>
<tr>
<th>Objective/Plan</th>
<th>Recommended Mitigation Measures</th>
<th>Responsible Party</th>
<th>Monitoring Mechanism</th>
<th>Cost (Kshs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Storm Water Run-off Management</td>
<td>- Provide proper storm water drainage from the paved roads.</td>
<td>Contractor</td>
<td>One-off</td>
<td>Part of project costs</td>
</tr>
<tr>
<td></td>
<td>- Provide regular inspection and maintenance of the drains.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2) Health and Safety Risks</td>
<td>- Implement all necessary measures to ensure health and safety of workers and the general public during operation of the project as stipulated in OSHA 2007</td>
<td>County</td>
<td>Continuous</td>
<td>-</td>
</tr>
</tbody>
</table>

8.1.3 Decommissioning Phase

In addition to the mitigation measures provided above, it is necessary to outline some basic mitigation measures that will be required to be undertaken once all operational activities of the project have ceased. The necessary 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 are outlined in below.

Table 5: EMMP for the Decommissioning Phase

<table>
<thead>
<tr>
<th>Environmental Impact</th>
<th>Recommended Mitigation Measures</th>
<th>Responsible Party</th>
<th>Time Frame</th>
<th>Cost (Kshs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sold Waste Generation.</td>
<td>• All removed materials that will not be used for other purposes must be removed and recycled/reused as far as possible</td>
<td>Contractor</td>
<td>One-off</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>• Where recycling/reuse of the removed materials and other demolition waste is not possible, the materials should be taken to a licensed waste disposal site or arrangements made with Kiambu County</td>
<td>Contractor</td>
<td>One-off</td>
<td>10,000</td>
</tr>
<tr>
<td></td>
<td>• Donate reusable demolition waste to charitable organizations, individuals and institutions</td>
<td>Contractor</td>
<td>One-off</td>
<td>-</td>
</tr>
<tr>
<td>Degeneration of vegetation at the construction site</td>
<td>• Implement an appropriate re-vegetation programme to restore the site to better status</td>
<td>Contractor</td>
<td>One-off</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>• Consider use of indigenous plant species in re-vegetation</td>
<td>Contractor</td>
<td>One-off</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>• Trees should be planted at suitable locations so as to interrupt slight lines (screen planting), between the adjacent residential area and the development.</td>
<td>Contractor</td>
<td>Once-off</td>
<td>-</td>
</tr>
</tbody>
</table>
CHAPTER NINE: AUXILIARY INFORMATION

9.1 Budget
A one-page summary of the certified Bills of Quantities that form the budget of the project is as attached in the Annexes. The total project budget is approximately Kshs. 80,774,620.

9.2 Monitoring Guidelines
Continuous observations and assessment is essential so that if unforeseen safety dangers are noticed, alternatives must be sought for. Risk assessment of accidents, and other adverse impacts should not be ignored in the construction plan. Waste management in the construction should be strictly followed. Mitigation measures of storm water management are essential. Safety standards should constantly be maintained, with indicators like condition of equipment, contractor compliance with the set regulations, and tracking of accidents on-site logged regularly.

9.3 Reporting
Constant reporting by the site contractor to the contractor and proponent is necessary to ensure the project is executed as per the plans and drawings. The safety officer should always remain on site to report any safety concerns for urgent mitigation. The officer should also at all times enforce safety requirements as per the relevant legislation. The contractor must consult the proponent to maintain a clear understanding of all the aspects of the project. Kiambu County Government should be involved where necessary in early stages of the project to increase acceptance and ensure necessary partnership is in place (e.g. waste removal requirements).
CHAPTER TEN: CONCLUSION AND RECOMMENDATIONS

During the preparation of this report for the development of the proposed development, it is observed and established that most of the negative impacts on the environment can be mitigated and have potentially short term low significant effect. The positive impacts are highly rated and will benefit all stakeholders and the Limuru Town residents at large. The project proponents have proposed to adhere to prudent implementation of the environmental management and monitoring plan. The contractor is committed to obtaining all necessary permits and licenses from the relevant authorities and have qualified and adequate personnel to do the project as proposed. The proponent has proposed adequate safety and health mitigation measures as part of the relevant statutory requirements.

It is the duty of NEMA to consider licensing the project subject to 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.
REFERENCES


Kenya gazette supplement Acts *Building Code 2000 by government printer, Nairobi*

Kenya gazette supplement Acts *Land Planning Act (Cap. 303) government printer, Nairobi*

Kenya gazette supplement Acts *Local Authority Act (Cap. 265) government printer, Nairobi*

Kenya gazette supplement Acts *Penal Code Act (Cap.63) government printer, Nairobi*

Kenya gazette supplement Acts *Physical Planning Act, 1999 government printer, Nairobi*

Kenya gazette supplement Acts *Public Health Act (Cap. 242) government printer, Nairobi*


The Environmental Management & Coordination Act 1999 (EMCA 1999).
Annexure

- Plate of Photographs – includes Public Participation & Consultation Meeting Photograph – meeting held on March 2, 2015
- Site Layout Plan
- Sample Chance Find Procedures
- Minutes of Public Participation & Consultation meeting held on Monday March 2, 2015
- Public Participation & Consultation Sign-in Sheets – Meeting of Monday March 2, 2015
- Public Participation & Consultation Questionnaires of Surrounding Community
Plate of Photographs

Beginning Section of the road from the main highway to Limuru Town where the access road to be constructed starts.

Section of road to be upgraded winding up towards Limuru Town and passing next to Limuru Railway Station.
Road through residential area

Road passing through a portion adjacent to Limuru Railway Station fencing on the right
Part of the road to be developed entering Limuru Town after Limuru Railway Station

Section of road to be constructed winding round next to Limuru Slaughter House
Public Participation & Consultation Meeting (Baraza) held in Limuru Town on Monday March 02, 2015 that discussed the sub-project among other salient matters.
Site Location Plan
Sample Chance Find Procedures

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

If the Contractor discovers archeological sites, historical sites, remains and objects, including graveyards and/or individual graves 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 Project 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.
MINUTES FOR ENVIRONMENTAL IMPACT ASSESSMENT (EIA) HELD ON 2ND MARCH 2015 AT 10:50 AM AT LIMURU TOWN NEXT TO MARKET STALLS.

MEMBERS PRESENT
As per the sign-in sheet.

Eng. Stephen Mwaura called the meeting to order at 10:50am and it was opened with a word of prayer from one of the residents.

Agenda
1. Introductions
2. Matters arising
3. Questions
4. AOB

Minute 1,
Eng Mwaura introduced all about the project the NAMSIP (Nairobi Metropolitan Service Improvement Project).
- Namsip deals with five counties which includes; Machakos, Kajiado, Murang’a, Kiambu and Nairobi.
- Namsip is funded by the World Bank to deal with infrastructure improvement i.e. markets upgrading, sewerage, water facilities and roads.
- Namsip identified this road in Limuru to provide another access to & from town and improve connectivity to the railway station.
- Namsip conducts public participation forums for every project it handles to establish how the project affects the residents positively and negatively.

Minute 2,
Residents living along the project area and Limuru town in general read the questionnaire and filled in the details as required and Eng. Mwaura took them through(translated the questions to Swahili).

Minute 3,
Residents raised a lot of issues concerning the project which included;
- Waigi: some survey plans of 1959 indicate 6m width of road but measurements carried out recently indicate 9m, what will happen to the affected in terms of compensations?
  COUNTY GOVERNMENT TO PROVIDE SURVEY PLANS SHOWING ALL LAND AFFECTED BELONGS TO THE COUNTY GOVERNMENT.
  ADDITIONALLY, THE CONSTRUCTION WORKS WILL BE RESTRICTED TO THE AVAILABLE CORRIDOR.
- Stanley Kimani: dumping of red soil has been done at Kamirithu area; an area where storm water is stored thus risking flooding to people living downstream, what measures will be taken to prevent/control it? STORMWATER MANAGEMENT PART OF THE PROJECT. ADDITIONALLY, KAMIRITHU AREA DOES NOT AFFECT THE
PROJECT AT ALL AS IT IS QUITE FAR AND THE PROJECT’S OUTFALL DRAINS ARE IN A DIFFERENT DIRECTION.

- Stanley Kimani: how is dust going to be controlled? SPRINKLING WATER WHERE NECESSARY. THE CONTRACT HAS PROVISION TO ADDRESS THIS ISSUE.
- Joseph Ngugi: (manager of slaughterhouse), demarcation of land initially does not reflect the condition now, which survey plans will you use? COUNTY GOVERNMENT TO PROVIDE THE SURVEY PLANS. CONSTRUCTION ARE BEING IMPLEMENTED ON THE AVAILABLE CORRIDOR.
- Lucy Mburu: sewer line is along the project area, what will happen to developed plots and the water that passes through the affected gardens and what will be done about it?
- Limuru water: Limuru water has water services along the project scope, what will be done to the water and sewer lines that require relocation? LIMURU SEWERAGE COMPANY TO WORK WITH THE CONTRACTOR TO ENSURE MINIMUM OR NO INTERRUPTION TO WATER AND WASTEWATER SERVICES. THERE IS ALSO PROVISION FOR RELOCATION OF SERVICES INCLUDING WATER AND SEWER SERVICES IF NEED BE.
- Traffic control: bumps to be erected to control speeds especially at Grace School and Top Kids Academy. SAFETY CONCERNS WILL BE ADDRESSED BY INSTALLING ZEBRA CROSSINGS & SPEED BUMPS NEAR THE SCHOOLS.
- Comments: culverts to be installed at plot entrances, labour to be sourced from the surrounding areas, to have an offloading point next to stage, relocations to be done in liaison with the service providers and gabions to be installed at deep cuttings.

**Minute 4, AOB**

Having no other business the meeting was ended by Eng. Mwaura with the residents giving back the filled up forms.
This questionnaire is intended to ensure there is adequate Public Participation & Consultation before implementation of the said project – **Construction of Access Road to Limuru Railway Station in Limuru Town of Kiambu County.** It is proposed this questionnaire is filled and signed by members of the surrounding community and institutions in the area of the said project, as required by the National Environment Management Authority, NEMA and World Bank.

**Project Name:** Construction of Access Road to Limuru Railway Station in Limuru Town of Kiambu County

**Project Proponent:** Directorate of Nairobi Metropolitan Development

**Date:** March 2015

1. Are you aware of the construction of this project and do you know its exact location?
   - Yes [✓]  
   - No [ ]

2. Do you think this project will affect the normal land use in the area and if so in what way?
   - Yes, it will improve access and drainage services.

3. Are there historical or cultural heritage that would be affected by this project? If so, state them.
   - No

4. Are there hydro-geological (ground-water) or surface water resources condition that will be affected by this project? If so, state them.
   - No

5. Do you think there will be any wastes generated during this project and how do you propose that is handled?
   - Damaged material along the road disposed in right place.

6. What are the expected POSITIVE impacts of the project from construction phase through to commissioning and operations phases?
   - Improved drainage, street lighting and better roads.

7. What are the expected NEGATIVE impacts of the project from construction phase through to commissioning and operations phases?
   - Inconvenience through blockage of road but once through it will be okay.
8. Do you think construction, commissioning and operations will cause any problems of aesthetics, noise, lighting etc? Please explain.

In a little extent.

9. Is this construction going to affect the environment negatively in any way you know or think of? Please explain.

Large volumes of water to the inverts.

10. What environmental hazards would you associate with this project during construction, commissioning and operations?

Risks involving machinery, leakages of oils.

11. What suggestions would you make to mitigate any adverse environmental impacts during the project construction, commissioning and operations?

None.

12. In your conclusion, do you welcome the project in the said area?

Yes.

13. Any relevant observations, recommendations or comments on this project.

It has come at the right time.

Name (Optional): [Signature]

ID Number (Optional): 23208201

Telephone (Optional): 07303705146

Signature: (With Company Stamp if Institution)
This questionnaire is intended to ensure there is adequate Public Participation & Consultation before implementation of the said project – **Construction of Access Road to Limuru Railway Station in Limuru Town of Kiambu County**. It is proposed this questionnaire is filled and signed by members of the surrounding community and institutions in the area of the said project, as required by the National Environment Management Authority, NEMA and World Bank.

**Project Name:**  Construction of Access Road to Limuru Railway Station in Limuru Town of Kiambu County

**Project Proponent:**  Directorate of Nairobi Metropolitan Development

**Date:**  March 2015

1. Are you aware of the construction of this project and do you know its exact location?  
   Yes  [ ]  No  [ ]

2. Do you think this project will affect the normal land use in the area and if so in what way?  
   [ ]

3. Are there historical or cultural heritage that would be affected by this project? If so, state them.  
   [ ]

4. Are there hydro-geological (ground-water) or surface water resources condition that will be affected by this project? If so, state them.  
   [ ]

5. Do you think there will be any wastes generated during this project and how do you propose that is handled?  
   [ ]

6. What are the expected POSITIVE impacts of the project from construction phase through to commissioning and operations phases?  
   **There will be reduction in traffic jam and better economy.**

7. What are the expected NEGATIVE impacts of the project from construction phase through to commissioning and operations phases?  
   **None**

---

1
8. Do you think construction, commissioning and operations will cause any problems of aesthetics, noise, lighting etc? Please explain.

________________________________________________________________________

     None
________________________________________________________________________

9. Is this construction going to affect the environment negatively in any way you know or think of? Please explain.

________________________________________________________________________

     Yes. There may be dust in the area
________________________________________________________________________

10. What environmental hazards would you associate with this project during construction, commissioning and operations?

________________________________________________________________________

     None
________________________________________________________________________

11. What suggestions would you make to mitigate any adverse environmental impacts during the project construction, commissioning and operations?

________________________________________________________________________

     Watering of roads during construction
________________________________________________________________________

12. In your conclusion, do you welcome the project in the said area?

________________________________________________________________________

     Yes
________________________________________________________________________

13. Any relevant observations, recommendations or comments on this project.

________________________________________________________________________

     Construction of bus stage at Limuru Slaughter house next to market
________________________________________________________________________

Name (Optional): Mr. Enoch Muchai

ID Number (Optional): ..............................................................

Telephone (Optional): ..............................................................

Signature: (With Company Stamp if Institution) ..................................
This questionnaire is intended to ensure there is adequate Public Participation & Consultation before implementation of the said project – **Construction of Access Road to Limuru Railway Station in Limuru Town of Kiambu County**. It is proposed this questionnaire is filled and signed by members of the surrounding community and institutions in the area of the said project, as required by the National Environment Management Authority, NEMA and World Bank.

**Project Name:** Construction of Access Road to Limuru Railway Station in Limuru Town of Kiambu County

**Project Proponent:** Directorate of Nairobi Metropolitan Development

**Date:** March 2015

1. Are you aware of the construction of this project and do you know its exact location?
   
   Yes [ ]
   No [ ]

2. Do you think this project will affect the normal land use in the area and if so in what way?
   
   No

3. Are there historical or cultural heritage that would be affected by this project? If so, state them.
   
   No

4. Are there hydro-geological (ground-water) or surface water resources condition that will be affected by this project? If so, state them
   
   No

5. Do you think there will be any wastes generated during this project and how do you propose that is handled?
   
   No

6. What are the expected POSITIVE impacts of the project from construction phase through to commissioning and operations phases?
   
   Improved economy in the area and enhanced traffic

7. What are the expected NEGATIVE impacts of the project from construction phase through to commissioning and operations phases?
   
   None
8. Do you think construction, commissioning and operations will cause any problems of aesthetics, noise, lighting etc? Please explain.

[Blank]

9. Is this construction going to affect the environment negatively in any way you know or think of? Please explain.

[Blank]

10. What environmental hazards would you associate with this project during construction, commissioning and operations?

[Blank]

11. What suggestions would you make to mitigate any adverse environmental impacts during the project construction, commissioning and operations?

[Blank]

12. In your conclusion, do you welcome the project in the said area?

[Blank]

13. Any relevant observations, recommendations or comments on this project.

[Blank]

Name (Optional): Mr. Naveen Nganga

ID Number (Optional):

TelephoneNumber (Optional):

Signature: (With Company Stamp if Institution)
This questionnaire is intended to ensure there is adequate Public Participation & Consultation before implementation of the said project – **Construction of Access Road to Limuru Railway Station in Limuru Town of Kiambu County.** It is proposed this questionnaire is filled and signed by members of the surrounding community and institutions in the area of the said project, as required by the National Environment Management Authority, NEMA and World Bank.

**Project Name:**  
Construction of Access Road to Limuru Railway Station in Limuru Town of Kiambu County

**Project Proponent:**  
Directorate of Nairobi Metropolitan Development

**Date:**  
March 2015

1. Are you aware of the construction of this project and do you know its exact location?
   - Yes [ ]  
   - No [ ]

2. Do you think this project will affect the normal land use in the area and if so in what way?
   - No [ ]  
   - Yes [ ]

3. Are there historical or cultural heritage that would be affected by this project? If so, state them.
   - No [ ]  
   - Yes [ ]

4. Are there hydro-geological (ground-water) or surface water resources condition that will be affected by this project? If so, state them.
   - No [ ]  
   - Yes [ ]

5. Do you think there will be any wastes generated during this project and how do you propose that is handled?
   - Yes, **no dumping of waste in the area**

6. What are the expected POSITIVE impacts of the project from construction phase through to commissioning and operations phases?
   - It will decongest Limuru Town and open up the Town

7. What are the expected NEGATIVE impacts of the project from construction phase through to commissioning and operations phases?
   - [ ]

1
8. Do you think construction, commissioning and operations will cause any problems of aesthetics, noise, lighting etc? Please explain.

\underline{\text{Noise and Dust during construction}}

9. Is this construction going to affect the environment negatively in any way you know or think of? Please explain.

\underline{\text{Dust and Noise}}

10. What environmental hazards would you associate with this project during construction, commissioning and operations?

\text{It will affect existing infrastructure like water etc.}

11. What suggestions would you make to mitigate any adverse environmental impacts during the project construction, commissioning and operations?

\text{The contractor to be careful}

12. In your conclusion, do you welcome the project in the said area?

\underline{\text{Yes}}

13. Any relevant observations, recommendations or comments on this project.

\underline{\text{Yes, give the locals manual jobs}}

\underline{\text{Name (Optional):}} Humphrey Murungi

\underline{\text{ID Number (Optional):}} 22093712

\underline{\text{Telephone (Optional):}} 0721959578

\begin{center}
\text{Signature: (With Company Stamp if Institution))}
\end{center}
This questionnaire is intended to ensure there is adequate Public Participation & Consultation before implementation of the said project – **Construction of Access Road to Limuru Railway Station in Limuru Town of Kiambu County**. It is proposed this questionnaire is filled and signed by members of the surrounding community and institutions in the area of the said project, as required by the National Environment Management Authority, NEMA and World Bank.

**Project Name:** Construction of Access Road to Limuru Railway Station in Limuru Town of Kiambu County

**Project Proponent:** Directorate of Nairobi Metropolitan Development

**Date:** March 2015

1. Are you aware of the construction of this project and do you know its exact location?
   - Yes [√]
   - No [ ]

2. Do you think this project will affect the normal land use in the area and if so in what way?
   - Yes

3. Are there historical or cultural heritage that would be affected by this project? If so, state them.
   - Yes. Size of pieces of land along the road.

4. Are there hydro-geological (ground-water) or surface water resources condition that will be affected by this project? If so, state them.
   - No

5. Do you think there will be any wastes generated during this project and how do you propose that is handled?
   - No

6. What are the expected POSITIVE impacts of the project from construction phase through to commissioning and operations phases?
   - This will improve the accessibility to the railway station.

7. What are the expected NEGATIVE impacts of the project from construction phase through to commissioning and operations phases?
   - The size of the road will affect the size of some pieces of land privately owned.
8. Do you think construction, commissioning and operations will cause any problems of aesthetics, noise, lighting etc? Please explain.

   YES. NOISE FROM THE HEAVY MACHINES.

9. Is this construction going to affect the environment negatively in any way you know or think of? Please explain.

   NO

10. What environmental hazards would you associate with this project during construction, commissioning and operations?

   THIS WILL PRODUCE A LOT OF DUST DURING CONSTRUCTION.

11. What suggestions would you make to mitigate any adverse environmental impacts during the project construction, commissioning and operations?

   I WOULD SUGGEST THAT WATER BE BOTTLED DURING CONSTRUCTION.

12. In your conclusion, do you welcome the project in the said area?

   YES, I DO

13. Any relevant observations, recommendations or comments on this project.

   WATER BOTTLED DURING CONSTRUCTION.
   EFFECT BUMPS ON COMPLETION OF THE PROJECT.

Name (Optional): THOMAS GRIFFIN

ID Number (Optional): 20528754

Telephone (Optional): 0723349529

Signature: (With Company Stamp if Institution)
This questionnaire is intended to ensure there is adequate Public Participation & Consultation before implementation of the said project – **Construction of Access Road to Limuru Railway Station in Limuru Town of Kiambu County**. It is proposed this questionnaire is filled and signed by members of the surrounding community and institutions in the area of the said project, as required by the National Environment Management Authority, NEMA and World Bank.

**Project Name:** Construction of Access Road to Limuru Railway Station in Limuru Town of Kiambu County

**Project Proponent:** Directorate of Nairobi Metropolitan Development

**Date:** March 2015

1. Are you aware of the construction of this project and do you know its exact location?
   - Yes [ ]
   - No [ ]

2. Do you think this project will affect the normal land use in the area and if so in what way?
   - No

3. Are there historical or cultural heritage that would be affected by this project? If so, state them.
   - No

4. Are there hydro-geological (ground-water) or surface water resources condition that will be affected by this project? If so, state them
   - No

5. Do you think there will be any wastes generated during this project and how do you propose that is handled?
   - No

6. What are the expected POSITIVE impacts of the project from construction phase through to commissioning and operations phases?
   - This will improve accessibility to the railway station

7. What are the expected NEGATIVE impacts of the project from construction phase through to commissioning and operations phases?
   - This will affect in a small percentage the size of plots privately owned
8. Do you think construction, commissioning and operations will cause any problems of aesthetics, noise, lighting etc? Please explain.

YES - NOISE FROM THE HEAVY MACHINES

9. Is this construction going to affect the environment negatively in any way you know or think of? Please explain.

NU

10. What environmental hazards would you associate with this project during construction, commissioning and operations?

PRODUCTION OF DUST

11. What suggestions would you make to mitigate any adverse environmental impacts during the project construction, commissioning and operations?

WATER BODING

12. In your conclusion, do you welcome the project in the said area?

YES

13. Any relevant observations, recommendations or comments on this project.

WATER BODING DURING THE CONSTRUCTION

Name (Optional): GEORGE M-ABWARI

ID Number (Optional): 21889702

Telephone (Optional): 0710 944 388

Signature: (With Company Stamp if Institution) 

2
This questionnaire is intended to ensure there is adequate Public Participation & Consultation before implementation of the said project – Construction of Access Road to Limuru Railway Station in Limuru Town of Kiambu County. It is proposed this questionnaire is filled and signed by members of the surrounding community and institutions in the area of the said project, as required by the National Environment Management Authority, NEMA and World Bank.

Project Name:  Construction of Access Road to Limuru Railway Station in Limuru Town of Kiambu County

Project Proponent:  Directorate of Nairobi Metropolitan Development

Date: 02/03/2015, March 2015

1. Are you aware of the construction of this project and do you know its exact location?
   Yes [ ]  No [x]

2. Do you think this project will affect the normal land use in the area and if so in what way?
   [ ]

3. Are there historical or cultural heritage that would be affected by this project? If so, state them.
   [ ]

4. Are there hydro-geological (ground-water) or surface water resources condition that will be affected by this project? If so, state them
   Water pipes

5. Do you think there will be any wastes generated during this project and how do you propose that is handled?
   Any it should be disposed accordingly

6. What are the expected POSITIVE impacts of the project from construction phase through to commissioning and operations phases?
   It will improve transport and developement

7. What are the expected NEGATIVE impacts of the project from construction phase through to commissioning and operations phases?
   None
8. Do you think construction, commissioning and operations will cause any problems of aesthetics, noise, lighting etc? Please explain.

No

9. Is this construction going to affect the environment negatively in any way you know or think of? Please explain.

No

10. What environmental hazards would you associate with this project during construction, commissioning and operations?

Accidents (So there should be pumps)

11. What suggestions would you make to mitigate any adverse environmental impacts during the project construction, commissioning and operations?

Safety of Travellers by foot should be taken care of.

12. In your conclusion, do you welcome the project in the said area?

Yes

13. Any relevant observations, recommendations or comments on this project.

School children using the road should be taken care of.

Name (Optional): .................................................................

ID Number (Optional): ...........................................................

Telephone (Optional): 0712 296778

Signature: (With Company Stamp if Institution) ................................
This questionnaire is intended to ensure there is adequate Public Participation & Consultation before implementation of the said project – **Construction of Access Road to Limuru Railway Station in Limuru Town of Kiambu County**. It is proposed this questionnaire is filled and signed by members of the surrounding community and institutions in the area of the said project, as required by the National Environment Management Authority, NEMA and World Bank.

Project Name: **Construction of Access Road to Limuru Railway Station in Limuru Town of Kiambu County**

Project Proponent: **Directorate of Nairobi Metropolitan Development**

Date: **March 2015**

1. Are you aware of the construction of this project and do you know its exact location?
   - Yes [ ]
   - No [ ]

2. Do you think this project will affect the normal land use in the area and if so in what way?
   [ ]

3. Are there historical or cultural heritage that would be affected by this project? If so, state them.
   [ ]

4. Are there hydro-geological (ground-water) or surface water resources condition that will be affected by this project? If so, state them.
   [ ]

5. Do you think there will be any wastes generated during this project and how do you propose that is handled?
   [ ]

6. What are the expected POSITIVE impacts of the project from construction phase through to commissioning and operations phases?
   [ ]

7. What are the expected NEGATIVE impacts of the project from construction phase through to commissioning and operations phases?
   [ ]
8. Do you think construction, commissioning and operations will cause any problems of aesthetics, noise, lighting etc? Please explain.

Yes, noise especially because of

9. Is this construction going to affect the environment negatively in any way you know or think of? Please explain.

Dust

10. What environmental hazards would you associate with this project during construction, commissioning and operations?

11. What suggestions would you make to mitigate any adverse environmental impacts during the project construction, commissioning and operations?

12. In your conclusion, do you welcome the project in the said area?

Yes

13. Any relevant observations, recommendations or comments on this project.

Bump, and Road Signs

Name (Optional): .................................................................

ID Number (Optional): 22294870 ...................................................

Telephone (Optional): 0127280766 .................................................

Signature: (With Company Stamp if Institution) ................................
This questionnaire is intended to ensure there is adequate Public Participation & Consultation before implementation of the said project – **Construction of Access Road to Limuru Railway Station in Limuru Town of Kiambu County**. It is proposed this questionnaire is filled and signed by members of the surrounding community and institutions in the area of the said project, as required by the National Environment Management Authority, NEMA and World Bank.

**Project Name:** Construction of Access Road to Limuru Railway Station in Limuru Town of Kiambu County

**Project Proponent:** Directorate of Nairobi Metropolitan Development

**Date:** March 2015

1. Are you aware of the construction of this project and do you know its exact location?
   
   Yes [ ]  No [ ]

2. Do you think this project will affect the normal land use in the area and if so in what way?
   
   Improve Transport

3. Are there historical or cultural heritage that would be affected by this project? If so, state them.
   
   No

4. Are there hydro-geological (ground-water) or surface water resources condition that will be affected by this project? If so, state them.
   
   Pipemage in the Limuru water d sewage

5. Do you think there will be any wastes generated during this project and how do you propose that is handled?
   
   No

6. What are the expected POSITIVE impacts of the project from construction phase through to commissioning and operations phases?
   
   Improve the lives & protect Property

7. What are the expected NEGATIVE impacts of the project from construction phase through to commissioning and operations phases?
   
   Loss land Comp footing if any
8. Do you think construction, commissioning and operations will cause any problems of aesthetics, noise, lighting etc? Please explain.

   Yes, noise and dust

9. Is this construction going to affect the environment negatively in any way you know or think of? Please explain.

   Not any

10. What environmental hazards would you associate with this project during construction, commissioning and operations?

    Sewage and water drainage

11. What suggestions would you make to mitigate any adverse environmental impacts during the project construction, commissioning and operations?

    Pour water to decrease dust

12. In your conclusion, do you welcome the project in the said area?

    Yes

13. Any relevant observations, recommendations or comments on this project.

    [Signature]

Name (Optional):  Lucy Mburu

ID Number (Optional):  11336055

Telephone (Optional):  0716817476

Signature: (With Company Stamp if Institution)
This questionnaire is intended to ensure there is adequate Public Participation & Consultation before implementation of the said project – **Construction of Access Road to Limuru Railway Station in Limuru Town of Kiambu County**. It is proposed this questionnaire is filled and signed by members of the surrounding community and institutions in the area of the said project, as required by the National Environment Management Authority, NEMA and World Bank.

**Project Name:** Construction of Access Road to Limuru Railway Station in Limuru Town of Kiambu County

**Project Proponent:** Directorate of Nairobi Metropolitan Development

**Date:** March 2015

1. Are you aware of the construction of this project and do you know its exact location?
   - Yes [✓]  
   - No [ ]

2. Do you think this project will affect the normal land use in the area and if so in what way?
   - No [ ]

3. Are there historical or cultural heritage that would be affected by this project? If so, state them.
   - No [ ]

4. Are there hydro-geological (ground-water) or surface water resources condition that will be affected by this project? If so, state them.
   - Yes [✓] Plan of water from Kamiri

5. Do you think there will be any wastes generated during this project and how do you propose that is handled?
   - No [ ]

6. What are the expected POSITIVE impacts of the project from construction phase through to commissioning and operations phases?
   - Development will hasten [ ]

7. What are the expected NEGATIVE impacts of the project from construction phase through to commissioning and operations phases?
   - No [✓]
8. Do you think construction, commissioning and operations will cause any problems of aesthetics, noise, lighting etc? Please explain.

No

9. Is this construction going to affect the environment negatively in any way you know or think of? Please explain.

No

10. What environmental hazards would you associate with this project during construction, commissioning and operations?

There is none

11. What suggestions would you make to mitigate any adverse environmental impacts during the project construction, commissioning and operations?

There is none

12. In your conclusion, do you welcome the project in the said area?

Yes

13. Any relevant observations, recommendations or comments on this project.

Good

Name (Optional): Samuel Kariuki Kaman

ID Number (Optional): 0713852

Telephone (Optional): 0720238900

Signature: (With Company Stamp if Institution)
# Attendance List for Public Participation & Consultation Meeting in Limuru Town for the Proposed Construction of Access Road to Limuru Railway Station

**Date:** Monday March 2, 2015

<table>
<thead>
<tr>
<th>S/No.</th>
<th>Name of Participant</th>
<th>Organization</th>
<th>Signature</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Hiram Muriuki K.</td>
<td>Kiambu County Govt.</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Livingstone Manasse</td>
<td>WALD Admin - Limuru East</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Kevin Kago</td>
<td>DOYMED</td>
<td></td>
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<tr>
<td>4</td>
<td>Thomas NJORGE Gitau</td>
<td>Kiambu County Govt.</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>AND KARIYIKU</td>
<td>Resident</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Mason Ng’ang’a</td>
<td>Resident</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Enock Muchai</td>
<td>Resident</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Peter Kamoga Carua</td>
<td>Resident</td>
<td></td>
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<tr>
<td>9</td>
<td>Lucy Ng’eria Mbura</td>
<td>Resident</td>
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<tr>
<td>10</td>
<td>ANN FUBAI MUGUINNA</td>
<td>Grace School</td>
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<tr>
<td></td>
<td>Name</td>
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<tr>
<td>11</td>
<td>Kenneth M. Ngangi</td>
<td>Resident</td>
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<tr>
<td>12</td>
<td>David K. Ngangi</td>
<td></td>
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<tr>
<td>13</td>
<td>Teresia Mwuta Kimani</td>
<td></td>
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<tr>
<td>14</td>
<td>Humphrey Murindu</td>
<td>Ward Manager - Limuru East</td>
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<tr>
<td>15</td>
<td>Joseph Kyunge</td>
<td>Limuru Water Co.</td>
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<tr>
<td>16</td>
<td>Teresia Muungu</td>
<td>Limuru Water Co.</td>
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<tr>
<td>17</td>
<td>Viwan Mathodi Wamuntha</td>
<td>President</td>
<td></td>
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<tr>
<td>18</td>
<td>Phile Wambui</td>
<td></td>
<td>Public</td>
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<tr>
<td>19</td>
<td>Ernest Waikinawa</td>
<td>S.A. Contractor</td>
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</tr>
<tr>
<td>20</td>
<td>Peter Ngangi</td>
<td>Resident</td>
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<tr>
<td>21</td>
<td>Wavine Ngangi</td>
<td>Resident</td>
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<tr>
<td>22</td>
<td>Thomas Njiria</td>
<td>Resident</td>
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<tr>
<td>23</td>
<td>Hoima Wabuli</td>
<td>Resident</td>
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<tr>
<td>24</td>
<td>Bernard Ngangi</td>
<td>Resident</td>
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<td>25</td>
<td>Henry Ngangi</td>
<td>Resident</td>
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<td>Name</td>
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<tr>
<td>George</td>
<td>Resident</td>
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<tr>
<td>Carol S.</td>
<td>Assistant</td>
<td></td>
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<tr>
<td>Patrick</td>
<td>Kibogo</td>
<td></td>
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</tr>
<tr>
<td>Joseph</td>
<td>Administration</td>
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<tr>
<td>Stephen</td>
<td>Environment</td>
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<tr>
<td>Damaris</td>
<td>Office Gated</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Isaac</td>
<td>Resident</td>
<td></td>
<td></td>
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<tr>
<td>Jade</td>
<td>Resident</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sharon</td>
<td>Resident</td>
<td></td>
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