ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA) AND ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP) REVIEW VERSION

FOR
THE PROPOSED CONSTRUCTION OF A HIGH COURT IN SIAYA COUNTY

FINAL REPORT

Submitted to:
The Judiciary of Kenya
Supreme Court Building, City Hall Way,
P.O. Box 30041 – 00100
NAIROBI, KENYA

SEPTEMBER, 2015
Client: THE JUDICIARY OF KENYA

Assignment: ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA) AND ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP) FOR THE PROPOSED CONSTRUCTION OF A HIGH COURT IN SIAYA COUNTY REVIEW VERSION

Report Title: FINAL REPORT

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EXECUTIVE SUMMARY

The Judiciary is an independent, impartial, transparent and accountable institution anchored under Article 159 of the Constitution. It derives its authority from the people of Kenya and it is bound by the National Values and Principles of Governance as enshrined in Article 10. Its mission is to deliver justice fairly, impartially and expeditiously, promote equal access to justice, and advance local jurisprudence by upholding the rule of law. The Judicial Service Act, 2011, governs the administration of the Judiciary as well as its functions.

In line with the new Constitution in which the judicial reforms are anchored, the judiciary developed a comprehensive Judiciary Transformation Framework (2012–2016), which took into account earlier viable reforms and the spirit of the new constitution. This framework; that was commonly known as the Judiciary Transformation Framework (JTF) has been replaced the Sustaining the Judiciary Transformation Framework (2017-2021) that will govern the reforms in the judiciary for the next four (4) years.

The World Bank partnered with the Judiciary, to implement the Judicial Performance Improvement Project (JPIP) (2012-2018), a project that supported implementation of objectives of the JTF and now the SJT. The project’s objective is to improve the performance of the Judiciary to provide its services in the Project areas, in a more effective and accountable manner. The Project has four components, namely: (i) Access to Courts and Legal Information (ii) Improve timeliness of judiciary services (iii) Enhance performance and quality of decision making and (iv) Project Implementation Unit.

Of the four components of the JPIP, the Access to Courts and Legal Information and Improve timeliness of judiciary services components are likely to generate environmental and social impacts that will require environmental and social safeguards monitoring. This component aims to overcome obstacles Kenyans face in obtaining access to justice, including access to courts. Under this component, with the World Bank financing the Judiciary shall rehabilitate and/or construct 30 courts in Kenya.

Environmental and Social Impact Assessment (ESIA) and Environmental and Social Management Plan (ESMP) for the construction of Siaya High Court is carried out to guide during construction phase and Operational phases of the project.

An ESIA was conducted prior to construction and reviewed during construction. The ESIA Consultants worked closely with design consultants to come up with definitive scope of works. Given the lack of full clarity on the sites and extent of renovations and nature and severity of impacts/risks during the preparation and design phase of the project, an Environmental and Social Management Framework (ESMF) was prepared for the project. The ESMF spelled out the World Bank’s environmental and social safeguard policy frameworks, the Borrower’s/Recipient’s institutional arrangements and capacity to identify and mitigate potential environmental and social safeguards issues and impacts of the Project. The ESMF was prepared, and was cleared by the World Bank and disclosed publicly, in Kenya and at the World Bank Info Shop on October 11, 2012.
The JPIP is rated Category B for environmental purposes. The project entails the construction and rehabilitation of courts and triggers World Bank Safeguard Policies OP/BP 4.01 on Environmental Assessment (EA), OP/BP 4.11 on Physical Cultural Resources and OP/BP 4.12 on Involuntary Resettlement, namely:

<table>
<thead>
<tr>
<th>No.</th>
<th>Safeguard Policies</th>
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<td>1.</td>
<td>Environmental Assessment (OP/BP 4.01)</td>
<td>According to national environmental guidelines, new constructions and rehabilitations may impact negatively on the socio and biophysical environments and they may need the preparation of Environmental Assessments (EA) and/or Environmental Management Plans (EMPs) which would have to be approval by NEMA. The principal objective of OP/BP 4.01 is also to ensure that World Bank-financed projects are environmentally sound and sustainable and that decision-making is improved through appropriate analysis of actions and of their likely environmental impacts. The policy is triggered if a project is likely to have potential (adverse) environmental risks and impacts in its area of influence. OP 4.01 covers impacts on the natural environment (air, water and land); human health and safety; physical cultural resources; and trans boundary and global environment;</td>
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<td>2.</td>
<td>Physical Cultural Resources (OP/BP4.11):</td>
<td>The objective of this policy is to avoid or mitigate adverse impacts of development projects on physical cultural resources and “chance finds”. “Physical cultural resources” may be defined as movable or immovable objects, sites, structures, groups of structures, natural features and landscapes that have archaeological, paleontological, historical, architectural, religious, aesthetic, or other cultural significance. Physical cultural resources may be located in urban or rural settings, and may be above ground, underground, or underwater. The cultural interest may be at the local, provincial or national level. Chance finds procedures are mandated by the ESMF and should be included in the earth works (civil works) contracts. This policy applies to all projects requiring a Category A or B Environmental Assessment under OP 4.01.</td>
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<td>3.</td>
<td>Involuntary Resettlement (OP/BP 4.12):</td>
<td>Involuntary land acquisition or restriction of access to resources will need to be managed through a Resettlement Policy Framework (RPF), Resettlement Action Plan (RAP) or Policy Framework (PF). The application of this policy will depend on how land will be acquired for construction of the courts. Critical to the Project, the policy covers not only physical relocation, but any loss of land or other assets resulting in: (i) relocation or loss of shelter; (ii) loss of assets or access to assets; and (iii) loss of income sources or means of livelihood, whether or not the affected people must move to another location.</td>
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Initial scoping indicated that JPIP was not likely to lead to any large scale acquisition of land or denial of access to people’s means of livelihood. The Judiciary is only carrying out construction and rehabilitation in those areas where the Judiciary owns the land. It was anticipated that there will be few, if any, human settlements or wide scale economic activity on the land owned by the Judiciary.

A detailed plan was prepared to monitor the implementation of mitigating measures by the PMU/Judiciary Architect and the impacts of the project during rehabilitation and operation.
**Project Location**

The proposed project site is located on the following GPS Coordinates, Latitude 0° 3’25.59” N and longitude: 34°17’4.88”E, in Siaya Town, Siaya County. The site is located 400m off Luanda – Siaya Road.

![Google Earth excerpt showing the location of the proposed project site](image)

**Figure 2: Google Earth excerpt showing the location of the proposed project site**

The project site does not neighbour any sensitive receptor the site is located in an area considered of similar character with the proposed project i.e. offices.
The Proposed Project

The project will involve construction of a New High Court in Siaya town. The project activities will be according to conventional engineering scheduling, procedures and practices. The works will include but not limited to:

- Development of 4 storey building
- Construction of a boundary wall
- Construction of drainages and storm water outlets
- Construction of a septic tank
- Development of external works/services – driveway, car parking lots, vehicular gate access, pedestrian access.
- Site landscaping

The project cost is estimated to be Kshs. 350 Million inclusive VAT.

The proponent has committed himself to undertake this EIA in accordance with Sections 58 and 138 of the Environmental Management and Coordination Act (EMCA) No. 8 of 1999 and its subsequent amendments in 2015, the World Bank operational safeguard policies on environmental and social Assessment, and Environmental Impact Assessment (EIA) and Environmental Audit (EA) Regulations 2003 (Legal No. 101).

The scope of this EIA covered the nature of the project; the location of the project including the physical area that may be affected by the project's activities; the activities that shall be undertaken during the project construction, operation and decommissioning phases; the 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 their disposal; the potential impacts of the project and the mitigation measures to be taken during and after implementation of the project; an action plan for the prevention and management of possible adverse impacts during the project cycle; a plan to ensure the health and safety of the workers and neighbouring communities; the economic and socio-cultural impacts to the local community and the nation in general; and the project budget.

The proposed project has the overall objective of construction of new judicial building to provide offices for improved judicial services and its own parking space for several cars. The consultant carried out the assessment guided by TOR given by the proponent and as per EIA guidelines as per National Environment Management Authority (NEMA) requirements be followed up to completion. It involved environmental screening and scoping to avoid unnecessary data. Data collection was carried out through questionnaires/standard interview schedules, use of checklists, observations and photography, site visits and desk environmental studies.

Relevant legislative and legal aspects should be taken into account when implementing the proposed housing project; they include, Environmental Policy Framework which primarily falls under EMCA and concerns environmental regulations that have to be adhered to, such as EIA; and Institutional Framework which concerns institutions that are relevant stakeholders in resources and environmental issues that affect the proposed project. In the proposed project they include National Environmental Council (NEC), National Environmental Management Authority (NEMA) and relevant conventions, which include Public Health Act (Cap. 242), Local

During the public consultation several issues were raised for the different phases of the proposed project. Employment, better service provision and economic empowerment were among the positive impacts associated with the proposed project. The negative impacts anticipated for the demolition phase include: Poor disposal of debris, Noise Pollution, Air pollution, Worker Accidents just but to mention a few. During the construction phase, impacts anticipated include: Air pollution, Noise Pollution, Soil erosion, Loss of biodiversity, Worker Accidents and hazards when handling hazardous wastes, likelihood of fire during and after construction, Generation of construction and demolition waste amongst other impacts and social issues arising from movement of workers such as HIV and Aids, Populations of disease vectors, among others.


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

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

The consultant finds the proposed project to be environmentally credible and socially friendly. Further, in view of the information collected, the consultant concludes that the proposed project is desirable and therefore it requires licensing to allow for its speedy implementation.
CHAPTER I: INTRODUCTION

1.1 Project Background

The Judiciary is an independent, impartial, transparent and accountable institution anchored under Article 159 of the Constitution. It derives its authority from the people of Kenya and it is bound by the National Values and Principles of Governance as enshrined in Article 10. Its mission is to deliver justice fairly, impartially and expeditiously, promote equal access to justice, and advance local jurisprudence by upholding the rule of law. The Judicial Service Act, 2011, governs the administration of the Judiciary as well as its functions.

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A detailed plan was prepared to monitor the implementation of mitigating measures by the PMU/Judiciary Architect and the impacts of the project during rehabilitation and operation.

1.2 Scope of the ESIA Study
The key tasks will be to prepare an ESIA project report that has a detailed Environmental and Social Management Plan for the proposed construction of a new High Court in Siaya Town. The Consultant shall carry out the assignment and organize the required information to take into account the World Bank safeguard policies and the relevant legal and policy framework of the Government of Kenya as outlined in the ESMF, RFP and NEMA EIA/EA Regulation.

1.3 Project Budget
The project is estimated to cost Kenya Shillings 347,583,000.00 Million. The National Environment Management Authority (NEMA) has scrapped the EIA processing fees with effect from 1st January 2017, therefore the proponent will not be required to pay any submission fees to NEMA.

1.4 The EIA Objectives
In accordance with EMCA, 1999 and its subsequent amendments in 2015, all new projects must undergo an environmental impact assessment process and submit an EIA report to NEMA for review and approval. While complying with NEMA requirements, EIA process will also satisfy the conditions of the development partner and financier, The World Bank.

The proposed construction of the New Magistrate is expected to have significant linkages to environmental and social settings. The EIA task will be to quantify Environmental impacts associated with the project. Potential activities including excavations, spoil disposal, construction material deliveries and installations may be associated to social conflicts, safety risks, emissions, noise and environmental degradation at material sources to mention a few.

The main objective of the task is to carry out an EIA process on the proposed project for submission to NEMA for necessary review and approval in accordance to EMCA, 1999 and its subsequent amendments in 2015 and World Bank guidelines. Findings, cumulative impacts and mitigation measures from the assessments will be presented in an EIA report with among other key features;

(i) An Executive Summary
(ii) Project Description
(iii) Legal and Institutional Framework
(iv) Baseline Conditions
(v) Project Design and Implementation
(vi) Description of Potential and cumulative Impacts
(vii) Provision of Impacts Mitigation Measures
The ESIA study will include the following tasks:

- Review of the existing data on the proposed project and social economic activities in the project study area (data that will also be used for monitoring and evaluation of how well the mitigation measures are implemented during the project cycle);
- Collection of additional environmental, social, economic, and physical data that may be necessary to support a robust environmental and social impact assessment.
- Carry out an environmental assessment of the project area in relation to the proposed project leading to preparation of an Environmental Impact Assessment Report;
- Carry out a social impact assessment of the project;
- Review other ESIA reports that have been prepared for JPIP projects and together with data collected during this ESIA process, determine the cumulative environmental impacts of all the projects;
- Verify compliance with the national environmental and social regulations and industry standards as well as safeguard policies and environmental and social assessment procedures;
- To recommend cost effective measures to be implemented to mitigate against the expected negative impacts;
- Make recommendations to JPIP on a programmatic approach to mitigating the cumulative impacts that have been identified;
- To provide for consultation of all stakeholders, including communities to be affected by the project as well as other stakeholders in order to obtain their input during the Environmental and Social Impact Assessment (ESIA) process;
- To provide a platform for stakeholders to participate in the identification of mitigation measures for the negative environmental and social impacts of the project; and
- To prepare an Environmental and Social Impact Assessment (ESIA) project report and accompanying environmental and Social Management Plan (ESMP) in accordance with the Environmental Management and Coordination Act (1999) and the Environmental (Impact Assessment & Audit) regulations, 2003 detailing findings and recommendations.

1.5 Study Phasing

Phase 1:
Prepare comprehensive report on the understanding of the TOR, data and information requirements from JPIP and the methodologies to be adopted in the ESIA process and present to the Client as an Inception Report.

**Phase 2:**

Undertake an ESIA study as per the approved TOR and prepare an ESIA Project Report for submission to NEMA for review. A draft PR should be submitted to JPIP for review before preparation of the final EIA PR for submission to NEMA. The following tasks should be undertaken during this phase;

**Task 1: Brief on Project Background**

The Consultant shall provide brief description of the developer (this will be Judiciary), background to the project proposal and its justification, need and purpose of undertaking the ESIA study, ESIA study methodologies and approaches applied and structure of the report.

**Task 2: Description of the Proposed Project**

The Consultant shall describe project components and activities to be implemented in each phase(s) of the project life i.e. pre-construction, construction, operation and post-construction. This part is meant to give a general idea of what the project will entail. The description shall include the following information:

**Background information**

Background information shall include: Title of the proposed project and developer; Project justification and objectives; Funds and source of funding or financier(s); Project location including maps of appropriate scale; Project design, size, and capacity; Area of influence of the project works; Project life span and Project components; Land size required.

**Project activities**

Description of project activities shall be based on phases of project life cycle i.e. mobilization or pre-construction, construction, operation and maintenance.

**Mobilization or Pre-construction activities**

Description of activities pertaining to screening and scoping procedures, land acquisition (if any); construction camp and site workshop, site preparations, relocation of services and utilities, etc.

**Construction activities**

Description of all associated activities during construction work including construction materials indicating types and sources, expected products and by-products, technology to be used, etc. Other environmental issues to be addressed will include: Waste management – collection, handling, storage, transportation and disposal, Disaster preparedness and management, Noise and excessive vibration,
Occupational Health, Safety at the construction phase, Socio-economic impacts, Ecological impacts including impacts on biodiversity, Environmental emergencies e.g. oil spills, Air quality and air pollution (local air quality), General effects on the landscape and natural environment.

**Operation and maintenance activities**

Identification and description of all the associated activities to be conducted during operation and maintenance of the project. These include but not limited to Liquid and Solid waste management plans, Occupational Health and safety, storm water, Effects of increased, if any, Levels of sanitation, water supply and water pollution, Fire hazards, Energy management. Further, make recommendations on long-term monitoring by undertaking regular audits

**Demobilization Activities**

Identification and elaboration on the activities to be conducted during demobilization or Decommissioning of the project including movement and demolition of constructed facilities, restoration of site, termination of the operations, etc.

**Project Requirements**

Identify all types, sources and quantities of construction materials, equipment and chemicals required by the project. Source and quantities of water, energy, manpower (staffing and support) and other facilities and services required in each phase of project life etc. should be discussed.

**Task 3: Provide baseline environmental and social conditions**

In order to forecast the impacts, it will be necessary to determine the initial reference or baseline environmental conditions. It is therefore, required to describe the existing environment that would be directly and/or indirectly affected by the construction and operation of the proposed project, collectively known as receptors. The environment to be affected must be based on the physical, biological socio-economic, cultural and historical factors.

The environmental factors that are necessary for understanding the impacts of the planned development should be clearly indicated. Assemble, evaluate, and present baseline data on the relevant environmental characteristics of the study area. Inclusion of information on any changes anticipated prior to the commencement of the project.

- **Physical**: covering factors such as geology, biodiversity, topography, soils, climate and meteorology, ambient air quality, ambient noise and vibration levels, surface and ground water hydrology, existing sources of air emissions, existing water pollution discharges, receiving water quality, traffic data, current air space configuration, etc.

- **Biological**: inclusion of data on flora, fauna, rare, threatened or endangered species, ecologically important or sensitive habitats, significant natural sites, species of commercial importance and species with potential to become nuisances (of project site and potential area of influence of the project).
✓ **Socio-economic and socio-cultural environment:** Population, land use, planned development activities in the area, community structure, livelihood and customs, employment, distribution of income, goods and services, recreation, public health, Gender issues and HIV/AIDS, cultural / historic properties, security and community safety, vulnerable and marginalized groups, attitudes to the project, water and sanitation, transport and communication.

**NOTE:** Sources of data and methodologies used to acquire these data shall be indicated.

**Task 4: Describe the Policy, Legal and Institutional Framework**

Description of policy, legal, institutional framework, regulations, guidelines, standards, International conventions and treaties that are of relevance to the environmental management of the proposed undertaking in particular. The objective of this section is to show how the developer would comply with the existing policies, laws and administrative/institutional conditions both at national and international levels. These will include but not limited to all the pertinent regulations and standards governing environmental quality, solid and liquid waste management, noise, air quality, health and safety, protection of sensitive areas, land use control at the national, County and local levels and ecological and socio-economic issues – stating compliance issues.

**Task 5: Stakeholders’ Consultations and Public Involvement**

The Consultant shall identify and consult all the relevant stakeholders. These will include but not limited to relevant Government Agencies, Siaya town, NEMA, local NGOs including resident associations, affected groups and other interested parties in order to obtain their views regarding the proposed project. Indicate who they are, where they are, why they are important to this project, which issues are critical to them and how they will be involved in the ESIA study.

The Consultant shall describe methodology applied during stakeholder consultations and public participation such as consultative meetings, questionnaires, focus group interviews and other appropriate methods to establish public views on the proposed project. Meetings with local authorities and the public shall be held to obtain their views on the project and its implication to the environment and social aspects.

The Consultant shall propose public consultation programme during the ESIA study and the most appropriate methods to establish public views should be used. The consultation process should be open and transparent to ensure that the views of interested and affected parties are incorporated in the project design. A summary of issues and response in table form indicating sections which address them should be prepared.

There should be evidence in the ESIA to the effect that there was adequate stakeholder consultation at all levels. Photographs, minutes of the meetings, names and signatures of consulted people could be necessary in this regard.

**Task 6: Analysis of Alternatives to the Proposed Project**
The Consultant shall describe different project alternatives that were examined in the course of designing the proposed project and identify other alternatives, which would achieve the same objectives. The “No action” alternative is included to demonstrate environmental and social conditions without the implementation of this proposed project. The consideration of alternatives should include siting, design, technology, construction techniques, phasing and schedule, and operating and maintenance procedures.

Comparison of alternatives in terms of potential environmental and social impacts, capital and operating costs, suitability under local conditions and institutional, training, and monitoring requirements will be necessary. To the extent possible, quantify the costs and/or benefits of each alternative, incorporating the estimated costs of any associated mitigation measures.

**Task 7: Impact Identification and Assessment**

The Consultant shall identify, analyse and assess environmental and social impacts (positive and negative) of the proposed project on physical environment, natural resources, human beings and the ecosystems based on the phases of project life cycle i.e. mobilization or pre-construction phase, construction phase, operation phase and decommissioning and demobilization phase. Methods applied in impact identification and the criteria used in evaluating significance of impacts must be specified.

The impact analysis should focus on both positive and negative impacts and be able to indicate which ones are positive or negative, direct or indirect, short term or long term, reversible or irreversible. The Consultant shall use the most up to date data and methods of analysing and assessing environmental impacts. Uncertainties concerning any impact shall be indicated.

The consultant shall assess impacts of the project on but not limited to the following aspects: Topography and geology, soil, erosion, groundwater, hydrology, fauna, flora, biodiversity, meteorology, landscape, air pollution, water contamination, soil pollution, waste generation and management, noise and vibration, social disruption.

**Task 8: Propose Impact Mitigation Measures**

The Consultant shall suggest cost-effective measures for minimizing or eliminating adverse impacts of the proposed project. Measures for enhancing positive or beneficial impacts should also be recommended. The costs of implementing these measures shall be estimated and presented as well as the responsible persons for their implementation.

**Task 9: Cost Benefit Analysis**

The Consultant shall undertake qualitative and quantitative analysis of costs and benefits to determine the viability of the proposed project on the environment, social and economic aspects.

**Task 10: Development of Environmental and Social Management and Monitoring Plan (ESMMP)**

The Environmental Management Plan will focus on three areas: implementation of mitigation measures, institutional strengthening and training, and monitoring. The Consultant shall prepare Environmental Management Plan which will include proposed work programme, budget estimates, schedules, staffing and training requirements and other necessary support
services to implement the mitigation measures. Institutional arrangements required for implementing this management plan shall be indicated. The cost of implementing the monitoring and evaluation including staffing, training and institutional arrangements must be specified.

Where monitoring and evaluation will require inter-agency and inter-Governments collaboration, this should be indicated.

Identify institutional needs to implement environmental assessment recommendations. Review the authority and capability of institutions at local, regional, and national levels and recommend how to strengthen the capacity to implement the environmental and social management and monitoring plans.

The ESMMMP should specify impact mitigation plan and environmental monitoring plan requirements - costs, responsibility and timeframe for mitigating each impact and monitoring of each environmental parameter. Impact Mitigation plan and monitoring plan should be based on the project phases i.e. Pre-construction, Construction, Operation and Demobilization.

1.6 Reporting

The ESIA should be concise and limited to significant environmental issues. The main text should focus on actions supported by summaries of the data collected and citations for any references used in interpreting data. The consultant should organize the ESIA report to include all items above and should adopt the format recommended in the EMCA, 1999 and its subsequent amendments in 2015, ESIA/EA Regulations of 2003.

The consultant is expected to submit the following reports:

- Draft ESIA Report
- Final ESIA Project Report

Each report will be submitted to the client for review before finalization and submission to NEMA and World Bank.

1.7 Stakeholders Consultations

Consultations with the members of public and key stakeholders will be an important component of the study process. Following a comprehensive stakeholder analysis, various categories of stakeholders and public groups within the area influenced by the project will be established. The possible stakeholders would include among others:

(i) Government Departments
(ii) Institutional premises
(iii) Conservation areas
(iv) Commercial and industrial premises Operators,
(v) Health centres and facilities Managers,
(vi) Health practitioners,
(vii) Landowners
(viii) Residential area representatives
(ix) Administration Agencies
Appropriate questionnaires will be developed and distributed as among the tools to harness their opinions with respect to the subject. Environmental issues arising from the consultation forums will provide a key element in the development of the Environmental management plan, part of which might involve actions by the stakeholders.

1.8 Data and Information Validation
Data and information gathered through documentary reviews, interview with the relevant government agencies, measurements on site (noise and air quality)

1.9 The Consultant
I am an independent Lead Expert, registered by NEMA (Registration No. 0562) to carry out Environmental Impact Assessments in Kenya, and has previously worked in the fields of environment in the following areas;

(i) Environmental assessments (Compliance EIAs, Strategic EIAs, Due Diligence Audits, Compliance Environmental Audits, Environmental Management Plans, Noise Audits, etc.),
(ii) Environmental impact assessment of policies, programmes and projects;
(iii) Waste management and audits (evaluation of pathways, waste characterization, waste audits, wastewater, solid wastes, hazardous wastes, waste management options),
(iv) Environmental sampling and management (noise, emissions, water, wastes, etc.),
(v) Implementation up to closure level EMP for various projects funded by World bank and other International Development Agencies

Attached in Annex 3 is the registration certificate of the Lead expert.

1.10 Work Plan and Deliverables
The assignment commenced upon receipt of the Contract. The main deliverables from the exercise include the following among others;

- Draft ESIA Report
- Final ESIA Project Report

1.11 The Consultant Staff
The Consultant is working with the following staff cadres;

1. Naomi Gitau Environmentalist/Team Leader
2. Elvira Nalyanya Socio Scientist
CHAPTER 2: PROJECT DESCRIPTION

2.1 Project Location
The proposed project site is located on the following GPS Coordinates, Latitude 0° 3′ 25.59″ N and longitude: 34° 17′ 4.88″ E, in Siaya Town, Siaya County. The site is located 400m off Luanda – Siaya Road.

Figure 2: Google Earth excerpt showing the location of the proposed project site

The project site does not neighbour any sensitive receptor, its located in an area considered of similar character with the proposed project i.e. offices.
2.2 The Proposed Project

The project will involve construction of a New High Court in Siaya. The project activities will be according to conventional engineering scheduling, procedures and practices.

- Development of a 3 storey building
- Connection to a septic tank and soak pit for disposing of sewage water
- Construction of a storm water outlet
- Development of external works/services – driveway, car parking lots, vehicular gate access, pedestrian access.
- Site landscaping

The proposed Siaya High Court project will consist of the following facilities:

1. Self-Contained Chambers--------3no.
2. Secretaries (Pooled) ----3no.
3. Court rooms -----------3no.
4. Kitchenette-------------1no.
5. Toilets (Staff, Handicapped and public)
6. Civil Registry-------------1no.
7. Criminal Registry--------1no.
8. Traffic Registry--------1no.
9. Archives Registry--------1no.
10. Prosecution Offices------1no.
11. Cells(Adult—Male & Female

Juvenile---Male & Female)-----2no.
12. Stores (Sizeable Procurement & Exhibit)----2no.
13. Executive Officer--------1no.
14. Allow for a small Server room----1no.
15. Accountant--------------1no.
16. Waiting Bay-------------1no.
17. Multi-Purpose meeting Room for 30 no. people------1no
18. A room with sink for breast-feeding mothers.---1 no.
19. Internal Access roads,
20. Open and Covered Parking,
21. Address Water supply,
22. Allow for Stone fencing,
23. Allow for incinerator,
24. Address power supply issues,
25. Attend to any matters arising from Environmental impact assessment report,
27. Allow for any other issue that is unique to the sites,
ESIA and ESMP for the proposed construction of Siaya High Court

Figure 1: Ground Floor - Design of the proposed New Siaya Law Court
Figure 2: 3-D image of the proposed New Siaya Law Court
CHAPTER 3: POLICY, LEGAL AND INSTITUTIONAL FRAMEWORK

3.1 Introduction
There is a growing concern in Kenya and at global level that many forms of development activities cause damage to the environment. Development activities have the potential to damage the natural resources upon which the economies are based. A major national challenge today is how to maintain sustainable development without damaging the environment. The Environmental Impact Assessment is a useful tool for protection of the environment from the negative effects of developmental activities. There are many environmental problems and challenges in Kenya today. Among the cardinal environmental problems include: loss of biodiversity and habitat, land degradation, land use conflicts, human animal conflicts, water management and environmental pollution. This has been aggravated by lack of awareness and inadequate information amongst the public on the consequences of their interaction with the environment.

3.2 Policy Review

3.2.1 The Constitution of Kenya
Article 42 of the Bill of Rights of the Kenyan Constitution provides that ‘every Kenyan has the right to a clean and healthy environment, which includes the right to have the environment protected for the benefit of present and future generations through legislative and other measures’. Part 2 of Chapter 5 of the constitution is dedicated to Environment and Natural Resources. Article 69 in Part 2 provides that the state shall;

i. Ensure sustainable exploitation, utilization, management and conservation of the environment and natural resources, and ensure the equitable sharing of the accruing benefits

ii. Work to achieve and maintain tree cover of at least ten per cent of the land area of Kenya

iii. Encourage public participation in the management of, protection and conservation of the environment

iv. Protect genetic resources and biological diversity

v. Establish systems of environmental impact assessment, environmental audit and monitoring of the environment

vi. Eliminate processes and activities that are likely to endanger the environment

vii. Utilize the environment and natural resources for the benefit of the people of Kenya

3.2.2 Environmental Management and Coordination Act (1999) and it’s subsequent amendments in 2015
Section 72 of the EMCA, prohibits discharging or applying poisonous, toxic, noxious or obstructing matter, radioactive or any other pollutants into the environment. Section 73 require that operators of activities which discharges effluent or other pollutants to submit to NEMA
accurate information about the quantity and quality of the effluent. Section 74 demands that all effluent generated from point sources are discharged only into the existing sewerage system upon issuance of prescribed permit from the local authorities.

Section 87 sub-section 1 states that no person shall discharge or dispose of any wastes, whether generated within or outside Kenya, in such a manner as to cause pollution to the environment or ill health to any person, while section 88 provides for acquiring of a license for generation, transporting or operating waste disposal facility. According to section 89, any person who owns or operates a waste disposal site or plant or generate hazardous waste, shall apply to the NEMA for a license. Sections 90 through 100 outline more regulations on management of hazardous and toxic substances including oils, chemicals and pesticides.

### 3.2.3 EMCA Regulations

Under EMCA, 1999, a set of regulations have been developed to address management and compliance in special aspects of the environmental. Among the regulations relevant in the proposed projects are listed here below;

**Water Quality Management Regulations, 2006 (Legal Notice No. 120)**

These regulations were drawn under section 147 of the Environmental Management and Coordination Act 1999. In accordance with the regulations, every person shall refrain from acts that could directly or indirectly cause immediate or subsequent water pollution and no one should throw or cause to flow into water resources any materials such as to contaminate the water. The regulation also provides for protection of springs, streams and other water sources from pollution. There are potential linkages during construction and use though mainly internal.

**Waste Management Regulations, 2006 (Legal Notice No. 121)**

The regulations are formed under sections 92 and 147 of the Environmental Management and Coordination Act, 1999. Under the regulations, a waste generator is defined as any person whose activities produces waste while waste management is the administration or operation used in handling, packaging, treatment, conditioning, storage and disposal of waste. The regulations requires a waste generator to collect, segregate and dispose each category of waste in such manners and facilities as provided by relevant local authorities. Regarding transportation, licensed persons shall operate transportation vehicles approved by NEMA and will collect waste from designated areas and deliver to designated disposal sites. Appropriate management measures would be necessary throughout the project phases.

**Noise and Excessive Vibration Pollution Control Regulations, 2009**

Part II section 3(I) of these Regulations states that: no person shall make or cause to be made any loud, unreasonable, unnecessary or unusual noise which annoys, disturbs, injures or
endangers the comfort, repose, health or safety of others and the environment and section 3(2) states that in determining whether noise is loud, unreasonable, unnecessary or unusual. Part II Section 4 states that: except as otherwise provided in these Regulations, no person shall;
(i) Make or cause to be made excessive vibrations which annoy, disturb, injure or endanger the comfort, repose, health or safety of others and the environment;
(ii) Cause to be made excessive vibrations which exceed 0.5cm per second beyond any source property boundary or 30m from any moving source.

Part III, Section 11(1) states that any person wishing to;
(i) Operate or repair any machinery, motor vehicle, construction equipment or other equipment, pump, fan, air-conditioning apparatus or similar mechanical device;
(ii) Engage in any commercial or industrial activity, which is likely to emit noise or excessive vibrations shall carry out the activity or activities within the relevant levels prescribed in the First Schedule to these Regulations. Any person who contravenes this Regulation commits an offence.

Section 13(1) states that except for the purposes specified in sub-Regulation (2) hereunder, no person shall operate construction equipment (including but not limited to any pile driver, steam shovel, pneumatic hammer, derrick or steam or electric hoist) or perform any outside construction or repair work so as to emit noise in excess of the permissible levels as set out in the Second Schedule to these Regulations. These purposes include emergencies, those of a domestic nature and/or public utility construction. Section 14 relates to noise, excessive vibrations from construction, demolition, mining or quarrying sites, and states that: where defined work of construction, demolition, mining or quarrying is to be carried out in an area, the Authority may impose requirements on how the work is to be carried out including but not limited to requirements regarding machinery that may be used and the permitted levels of noise as stipulated in the Second and Third Schedules to these Regulations. Noise regulations are perhaps the most relevant in respect of aviation operations.

**Environmental Management and Co-ordination Act, 1999; Environment Co-ordination (Air Quality) Regulations, 2008**

The government has gazetted the air quality regulations standards. The Environmental Management and Co-ordination (air quality Regulations). The regulation has provisions with prohibitions of Priority air pollutants associated with machine operations and burning activities (general sources, mobile sources and Greenhouse gasses) outlined under the second schedule of the regulations. Tolerable air quality limits are provided under the first schedule of the regulation while lists specific limited for emissions from controlled and non-controlled facilities by sector. An operator of a site or equipment is required to obtain a license under the regulations and stipulated regulations. A compliance is also required as part of the emission license.
EMCA (Controlled Substances) Regulation, 2007
This regulation controls the production, consumption and exports and imports of controlled substances. This is an important aspect in aviation operations, but the projects may not have a direct linkage.

EMCA (Conservation of Biological Diversity and Resources, Access to Genetic Resources and Benefit Sharing) Regulations, 2006
The regulation requires proponents to conduct ESIA if their activities may have adverse impacts on ecosystems or lead to unsustainable use of natural resources or/and lead to introduction of exotic species. The regulation aims at increasing the coverage of protected areas and establishing new special status sites by providing guidelines for protecting endangered species. There are no direct linkages to the proposed projects.

EMCA (Fossil Fuel Emission Control) Regulations, 2006
This Regulation aims at eliminating or reducing emissions generated by internal combustion engines to acceptable standards. The regulation provides guidelines on use of clean fuels, use of catalysts and inspection procedures for engines and generators. This regulation is triggered as the proponent would use vehicles and equipments that depend on fossil fuel as their source of energy. It is recommended the requirements of the regulation be implemented in order to eliminate or reduce negative air quality impacts. This would be relevant for construction equipment and vehicles and operations within the airport thereafter, and particularly with respect to aviation activities.

3.2.4 Occupational Safety and Health Act No. 15 of 2007
Locally, Occupational Safety and Health is governed by the Occupational Safety and Health Act (OSHA) of 2007. Salient features of the OSHA, 2007 relevant to the proposed project are detailed below.

General requirements of this Act vesting obligations to occupiers (Part II) in order to ensure the safety, health and welfare at work of persons employed and to prevent occupational accidents shall be followed and any situation potentially hazardous shall be rectified when detected. Section 44 of the Act requires contractors to register with the Directorate of Occupational Safety and Health Services before commencement of works on site. This requirement must be complied with to ensure that appropriate inspection and supervision is done in order to minimize any adverse effects that may compromise safety and health of both workers and the environment. It is also expected of the contractor to comply with all safety precautions set forth by the proponent to ensure safety of work at the proponent’s site. Any violations must be reported to the proponent and appropriate corrective measure taken to prevent future recurrence.

Competent persons shall be in charge of site safety and appropriate arrangements be made to ensure that safety and health committees are formed as provided for in Section 9 of OSHA and Section 4 of the Factories and Other Places of Work (Safety and Health Committees) Rules. All
employees are expected to be made aware of their obligations to comply with provisions of the Act through appropriate trainings organized by the contractors. The trainings shall comply with provisions of section 12 of the Factories and Other Places of Work (Safety and Health Committees) Rules of 2004. Appropriate personal protective equipment shall be provided by the contractors to all employees so as to protect them from hazards associated with their work. These should include highly reflective jackets, helmets, dust masks, ear muffs, safety harnesses when working at heights, and protective clothing.

The contractor shall be required to cause to be carried out an external safety and health audit of the workplace at least once in every period of twelve months as provided in Section 11 of OSHA, and Section 13 of the Factories and Other Places of Work (Safety and Health Committees) Rules. Internal audits and inspections should be carried out by the safety and health committee constituted by the contractor as spelt out in Section 6 of the Safety and Health Committees Rules.

Section 55 specifies requirements for compliance with provisions of Machinery Safety. In construction sites of the proposed magnitude and nature, strict protocols need to be put in place to ensure all plants and equipment conforms to these requirements. These include earth moving equipment, chains, hoists, and lifting equipment including tower cranes. These equipments shall be maintained in accordance with provisions of the subsidiary legislation – The Occupational Safety and Health (Examination of Plant Order). The proponent shall ensure that the contractor provides proof of inspection of all plants to be used for work at her site. Special arrangements shall be made by the contractor, in consultation with the proponent, to provide appropriate warning signs for temporary structures that may violate aviation space during the construction phase. Particular structures may include cement silos and tower cranes.

Special care shall be taken by the contractor to ensure transport safety including maintenance of fleet and control of speeds so as not to foul the air with dust. Excessive dust may have dire consequences to aviation space and therefore must be checked through regular water sprinkling of routes used by trucks, or by application of appropriate hydroscopic materials on earth roads. In addition, the contractor must carefully select routes to be followed during movement of construction materials. All drivers must have the requisite training and competence to operate stationary and mobile equipment, and appropriate procedures developed by the contractor must be observed at all times. These may include loading and unloading procedures. The contractor must ensure that pollution from trucks is controlled by limiting the loads carried and that maintenance is carried out as scheduled.
3.2.5 The Factories and Other Places of Work (Fire risk Reduction) Rules, 2007

Nationally, the Factories and Other Places of Work (Fire risk Reduction) Rules, 2007 provides statutory guidelines for the prevention, control and management of fires within workplaces, of which an airport is a part. Section 5 requires that suitable construction materials shall be used in the construction of workrooms where flammable substances are used, manufactured, or manipulated. Section 6 outlines conditions under which highly flammable substances must be stored, provided that no such store shall be so situated as to endanger the means of escape from a workplace or any part thereof in the event of a fire occurring in the store. Section 7 requires that every store room, cupboard, bin, tank or container used for storing highly flammable substances is clearly and boldly marked “Highly Flammable” in English or Kiswahili or otherwise with an appropriate indication of flammability. Section 8 requires that every occupier shall ensure that the quantity of any highly flammable substance present at any one time in a workplace, shall be as small as is reasonably practical, having regard to the processes or operations being carried on. Section 9 also requires all occupiers to ensure that no means likely to ignite vapour from any highly flammable substances, are present where a dangerous concentration of vapour from flammable substances may reasonably be expected to be present. Further, Section 10 requires the occupier to continuously monitor the workplace with a view to assessing any possible fire risks and mitigate against them.

Section 12 requires the occupier to ensure that all necessary steps are taken to remove flammable gases of vapours in a workplace or render the gasses or vapours non-flammable where the operations or processes involve application of heat. In section 13, the occupier shall ensure that a workplace is kept in a clean state and that any accumulation of dirt and refuse is removed at least once a day, and that every store shall have a marked gangway of the prescribed dimensions. Where mobile equipment for transportation of materials is in store, a marked gangway shall be provided to accommodate the size of the equipment and for the use of persons working therein.

Fire escape exits shall be provided by the occupier in accordance with provisions of Section 17 at every workplace of at least 90 centimetres wide, as far away as possible from the ordinary exit, and locate in a manner that the exit will not lead any person to a trap in the workplace in the event of a fire breakout. Section 18 requires every occupier to ensure that any door of any store where flammable substances are stored are constructed in a manner that the door shall be self-closing, opening outwards or sliding and capable of containing smoke from within the workroom, in the event of a fire.

Section 19 specifies that where a workplace is a storeyed building, every occupier shall ensure that a workplace is constructed in such a manner as to enable workers have access to other suitable outlet or exit for the evacuation other than the emergency exits. Section 20 requires occupiers to establish fire-fighting teams that shall be trained as specified in Section 21 and carry out functions outlined in section 22. Section 23 requires the occupier to ensure that fire drills
are conducted at least once in every period of twelve months and a record of such drills kept available for inspection.

Section 24 requires that Fire Assembly Points be identified and located in the workplace where every worker shall assemble in the event of a fire. The occupier for the provision of First Aid shall make necessary arrangements to any person injured in a fire and in addition, arrangement for the transportation of the injured person to the nearest health facility as required in Section 25. Section 26 requires the occupier to provide suitable means of alerting persons in the workplace, in the event of a fire, and such means shall be made known to all workers.

Appropriate notices prohibiting smoking in areas where highly flammable or highly combustible substances are manufactured, used, handled or stored as specified in section 27. Fire detection systems shall be provided and maintained by the occupier, who shall ensure that fire detection appliances are located in the appropriate places for immediate activation of an alarm or automatic fire extinguishing systems as provided in section 28. Fire fighting appliances shall also be provided by the occupier for extinguishing fires at the workplace as required under Section 29. Such appliances shall be maintained as required in Section 30. Section 31 specifies that every occupier shall ensure that, in selection and distribution of fire extinguishers in the workplace, the distribution and selection is based on the classes of fire anticipated and the size and degree of hazard caused by a fire.

Colour coding of pipes carrying water for firefighting shall be painted red as specified in Section 32, while adequate water storage shall be provided and readily accessible in quantities as specified in Section 33. Section 34 requires the occupier to establish, implement and maintain a written fire safety policy, outlining the organization and arrangements for carrying out the policy. Every occupier shall notify any fire occurring in the workplace to the nearest Occupational Safety and Health area office within 24 hours as required under Section 35. Fire audits should be conducted in accordance with provisions of Section 36.

In addition to statutory requirements specified in the Factories and Other Places of Work (Fire Risk Reduction) Rules of 2007, internal Aerodromes Rescue and Fire Fighting Service procedure manual should be applied. To supplement these two, internationally accepted procedures as outlined in section 3.2 above shall be implemented.

3.2.6 The Occupational Safety and Health (Building Operations and Works of Engineering Construction) Rules 1984
These Rules apply to building operations and works of engineering construction undertaken by or on behalf of the Government and local authority, or a public body. It is part of the OSHA subsidiary legislation relevant to the construction phase.
Part II of the Rules requires every contractor to comply with the requirements of these Rules designed to ensure the safety, health and welfare of all persons engaged in building operations or works of engineering construction undertaken by him or in any activity incidental to and at the site of the building operations or works of engineering construction. Part II Section 6 requires the main contractor to send a notification in writing of commencement or taking over operations or works to the Director of Occupational Safety and Health Services (DOSHS) within seven days of commencement or undertaking building operations in the prescribed format. Section 7 requires every contractor who employs more than twenty persons to, for every site on which he is the contractor to appoint one or more persons experienced in the operations or works carried out at the site and suitably qualified for the purpose to advice the contractor as to the observance of the safety, health and welfare requirements under the Act, supervise and ensure the observance of those requirements and promote the safe conduct of work generally at sites.

Part III Section 8 requires the walls and roof of any excavation, shaft or earthwork or tunnel, deeper than 1.2m to be reinforced with the fervour of suitable quality or with other suitable material, so far as is reasonably practicable, to prevent danger of injury resulting from a fall or dislodgement of earth, or other matter from the walls or roof, to any person employed or making the inspection or examination under Rule 9. Rule 9 requires the safety supervisor appointed pursuant to Rule 7 to inspect every part of an excavation, shaft, earthwork or tunnel once in every day during which persons are employed; and at the commencement of every shift inspect the face of every tunnel, the working end of every trench which is more than two metres deep to ensure safe working conditions.

Section 10 provides that no timbering or other support for any part of any excavation, shaft, earthwork or tunnel shall be protected or be substantially added to, altered or dismantled except under the direction of the safety supervisor and so far as possible be competent workmen possessing adequate experience of that work. Any material to be used in adding to, altering or dismantling as above shall be inspected by the safety supervisor before being used and defective materials shall not be used. Timbering or other support of any excavation, shaft, earthwork or tunnel shall be of good construction, sound material, free from patent defect and of adequate strength for the purpose for which it is used and shall be properly maintained. All struts and braces in an excavation, shaft, earthwork or tunnel shall be properly and adequately secured so as to prevent their accidental displacement or fall.

Section 11 requires that in an excavation, shaft, earthwork or tunnel where there is reasonable danger of flooding by rising worker or irruption of water or other matter, a contractor shall provide, so far as is practicable, means to an able person employed therein reach positions of safety. Section 12 states that no excavation, shaft, earthwork or tunnel, which is likely to reduce the security or stability of any part of structure thereby endangering persons employed shall be
commenced or continued unless adequate steps are taken to prevent danger to the person employed. Section 13 requires a contractor to ensure that any excavation, shaft, pit or opening in the ground more than two metres in depth shall be securely covered, fenced or otherwise provided the basic cable car when access by workmen, plant and equipment or material to it or from it is not necessary.

Section 14 requires that material shall not be placed or staked near the edge of any excavation, shaft, pit or opening in the ground so as to endanger persons employed below. It further prohibits placing or moving near the edge of the excavation, shaft, pit or opening any load, plant or equipment likely to cause a collapse of the side of an excavation, shaft, pit or opening.

The use of explosives in construction sites is primarily to break apart underlying rocks to pave way for construction. This will be highly discouraged for the proposed project site due to the sensitivity of the infrastructure already in place. Further, the resulting shock waves may interfere with buried services and cause damage to existing buildings and structures. Alternative methods for breaking the rocks should be explored including the use of pneumatic drills mounted on mobile earth moving equipment.

Part VI of the Building Operations and Works of Engineering Construction Rules requires that dangerous and unhealthy atmospheres be controlled. Specifically, the following measures shall be taken;

(i) In any building operation or work of engineering construction where dust or fumes likely to be injurious to the health of persons employed are given off, all reasonably practicable measures shall be taken to prevent the inhalation of dust or fumes by the person employed by ensuring adequate ventilation or provision of suitable respirators at the place where the operation or work is carried out.

(ii) Effective steps shall be taken to ensure and maintain adequate ventilation of every working place in any excavation, pit, hole, adit, tunnel, shaft or caisson and in any other enclosed or confined space where building operations or works of engineering construction are carried on and of every approach to those working places and enclosed or confined spaces so as to maintain an atmosphere which is fit for respiration, and to render harmless, so far as is reasonably practicable, all fumes, dust or other impurities in the atmosphere therein which may be dangerous or injurious to health and which are generated, produced or released by any other means.

(iii) Where there is reason to apprehend that the atmosphere in any of the working places or approaches thereto mentioned in 1 above is poisonous or asphyxiating, then, notwithstanding the requirements of that paragraph, no person shall be employed in or allowed to enter the working place or its approach until the atmosphere has been suitably tested by or under the immediate supervisor of a competent person, and he is satisfied that the working place or approach is for the time being free from the danger of a person being overcome by poisoning or asphyxiation.
Section 22 on internal combustion engines requires that no stationary internal combustion engine shall be used unless provision is made for conducting the exhaust gases from the engine into the open air. Section 34 requires that mechanically propelled vehicles and mechanically drawn trainers used in connection with building operations and works of engineering construction, whether for the carriage of workmen or materials or not, shall, unless being moved to a place for repairs; be in efficient state, efficient working order and in good repair; not to be used in an improper manner; not to be loaded in such a manner as to such an extent as to interfere with the safe driving or operation of the vehicle. Section 35 prohibits riding in insecure positions on vehicles to which Section 34 applies.

Section 37 specifies that where a vehicle is used for tipping materials into an excavation or pit or over the edge of an embankment or earthwork, adequate measures to prevent the vehicle from over-running the edge of the excavation, pit, embankment or earthwork shall, where necessary, be taken.

Part X Section 42 and 43 requires every machinery to be appropriately guarded to prevent injury through access to dangerous or moving parts. Such parts shall be adequately secured unless equipment is under repair, to which appropriate measures shall be taken not to injure those undertaking such repairs. Section 45 requires contractors to take measures to prevent, so far as practicable, steam, smoke or other vapour generated at the site where persons employed are present from obscuring any part of the work or operation, any scaffolding, machinery or other plant or equipment.

Section 46 requires every contractor to, at any site where material including waste material, scaffold material, tools or other objects and articles are likely to fall or drop or be thrown down to take proper and adequate steps to prevent any person, whether employed and working at the site or not, from being struck by a material, tool, object or article falling on or within the close cartilage and precinct of the site.

While Section 47 requires provision of adequate and suitable lighting of the workplace, section 44 requires that any live electric cable or apparatus at a site which is liable to be a source of danger to persons employed to be rendered electrically dead or otherwise made safe by all practicable means.

Section 48 prohibits the placing of timber or material with projecting nails to be placed or be allowed to remain in any place at a site where they may be a source of danger to persons employed. The section also prohibits loose materials that is not required for use to be placed or left so as to unduly restrict the passage of persons upon platforms, gangways, floors or other places on the site, but shall be removed and be securely stocked in a place where they are not a
danger or obstruction to persons employed and they do not render unsafe a floor, roof, or other part of a building or structure.

Part XII provides for the safe use of scaffolds and other working places including ladders used in scaffolds, cantilever, jib, suspended scaffolds, skips, cages, platforms, gangways, rungs and stairs to afford foothold, and ladders. It requires that these be of adequate strength, free from patent defects, of good construction, and sufficiently safe, properly maintained and inspected regularly. Only properly trained and experienced persons should be allowed to erect these structures, and their partial dismantling shall not be done unless it is then so erected or dismantled that it complies with these Rules as to safety.

Welfare facilities including toilets, clean drinking water and first aid facilities must be provided as specified in Part X – Welfare General Provision and Section 95 of OSHA, 2007; and the Occupational Safety and Health (First Aid) Rules of 1977.

### 3.2.7 Work Injury Compensation Benefit Act 2007

This act provides for compensation for employees on work related injuries and diseases contacted in the course of employment and for connected purposes. The act includes compulsory insurance for employees. The act defines an employee as any worker on contract of service with employer will be relevant during construction phase while operations will be blended with the normal airport procedures.

### 3.2.8 Water Act 2002

Section 73 of the Act of the Act allows a person with licensee to supply water to make regulations for purposes of protecting against degradation of water sources. Section 75 and sub-section 1 allows the licensee to construct and maintain drains, sewers and other works for intercepting, treating or disposing of any foul water arising or flowing upon land for preventing pollution of water sources within his/her jurisdiction. Section 76 states that no person shall discharge any trade effluent from any trade premises into sewers of a licensee without the consent of the licensee upon application indicating the nature and composition of the effluent, maximum quantity anticipated, flow rate of the effluent and any other information deemed necessary. Under the Water Act 2002, Water Rules were development to ensure sustainable and harmonized utilization of water resources throughout all sectors. The rules are summarized in the statement below;

### 3.2.9 Water Rules

One of the outcomes of the water sector reforms has been improved regulatory framework for water resource management and use. In addition to the Water Act 2002, the main document outlining the regulations is the Water Resource Management Rules 2007. The rules set out the
procedures for obtaining water use permits and the conditions placed on permit holders. Sections 54 to 69 of the Water Resources Management Rules 2007 impose certain statutory requirements on dam owners and users in regard. These provisions address:

(i) Technical design report in respect of the water use permit;
(ii) Operational information to be lodged with WRMA;
(iii) Dam safety measures and requirements for inspections;
(iv) Requirements for procedures to notify downstream communities in the event of unexpected releases.

Section 16 of the Water Rules requires approval from the Water Resources Management Authority (WRMA) for a variety of activities that affect the water resources, including the storage of water in dams and pans. Approval by WRMA is conferred through a Water Permit. A permit is valid for five years and must be renewed.

Section 104 of the Water Resource Management Rules requires certain water permit holders to pay water use charges. The intention of the water use charges was to raise revenue for water resource management, raise revenue for catchment conservation activities, improve efficiency of water resource abstraction and provide a system of data collection on water resource usage.

3.2.10 Public Health Act (Cap. 242)
Section 115 of the Act states that no person/institution shall cause nuisance or condition liable to be injurious or dangerous to human health. Section 116 requires Local Authorities to take all lawful, necessary and reasonably practicable measures to maintain their jurisdiction clean and sanitary to prevent occurrence of nuisance or condition liable for injurious or dangerous to human health. Such nuisance or conditions are defined under section 118 as waste pipes, sewers, drains or refuse pits in such a state, situated or constructed as in the opinion of the medical officer of health to be offensive or injurious to health. Any noxious matter or wastewater flowing or discharged from any premises into a public street or into the gutter or side channel or watercourse.
Other nuisances are accumulation of materials or refuse which in the opinion of the medical officer of health is likely to harbour rats or other vermin. On the responsibility of local authorities, Section 129 of the Act states in part “It shall be the duty of every local authority to take all lawful, necessary and reasonably practicable measures for preventing any pollution dangerous to health of any supply of water which the public within its County has a right to use and does use for drinking or domestic purposes…”: Section 136 states that all collections of water, sewage, rubbish, refuse and other fluids which permits or facilitate the breeding or multiplication of pests shall be deemed nuisances and are liable to be dealt with in the manner provided by this Act.
3.2.11 Physical Planning Act (Cap 286)
Section 24 of the Physical Planning Act gives provision for the development of local physical development plan for guiding and coordinating development of infrastructure facilities and services within the area of authority of County, municipal and town council and for specific control of the use and development of land. The plan shows the manner in which the land in the area may be used. Section 29 of the physical Planning Act gives the county councils power to prohibit and control the use of land, building, and subdivision of land, in the interest of proper and orderly development of its area. The same section also allows them to approve all development applications and grant development permissions as well as to ensure the proper execution and implications of approved physical development plans. On zoning, the act empowers them to formulate by-laws in respect of use and density of development.

Section 30 states that any person who carries out development within an area of a local authority without development permission shall be guilty of an offence and the development shall be invalid. The act also gives the local authority power to compel the developer to restore the land on which such development has taken place to its original conditions within a period of ninety days. If no action is taken, then the council will restore the land and recover the cost incurred thereto from the developer. In addition, the same section also states that no person shall carry out development within the area of a local authority without development permission granted by the local authority. At the same time, sub-section 5, re-enforce it further that, no licensing authority shall grant under any written law, a license for commercial use for which no development permission had been granted by the respective local authority.

Section 36 states that if in connection with development application a local authority is of the opinion that, the proposed activity will have injurious impact on the environment, the applicant shall be required to submit together with the application an Environmental Impact Assessment report. The environmental impact assessment report must be approved by the National Environmental Management Authority (NEMA) and followed by annual environmental audits as spelled out by EMCA. Section 38 states that if the local authority finds out that the development activity is not complying to all laid down regulations, the local authority may serve an enforcement notice specifying the conditions of the development permissions alleged to have been contravened and compel the developer to restore the land to its original conditions.

3.3 The World Bank Environment Safeguards
OP/BP 4.01 (Environmental Assessment)
The World Bank has well-established environmental assessment procedures, which apply to its lending activities and to the projects undertaken by borrowing countries, in order to ensure that development projects are sustainable and environmentally sound. Although its operational policies and requirements vary in certain respects, the World Bank follows a relatively standard procedure for the preparation and approval of an environmental assessment study, which:
i. Identifies and assesses potential risks and benefits based on proposed activities, relevant site features, consideration of natural/human environment, social and trans-boundary issues

ii. Compares environmental pros and cons of feasible alternatives

iii. Recommends measures to eliminate, offset, or reduce adverse environmental impacts to acceptable levels (siting, design, technology offsets)

iv. Proposes monitoring indicators to implement mitigation measures

v. Describes institutional framework for environmental management and proposes relevant capacity building needs.

The environmental assessment evaluates a project’s potential environmental risks and impacts in its area of influence; examines project alternatives; identifies ways of improving project selection, siting, planning, design, and implementation by preventing, minimizing, mitigating, or compensating for adverse environmental impacts and enhancing positive impacts; and includes the process of mitigating and managing adverse environmental impacts throughout project implementation. The assessment takes into account: the natural environment (air, water, and land); human health and safety) social aspects (involuntary resettlement, indigenous peoples, and physical cultural resources); and trans-boundary and global environmental aspects. Preventive measures are favoured over mitigation or compensatory measures, whenever feasible.

The World Bank considers environmental impact assessment (EIA) as one among a range of instruments for environmental assessment. Other instruments used by the World Bank include environmental management plan (EMP) among other studies. The Bank undertakes environmental screening of each proposed project to determine the appropriate extent and type of environmental assessment. Projects could be classified into one of three categories below, depending on the type, location, sensitivity, and scale of the project and the nature and magnitude of its potential environmental impacts:

(i) Category A: the proposed project is likely to have significant adverse environmental impacts that are sensitive, diverse, or unprecedented. These impacts may affect an area broader than the sites or facilities subject to physical works. For a Category A project, the Proponent is responsible for preparing an EIA report.

(ii) Category B: the proposed project has potential adverse environmental impacts on human populations or environmentally important areas such as wetlands, forests, grasslands, and other natural habitats - but these are less adverse than those of Category A projects. These impacts are site-specific; few if any of them are irreversible; and in most cases, mitigation measures can be designed more readily than for Category A projects. Like Category A the environmental assessment examines the
ESIA and ESMP for the proposed construction of Siaya High Court

project's potential negative and positive environmental impacts and recommends any measures needed to prevent, minimize, mitigate, or compensate for adverse impacts and improve environmental performance.

(iii) Category C: the proposed project is likely to have minimal or no adverse environmental impacts. Beyond screening, no further environmental assessment action is required for a Category C project.

Environmental Assessments are used by the World Bank to identify, avoid and mitigate the potential negative environmental associated with Bank lending operations. The purpose of Environmental Assessment is to improve decision making, to ensure that project options under consideration are sound and sustainable and that potentially affected people have been properly consulted. The proposed project would be placed at Category B.

**OP/BP 4.04 (Natural Habitats)**
The policy is designed to promote environmentally sustainable development by supporting the protection, conservation, maintenance and rehabilitation of natural habitats and their functions. The policy seeks to ensure that World Bank-supported infrastructure and other development projects take into account the conservation of biodiversity, as well as the numerous environmental services and products which natural habitats provide to human society. The policy strictly limits the circumstances under which any Bank-supported project can damage natural habitats (land and water area where most of the native plant and animal species are still present. There are no direct or indirect interaction of the proposed projects with natural habitats. The proposed project has no interaction with the wildlife dispersal areas. Additionally, there are no breeding habitats around the proposed project site.

**OP/BP 4.11 (Physical Cultural Resources)**
This policy is meant to assist in preserving physical cultural resources including the movable or immovable (above or below ground, or under water) objects, sites, structures, groups of structures, and natural features and landscapes that have archaeological, paleontological, historical, architectural, religious, aesthetic, or other cultural significance including sites and unique natural values. Physical cultural resources are important as sources of valuable scientific and historical information, as assets for economic and social development, and as integral parts of a people’s cultural identity and practices. The objective of this policy is to avoid or mitigate adverse impacts on physical cultural resources from development projects. The proposed New Siaya High Court has no direct linkage to a cultural resource. The aspect, therefore, will not be triggered.

**OP/BP 4.12 (Involuntary Resettlement)**
The policy states that “Where large-scale of population displacement is unavoidable, a detailed resettlement plan, timetable, and budget are required. Resettlement plans should be built around a development strategy and package aimed at improving or at least restoring the economic base for those relocated. Experience indicates that cash compensation alone is normally inadequate. Voluntary settlement may form part of a resettlement plan, provided measures to address the special circumstances of involuntary resettlers are included.

This proposed project under JPIP – Siaya High Court is not likely to lead to any large scale acquisition of land or denial of access to people’s means of livelihood. The judiciary will only carry out construction within land that is owned by judiciary.
CHAPTER 4: BASELINE CONDITIONS

4.1 General Overview
The study area is located in Siaya Town in Siaya County. Siaya lies between latitude 0°26’S to 0°18' N and longitude 33°58’E and 34°33’W and covers an area of 2,530.5 km². The county is bordered by Busia County to the North West, Vihiga and Kakamega counties to the North East, Kisumu County to the South East and Homa Bay County across the Winam Gulf to the South. Siaya County is divided into six administrative sub-counties namely; Gem, Ugunja, Ugenya, Bondo, Rarieda and Siaya which is the largest covering an area of 605.8 km².

Siaya town and its surroundings has got many environmental and social similarities with the rest of Siaya County including geology and soils, vegetation types, hydrology, land use, cultural trends as well as economic patterns. During the evaluation of baseline conditions and field visits, physical inspection was backed up with literature of the wider Siaya region. Social and cultural characteristics were also drawn from interviews and historical knowledge of Siaya people and the transformation time. The following sections therefore briefly describe the general and site specific environmental and social status that also provides the base of the impacts identification.

4.2 Physical Environment

4.2.1 Topography and Drainage
The altitude of the County rises from 1,140m on the shores of Lake Victoria to 1,400m above sea level on the North. There are few hills found in the County namely; Mbaga, Odiado, Akala, Regea, Nyambare, Usenge, Ramogi hills, Rambugu, Abiero, Sirafuongo and Naya hills. River Nzoia and Yala traverse the County and enter Lake Victoria through the Yala Swamp. The physical features have a bearing on the overall development potential of the County. The high altitude areas that form the Ugenya and Ugunja sub-counties have higher rainfall hence suitable for agriculture and livestock keeping. Rivers Nzoia, Yala and Lake Kanyaboli have a great potential for irrigation. The low altitude areas of Boro, Uranga, Uyoma and Wagai receive less rainfall and thus are suitable for cotton growing and drought resistant crop varieties.

4.2.2 Geology and Soils
The geology of the area is composed of the old Nyanzian system forming exposed rocks in Siaya, Ugenya, Ugunja and Gem Sub-counties. These rocks include basalts, desites and rylites, that consist of coarse and fine aggregates used in the construction industry. The main soil type is ferrasols and its fertility ranges from moderate to low with most soils being unable to produce without the use of either organic, inorganic or in most cases both types of fertilizers. Most of the areas have underlying murrum with poor moisture retention.

Bondo sub-County has various soil types ranging from black-cotton, sandy loams to laterite including red volcanic soils. West Sakwa, South Nyang’oma and Usigu locations have ferrasols, while North Sakwa, East and Central Yimbo have luvisols with low moderate fertility. The soil
types in Rarieda ranges from black cotton soil in Madiany Division and sandy loams and red volcanic soils in Rarieda Division. The expansive Yala Swamp around Ramogi Hill has potential for large scale irrigation using river Yala. Bondo Sub-County also has several islands including Mageta, Sirigombe, Magari and Yalombo.

4.2.3 Climatic Conditions
The County experiences a bi-modal rainfall, with long rains falling between March and June and short rains between September and December. The relief and the altitude influence its distribution and amount. Siaya County is drier in the western part towards Bondo and Rarieda sub-counties and is wetter towards the higher altitudes in the eastern part particularly Gem, Ugunja and Ugenya sub-counties. On the highlands, the rainfall ranges between 800mm – 2,000mm while lower areas receive rainfall ranging between 800 – 1,600mm.

Temperatures vary with altitude rising from 21° C in the North East to about 22.50° C along the shores of Lake Victoria while in the South, it ranges from mean minimum temperature of 16.3°C and mean maximum temperature of 29.1° C. Humidity is relatively high with mean evaporation being between 1,800mm to 2,200mm per annum within the County. The relative humidity ranges between 73 per cent in the morning and 52 per cent in the afternoon. Climate variations are evident in all these areas due to human activity distorting some of the statistics above.

4.2.4 Hydrology
The county has to major rivers namely: River Yala and river Nzoia. These two rivers, which form the county’s drainage systems of major river basins with numerous tributaries, drain directly into lake Victoria. The seven major tributaries (small rivers) are Huro, Akala North, Nyamonye, Woroya, Dande and Seme Awach which have a combined discharge rate of 7.42m3/sec. They are potentially important sources of water needed for both farming and domestic use. There are several swamps, wetlands, dams and pans. The major lakes in the County are: Lake Victoria, Kanyaboli, and Lake Sare. Ground waters are found in Nyanzan rock aquifer system and Kavirondian rock aquifer system. Generally, the county has good potential of ground water. The potential however, diminishes as one approaches the lake. There are also several springs and shallow wells. There are several sampling points for ground and surface water done on quarterly basis for water analysis to determine the quality.

4.3 Biological Environment
4.3.1 Flora
The study area mainly has grass, some shrubs and minimal number of tress similar to many areas within the County. Grass and trees grow on the seasonal flood plain and stands of acacia occur throughout the landscape adjacent to the lake and in flowing rivers. However, Lake Victoria was invaded by the water hyacinth (Eichhoria crassipes, Martius) in 1990. While the introduction of the weed in the lake may have been accidental, the water hyacinth was originally transported
from its native home in South America to Africa to be used as an ornamental plant. The most extensive papyrus swamps (c. papyrus) in East Africa occur along the perimeter of Lake Victoria.

4.3.2 Fauna
The varieties of wild life found in the County include hippopotamus (Lake Victoria, River Yala), crocodiles (Yala Swamp, parts of the Lake Victoria), Sitatunga (Yala Swamp) and monkeys and leopards. The County has several species of fish, but the most popular ones are Nile perch, Rastrineobola argentea (Locally known as Omena) , Hatlochromines (locally known as Fulu or Wiu) and Nile Tilapia. The first species have a very high commercial value and is responsible for the economic break through which has been experienced along the shore of Lake Victoria. Others are bushpig (mainly in Yala Swamp), Hyenas (Got Abiero, Utonga), various species of snakes e.g. pythons, cobras and various species of birds.

4.4 Human Environment
4.4.1 Education
In Siaya County the percentage of population with primary education is 70.3%, those with secondary education constitute 10.8% of the population while those who can read and write form 66.2%. The County has a total of 385 Pre-Primary schools, 381 Primary Schools, and 56 Secondary schools. Dropout rates for primary school is 8.8% for females 7.9% for males while in secondary schools it increases to 11.6% and 10.7% respectively. The pupil/teacher ratio is 1:36 in primary schools and 1: 17 in secondary schools. Dropout rates especially for girls will need to be addresses.

4.4.2 Population
According to the 2009 national census, the Population of Kisumu County was 885,762 persons with 419,227 males and 466,535 female. The county has an annual population growth rate of 1.7 per cent and is projected to increase to 964,390 persons in 2017(456,441 males and 507,949 female).

<table>
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4.4.3 Gender Aspects
The population of women is proportionately higher than that of men in the project area. There is no clear division of productive activities based on gender as males and females are involved in
similar socio-economic activities, however with varying proportions and intensify. Men dominate in activities that require strength (e.g. pulling carts, carrying heavy baggage, construction and mechanical among others). Women are engaged in domestic chores of fetching water and taking children to school as well as undertaking light business activities of vegetables selling and office works of preparing and serving tea. They are also employed in jobs that require less energy e.g. packing and cleaning. In construction industry, women are mainly hired for curing the construction buildings, cooking for the male workers etc.

4.4.4 Health
Administratively, the County has eight existing education divisions and a total of 21 educational zones. There are 636 primary schools, 179 secondary schools, six tertiary institutions, 12 special education schools, one public university and 13 special units in regular primary schools. School enrolment is 57,592 pupils at pre-primary level, 232,691 pupils at primary school level, 33,780 students at secondary school level, 2,759 at tertiary level, 1,847 in the university and 104 in the youth polytechnics. Basic literacy rate stands at 80 per cent.

3.4.3.1 HIV/AIDS
The high prevalence rate of HIV/AIDS at 17.8 per cent is a major hindrance to development. This has led to an increase in the number of child headed households, Orphans and Vulnerable Children (OVC), loss of productive labour force leading to low productivity and increased school drop-out rate as the older children assume the role of taking care of their ailing parents and their younger siblings. In addition, more resources are being diverted to taking care of the infected and affected at the expense of development.

To combat HIV and AIDS, the GOK and the Civil Society Organizations (CSOs) have stepped up sensitization and support activities on the various ways of avoiding infections and how to live positively. This has resulted in many people going to VCTs and talking freely about their status; unlike in the past when the stigma was very strong. Quality of care to the infected has also improved with more than 80,000 clients on ARVs by 2013. This has improved the quality of life for PLWA with increased. Improved laboratory support, finance by local implementing partners has to a great length improve quality of care.” The high prevalence of HIV/AIDS in the county is also associated with high co-infection rates with Tuberculosis. Targeted measures have to be focused on to prevent, treat and cure all Tuberculosis patients in the county.

4.4.5 Poverty Aspects
The overall poverty level of the County stands at 47.56 per cent. Most of the affected people are the Persons living with Disabilities (PWDS), People Living with HIV and AIDS (PLWHA) and the youth who have negative attitude towards non-formal employment. While the overall poverty level has reduced significantly, there are still many locations in the county with high poverty ratings. The causes of poverty in these areas are diverse and include poor soil fertility leading to low yields, low income among households to afford farm inputs, over-reliance on traditional
methods of farming and lack of alternative sources of income. To be able to address poverty there is need to enhance development efforts targeting food production. This will not only ensure food security but also provide income through the sale of surplus farm produce. There will be need to fully practice proper crop and animal husbandry unlike the current situation where many households still use traditional off-farm and on-farm practices.

4.4.6 Land use
In Siaya County, private land, which forms most of the land in the county, is the category of land owned by private individuals. The rights and interests of this category of land have been fully ascertained through the process of land adjudication and therefore relatively easy to acquire for investment purposes. There however still exist sections whose rights and interest have not been determined and the county government needs to intervene to have the process finalised. Approximately 2059 square kilometres of land is arable and a major form of land use is peasantry agriculture. Only small potion Siaya town has been set aside for industrial use. There is need to demarcate more land for industrial use in major urban centres in the county. Most of the lands in the rural areas are under general boundaries prone to a lot of boundary disputes, while in Urban centres there are fixed surveys which are free from disputes. The first category requires that this general surveys be geo referenced to reduce the number of disputes arising from the boundaries. The average farm size in the County varies from sub-County to sub-County, for instance the average farm size for small scale farmers in Bondo sub-County is approximately 3.0 Ha while in Siaya sub County is 1.02 Ha. The average farm size for large scale farm stands at approximately 7.0 ha. Due to high cost of processing land transactions and succession charges, there are a lot of informal land subdivisions in the County.

4.5 Infrastructure Aspects
4.5.1 Transport
The County had 283.2 Km of bitumen standard roads, 741.3Km of gravel and 1,161.8 Km of earth roads as at December 2012. The County has witnessed an improvement in the road network with several roads being tarmacked; these include the Rang’ala-Siaya-Bondo road which is 90% complete, Ndori-Owimbi-Luanda Kotieno, and Bondo -Misori –Mituri road, Kisian- Bondo and ngiya- Ndori road. Several roads in the County have also been graveled. There are also three airstrips in the County namely: Gombe, Dominion and Sega. These airstrips are currently not in use so there is need for the county government to rehabilitate them.

The proposed project’s site is located in an area served with good road network; and is well connected to the main roads networks-i.e. 18 Meter Access Road (see plate 1 below). The accessibility of the site will be instrumental during project implementation process and occupation phases.
4.5.2 Water

The distribution of water sources, surface and underground in the County are naturally widely spaced and make people walk long distances to fetch water. The Government interventions were intended to reduce the long distance coverage to about 500m distance. The intervention measures the Ministry of water has put in place so far interns of piped schemes, point water sources like boreholes, shallow wells and spring protection has not met the target. The rural population of the County depends on various types of water sources for their domestic needs. The southern part (Bondo and Rarieda) have less than one water point per 2.5km², while the north and north-eastern parts have a water point density of more than 3 per km².

Streams are the most wide spread type of water points, but occur mainly in north-eastern part of the County. Other sources of water in the County include; wells, boreholes, roof catchment, rivers, Lake Victoria, water holes, dams, ground catchments and piped supplies. A large number of water points cannot be used during the dry season because they are seasonal. There will be need for expansion of water supply systems in addition to desilting the existing dams like Ouya, Anyuoni and Gologolo so as to reduce distance to water source to less than 3 km.

The site is served with water supplied by County Government of Siaya connection point already existing within the site. However, arrangements will need to be made to have a water vendor/the contractor get permission from relevant water resource and users regulators on how to get reliable water on the site to supplement the supply to the site in case of short-fall in the normal supply, during construction phase. The use of roof catchments, to enhance provision of water, shall also be put into consideration. The proponent/contractor shall install standard roof water collection systems for the roof catchments of the proposed buildings blocks. These include gutters, down pipes and suitable water storage tanks for the harvested rainwater. It will greatly help in minimizing pressure on the existing water supply and the proposed borehole.
4.5.3 Sanitation

About 34 per cent of the population is using improved sanitation facilities, the most common being pit latrines with slabs (used in 26 per cent of households). Notably, 16 per cent of the households in Siaya County lack conventional sewer facilities whilst 24 per cent use either public or shared sanitation facilities. Stools of children age 0-2 years are disposed of safely in 71 per cent of cases. Only 5 per cent of the households have both improved drinking water sources and improved sanitation. Whilst 3 per cent of households have designated hand washing places, soap is present in only 1 per cent of the households. Poor sanitation could lead to pollution of the lake.

The proposed project area is served with public sewerage system (trunk sewer). The proponent therefore intends to continue to use trunk sewer. The internal sewer system of the proposed building blocks will be suitably designed to collect all effluent / waste water from offices and rooms (i.e. toilets and other wash rooms) into the sewer line. All sanitary works will be done to the entire satisfaction of County government and Ministry of Health, Public Health office.

Plate 2: Water Point

Plate 3: Sewer Point
4.5.4 Energy

The main sources of lighting in the County include: tin lamps, lantern, electricity, pressure lamps, gas lamps, wood fuel and solar. The main sources of cooking fuel used in the households include firewood constituting 82.5 per cent, charcoal at 13.6 per cent while 1.3 per cent of the households use paraffin. These indicate that the demand for wood fuel is high and continues to rise. This has negatively impacted on the forest cover within the County and there is urgent need for up scaling agro-forestry programmes and also encouraging households to use energy conserving jikos and alternative energy sources especially solar energy. The general area is supplied with electricity from the national grid (see plate 4 below). It will just be connected (by the proponent before the commencement of the proposed project.

Plate 4: Electricity Line

4.6 Social and Economic Environment
4.6.1 Agriculture

Food crops in Siaya County cover a total land area of 150,300 ha while the cash crops occupy 2,500 ha. In 2003-2007, one major project that was considered of significant potential to raise the area under cash crops was the reclamation of the Yala Swamp for rice production by the Dominion Farms limited which reclaimed 450 ha for rice production. The main food crops include; maize, sorghum, millet, beans, cowpeas, cassava, sweet potatoes, groundnuts and finger millets while the main cash crop include cotton, rice, sugar cane and groundnuts. Some of the emerging crops in the County include: irrigated rice, palm oil, chili, passion fruits and grain amaranth. Vegetables produced in the County include: tomatoes, onions and kales while fruits grown in the region are; mangoes, pawpaw, bananas, oranges and watermelon.
4.6.2 Fishing
In Siaya County, the main activities in the fisheries sub-sector are capture fisheries in Lake Victoria, Lake Kanyaboli as well as dams and fisheries aquaculture undertaken in fish ponds. The major fish species from the capture fisheries are Nile Perch, rastreoloda argentea (Omena), hatlochromines (fulu/wiu) and Nile Tilapia while the cultured species are Nile tilapia and the rarely found African Catfish. The capture fisheries resource users land their fish at Fish Landing sites of which there are a total of 81 along the shores of Lake Victoria with the major ones being Luanda Kotieno, Wichlum Uhanya, Usenge, Nango Kamariga and Osindo. On Lake Kanyaboli there are 3 fish landing sites. Some effort has been made to bring the fish landing sites to the quality assurance standard required but a lot of work remains towards this direction. In the year 2012, fish production from the capture fisheries totalled 28,149 metric tonnes while fish farming realized 71.3 metric tonnes.

The fish landings in Siaya County, same to the situation experienced in the other counties riparian to Lake Victoria has been declining over the last ten years while the demand for fish has steadily been increasing. In a bid to bridge the emerging gap between supply and demand for fish, the National government intensified fish production through fisheries aquaculture as from 2009/2010 fiscal year. This resulted in construction of 300 fish ponds for fish farmers in each of the sub-County under the widely publicised Programme.

4.6.3 Livestock
There are several livestock breeds in the County. These include: zebu cattle, up-grade and pure dairy cows, poultry, local goats, sheep, pigs, rabbits, donkeys and bees. Among these zebu cattle forms the largest part of the cattle population approximately 90%. Local sheep and goats are also widely kept by 70% of the farm holds. Nearly 99% of the households also own chicken. The County, therefore, has a great potential for the development of processing industries for both livestock products and byproducts.

4.6.4 Industrial activities
There exist small scale firms that utilize locally available raw materials in their production process. However The County has no major processing and manufacturing industries. These firms include; rice processing, sugar cane juggaries, bakeries and jua-kali industries. However, there is great potential in industrial development in the County due to the availability of raw materials (fish, sand, mangoes, skins and hides, underlying rocks), an educated human resource, availability of land, readily available market, political good-will and other support systems.

4.6.5 Trade and Commerce
The main towns in the County include: Siaya, Bondo and Usenge while the major markets are Ugunja, Ukwala, Yala, Madiany, Sega and Wagai. Most of these towns lack co-ordinated urban planning and solid waste management. Further to this, low compliance due to weak monitoring
systems and weak enforcement of environmental provisions is cited as a cause of environmental degradation in the County. Land being the denominator on which every development takes place, there is competing demand for various uses. High rate of land subdivisions in urban centres is as a result of increasing population. With the increasing demand for housing and other economic activities, Spatial planning framework will guide.

4.6.6 Tourism
The County has only one gazetted game reserve which is Lake Kanyaboli Game Reserve. The settlement patterns within the county coupled with the high population density posses as a major constraint to largescale wildlife conservation. There has been several investment in cultural and heritage centre, hotels, linkages of the County with the western circuit and tours and travel investments. Some of these investments include the Alego Nyang'oma Kogelo Village, a place of international attention because it is the birth place of Barack Obama Senior, the father of the United States' first black President, Barack Obama. The cultural sites in the County include; Olua Sacred Trees, Holy Got Adodi, Bullock of Got Podhe, Rambugu hills, Got Ramogi, Jaramogi Oginga Odinga Mausoleum, Achieng' Oneko Mausoleum, Mageta Island, Odera Akang'o office and cells in Yala and several island lakes along River Yala (Sare, Nyamboyo). There exists 33 beaches and 5 habited islands in the County (Oiyyo, Mageta, Ndeda, Magare and Sihu).

4.7 Environmental Hazards and Disasters Aspects
4.7.1 Flooding and Droughts
Climate change has led to increased amount and intensity of rainfall resulting in frequent flooding as well as frequent dry spells leading to droughts. Moreover, continued loss of fertile soils and siltation of rivers and water ways leading to frequent flooding especially in the lowlands.

4.7.2 Invasive Species
Continued discharge of raw waste and industrial effluent into the Lake Victoria has promoted the growth of water hyacinth that has engulfed the lake. In addition, climate change has led to increased temperature resulting in increased algal blooms in the lake which favour invasive species such as the water hyacinth.
CHAPTER 5: PUBLIC CONSULTATION AND PARTICIPATION

It is a Government policy that beneficiaries and members of the public living within new or improvement project sites (both public and private) are consulted to seek their views and opinions regarding the projects before they are implemented. Consultative Public Participation is therefore an important process in ESIA studies. Through this process, stakeholders and the public have an opportunity to contribute to the overall project design by making recommendations and raising concerns. In addition, the process creates a sense of responsibility, commitment and local ownership for smooth implementation of the project.

Due to the time constraints and the fact that stakeholders/public had been consulted in the original study process, the previous outcomes were adopted for this review process. The consultative meetings had been undertaken in the neighbouring settlement areas of Siaya and where stakeholders and public got an opportunity to contribute to the overall project concept by making recommendations and raising concerns. The process also created a sense of responsibility, commitment and ownership as well as clarifications on critical concerns with the communities.
CHAPTER 6: PROJECT ALTERNATIVES
The followings alternatives were considered during the preliminary planning phases.

6.1 The No Option Alternative
Not going ahead with the project will avoid all the potential environmental and social impacts but deny Siaya Town residents in general the economic growth that would come with the proposed construction of a New High Court. The New building is expected to promote business and also bring judicial services to the local people who have been travelling to neighbouring counties to get these services. The nation would also be deprived of economic development which would come with paying of taxes. The locals will equally be deprived of the many employment opportunities.

6.2 Site Alternatives
This is the only site available for this project. The proposed site is owned by the Client. The proximity of the site is within Siaya town centre. Other alternatives site would mean this project be constructed in another town.

6.3 The No Action Alternative
The No Action Alternative 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. However, the project process has already started and the anticipated insignificant environmental impacts resulting from construction has already been experienced. This option will however, involve several losses both to the project proponent (The Judiciary) and the Kenyan society and Government. The property will remain under-utilized. The No Project Option is the least preferred from the socio-economic and partly environmental perspectives since if the project is not done it will hinder the growth of Siaya county and Kenya Economy at large. The economic benefits especially during construction i.e. provision of jobs for skilled and non-skilled workers will not be realized. Following are other resultant effects

- There will be no improved judicial service delivery
- There will be no generation of income by the developer and the government.
- The government’s development policy may not be realized
- The socio-economic status of Kenyans and the local people would remain unchanged.
- The local skills would remain under utilized
- No employment opportunities will be created for Kenyans who will work in the project area.
- Discouragement for investors to produce this level of standard and affordable developments.
From the analysis above, it becomes apparent that the No Project Alternative is not the appropriate alternative to the local people, Kenyans, and the Government of Kenya.

### 6.4 Analysis of alternative

All the above alternatives were subjected to further scrutiny as shown in table below before the final selection of the appropriate site.

**Table 2: Ranking of Alternatives for the proposed New Siaya High Court**

<table>
<thead>
<tr>
<th>Alternative</th>
<th>Reasons for rejection/accepting</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Project</td>
<td>Current challenges of seeking judicial services in other counties would continue hence affecting county economic development</td>
<td>5</td>
</tr>
<tr>
<td>Site of the current law courts</td>
<td>The current site provides the best option as it would entail minimal additional environmental Impacts.</td>
<td>1</td>
</tr>
<tr>
<td>Construction of the New building</td>
<td>This would cost the proponent less but the status of Siaya High Court would improve</td>
<td>1</td>
</tr>
</tbody>
</table>
CHAPTER 7: IDENTIFICATION OF ENVIRONMENTAL IMPACTS
This section identifies both negative and positive impacts associated with the proposed renovation and extension works. These are identified according to Phases namely: Construction Phase, Operational Phase and Decommissioning Phase.

7.1 Construction Phase
7.1.1 Positive Impacts
7.1.1.1 Creation of Jobs
There will be job opportunities especially to casual workers. Employment opportunities are a benefit both in economic and social sense. In the economic sense it means abundant unskilled labour will be used in economic production. Several workers including casual labourers, masons, carpenters, joiners, electricians and plumbers are expected to work on the site for a period that the project will start to the end. Apart from casual labour, semi-skilled and unskilled labour and formal employees are also expected to obtain gainful employment during the period of construction.

7.1.1.2 Gains in the Local and National Economy
There will be gains in the local and national economy. Through consumption of locally available materials including: concrete tiles, timber, cement, electrical insulation and partitioning materials. The consumption of these materials, fuel oil and others will attract taxes including VAT which will be payable to the government. The cost of the materials will be payable directly to the producers.

7.1.2 Negative Impacts
7.1.2.1 Noise pollution
The construction works will most likely be a noisy operation due to the moving machines (mixers, tippers), incoming vehicles to deliver construction materials, workers to site and other construction related activities. This will be a major source of disturbance since the proposed site borders other institutions.

7.1.2.2 Dust Emissions
Particulate matter pollution is likely to occur during the aggregate mixing, loading and transportation of the raw materials and construction waste. There is a possibility of PM$_{10}$ suspended and settle-able particulates affecting the site workers and even neighbours health.

7.1.2.3 Solid Waste Generation
Some amount of solid waste will be generated during the construction of the project. These wastes will/may include metal cuttings, paper bags, empty cartons, empty paint and solvent containers, broken glass among others. Solid wastes if not well managed have a potential of causing disease outbreaks due to suitable breeding conditions for vectors of diseases.
7.1.2.4 **Increased water demand**
Both the workers and the construction works will create an increased demand for water in addition to the existing demand. Water will be mostly used in the creation of aggregates for construction works and for wetting surfaces for softening or hardening after creating the formworks.

7.1.2.5 **Building materials and energy used**
Several building materials will be required for construction of the building and associated facilities. These will include sand, ballast, hard core, timber, cement, clay tiles, metal sheets, electrical gadgets, steel, plumbing materials, glass and paints among others. Most of these materials will be obtained locally within the surrounding areas. Air pollution from dust generation and vehicular emissions during construction materials deliveries through public access roads adjacent to public offices and commercial areas.

The main sources of energy that will be required for construction of the project will include mains electricity and fossil fuels (especially diesel). Electricity will be used for welding, metal cutting/grinding and provision of light. Diesel will run material transport vehicles and building equipment/machinery.

7.1.2.6 **Workers accidents and hazards during construction**
During construction of the proposed project, it is expected that construction workers are exposed to accidental injuries and hazards as a result of accidental occurrences, handling hazardous waste, lack or neglect of the use of protective wear etc. All necessary health and safety guidelines should be adhered to so as to avoid such circumstances. Workers are also likely to be exposed to diseases from contact with potentially harmful building materials.

7.1.2.7 **Increased Traffic**
During construction phase roads leading to the project site mainly Court Road will serve additional vehicles used for transportation of materials to site. Heavy trucks, when used, will impact on infrastructure through destruction of operational road network especially near project site and turning points. The overall increase in traffic along neighbouring roads mainly Court as a result of the proposed development may be estimated to be around 15 vehicles per day. This will however be insignificant.

7.1.2.8 **Labour influx**
Labour influx at the project site may result to the following:

- Increased pressure on social amenities such as housing and sanitary facilities including sewage, water etc. There could be increased insecurity due to increased population and incomes
- Increased social interactions may happen causing negative social impacts such as spread of communicable diseases e.g. STDs and HIV/AIDS
- An influx could also result into conflict between the locals and the immigrants

During construction the contractor will use both skilled (including Engineer, Foreman, Site agent, Store Keeper) and unskilled workers (casuals). Siaya is characterised by high unemployment rate and from the general assessment of the population characteristics there is sufficient local labour in Siaya. Therefore it is expected all casual workers will be sourced locally. This project will thus create employment opportunities to the local people and hence improvement of living standards.

### 7.1.2.9 HIV/ AIDS

HIV/AIDS has been declared a national disaster. Influx of workers from outside communities and within the community may bring the risk of spreading communicable diseases such as HIV/AIDS to local communities. These effects can be managed by appropriate consultations with local communities throughout project construction and operation as well as informing workers on local cultural sensitivities and health matters.

The contractor should ensure the following:
- No camps should be used that might attract concentration of sex workers.
- The contractor should, as part of each worker’s initial orientation, provide public information, education, and communication about HIV/AIDS prevention measures. Condoms should be made available to project workers at no cost.
- Both workers and communities should be made aware of health implications and preventative measures provided by the Project.

### 7.1.2.10 Social Vices

Construction activities will attract an influx of people to the project area. This may lead to social vices like drug abuse, spread of diseases like HIV and may pose security concerns. Sensitization and awareness creation need to be done.

### 7.2 Operation Phase

#### 7.2.1 Positive Impacts

##### 7.2.1.1 Employment Generation

Employment opportunities are one of the long-term major impacts of the project after construction and during the operation and maintenance of the proposed project. These will involve security personnel, solid waste management staff, persons employed within the proposed project and direct service provision to the house keeping sector.
7.2.1.2 Increase in Revenue
There will be positive gain for the revenue system arising from the operations of the establishment in the proposed project and this includes the rent the proposed business will pay.

7.2.1.3 Optimal use of Land
The proposed site is currently abandoned and the infrastructure dilapidated. Construction of the proposed project will ensure optimal use of land to the great benefit of the country and its people.

7.2.2 Negative Impacts
7.2.2.1 Electricity Consumption
The Judiciary Offices shall consume large amount of electricity due to the nature of operation of the facility being proposed and the activities that will take place once the project is complete. Since electric energy in Kenya is generated mainly through natural resources, namely water and geothermal resources, increased use of electricity have adverse impacts on these natural resources base and their sustainability.

7.2.2.2 Increased water demand
Once the building is occupied, tenants will create an increased demand for water in addition to the existing demand. Water will be mostly used for tasks such as washing, cleaning, drinking and for sanitary facilities.

7.2.2.3 Household solid waste
The tenants of the building are expected to generate a substantial amount of solid waste which may mainly be in the form of paper, plastics, cartons, etc which if not appropriately disposed may have a detrimental effect on the environment.

7.2.2.4 Increased runoffs
The proposed project will create roofs and impervious/paved areas with high runoff coefficients during precipitation events. Run offs may cause adverse impacts when the area is poorly drained. Poor drainage causes dampness to building structures as well as water stagnation resulting to breeding grounds for malaria and other diseases.

7.2.2.5 Effluent Discharge
Effluent is another challenge. Developers construct without planning on how effluent will be disposed appropriately; hence waste water (raw sewage) is either channelled to a river, or disposed carelessly. Lack of maintaining a sewer line leads to either blockage or leakage of pipes. Areas not served with a sewer line use septic tanks which also poses other risks. Some are poorly constructed, inadequate capacity, use of low quality building materials which leads to leakage of sewage to the underground water hence posing a dangerous health risk to the living
organism including man. The proposed project area is not served with a sewer line hence the proponents have proposed to install septic tanks to contain effluent.

7.3 Decommissioning phase
7.3.1 Negative Impacts
7.3.1.1 Noise and vibration
The demolition works will lead to significant deterioration of the acoustic environment within the project site and the surrounding areas. This will be as a result of the noise and vibration that will be experienced as a result of demolishing the proposed project.

7.3.1.2 Solid waste generation
Demolition of the building and related infrastructure will result in large quantities of solid waste.

7.3.1.3 Dust
Large quantities of dust will be generated during demolition works. This will affect demolition staff as well as the neighbouring tenants.

7.3.2 Positive impacts
7.3.2.1 Rehabilitation
Upon decommissioning of the proposed project, rehabilitation of the project site will be carried out to restore the site to its original status or to a better state than it was originally. This will include replacement of topsoil and re-vegetation which will lead to improved visual quality of the area.

7.3.2.2 Employment Opportunities
For demolition to take place properly and in good time, several people will be involved. As a result, several employment opportunities will be created for the demolition staff during the demolition phase of the proposed project.
CHAPTER 8: IMPACT MITIGATION AND MONITORING

This section highlights the mitigation measures for the expected negative impacts of the proposed project. The potential impacts and the possible mitigation measures have herein been analyzed under two categories: Construction and Operational.

8.1 Construction related impacts

8.1.1 Management of construction waste

It is recommended that construction waste be recycled or reused to ensure that materials that would otherwise be disposed of 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 of. In addition, damaged or wasted construction materials will be recovered for refurbishing and use in other projects.

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:

i. 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.

ii. Provision of facilities for proper handling and storage of construction materials to reduce the amount of waste caused by damage or exposure to the elements.

iii. Use of building materials that have minimal packaging to avoid the generation of excessive packaging waste

8.1.2 Minimization of noise and vibrations pollution

The Contractor of the proposed Project shall put in place several measures that will mitigate noise and vibration pollution arising during the construction phase. The proponent shall ensure that he complies with all relevant requirements in the Environmental Management and Coordination (Noise and Excessive Vibration Pollution) (Control) Regulations, 2009.

8.1.3 Minimization of air pollution

Controlling dust during construction is useful in minimizing nuisance conditions and consequently health (respiratory and eye) complications. It is recommended that a standard set of feasible dust control measures be implemented for all construction activities. Emissions of other contaminants (Nitrogen oxides, Carbon dioxide, Sulphur oxides, and diesel related Particulate Matter PM$_{10}$) that would occur in the exhaust from heavy equipment are also included.

Dust emissions will be controlled by the following measures:
• Provide effective dust screens that shall be used on scaffolding erected around the perimeter of a buildings under construction
• Cover all trucks hauling soil, sand and other loose materials or require all trucks to maintain at least two feet of freeboard;
• Down wash of trucks (especially tyres) prior to departure from site;

8.1.4 Minimization of water use
Water at the site is supplied the County government. A combination of water saving appliances and water management measures can be planned in the proposed Project. The contractor shall ensure that water is used efficiently at the site by sensitizing construction staff to avoid irresponsible water usage.

8.1.5 Efficient sourcing and use of raw materials
The Proponent will source building 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 Proponent will only order for what will be required through accurate budgeting and estimation of actual construction requirements. Material delivery trucks shall be well maintained for low noise while traversing the residential areas,

8.1.6 Minimization of worker accidents and hazards
Necessary health and safety rules shall be enforced by the site clerk of works/foreman to ensure that all staff members adhere to these standards and are thus safe. Adequate collection and storage of waste on site and safe transportation to the disposal sites and disposal methods at designated area shall be provided. In addition, covers for refuse containers and appropriate personal protective equipment to be used by workers shall also be provided by the proponent.

8.1.7 Labour influx and socio issues
• Enhance safety and security screening at the entry points of the project site
• Contractor shall ensure observance of safety precautions at all times at their respective work areas
• Contractor shall enhance awareness on HIV/AIDS and other social infections to the workers and community in general,
• Enhance public utilities around the site including waste management, sanitation, foot path pavement, provide a public refreshment area, etc.
8.2 Operation Phase Impacts

8.2.1 Ensure efficient energy consumption
The proponent shall plan and install an energy-efficient lighting system at the building. This will contribute immensely to energy conservation during the operational phase of the project. In addition, occupants of the building will be sensitized to ensure energy efficiency in their operations. To complement these measures, it will be important to monitor energy use and set targets for efficient energy use.

8.2.2 Ensure efficient water use
The proponent shall conserve water by:
- Installing water-conserving push taps and toilets
- Install water efficient plumbing.
- Fixing any water leaks through damaged pipes and faulty taps promptly by qualified staff
- Sensitize tenants to use water efficiently.

8.2.3 Ensuring efficient solid waste management
The proponent will be responsible for efficient management of solid waste generated by the project during its operation. In this regard, the proponent will provide waste handling facilities such as waste bins and skips for temporarily holding waste generated at the premises. In addition, the proponent will ensure that they are disposed of regularly and appropriately. It is recommended that the proponent puts in place measures to ensure that the occupants of the building manage their waste efficiently through recycling, reuse and proper disposal procedures. The waste that will have to be disposed, will be done through a NEMA licensed garbage handler in accordance with the waste regulation, 2006.

8.2.4 Management of runoff
Good drainage system is used to prevent land near human settlement from becoming saturated with water which collects or accumulate/flood after a downfall or from other sources. The design of the drainage system should ensure that surface flow is drained suitably into the public drains provided to control flooding within the site. Drainage channels should be covered by approved materials to prevent occurrence of accidents and entry of dirt that would compromise flow of run-off. Additionally, the channels should ensure safe disposal of run-off/surface water and should be self-cleaning. Re-vegetation of the compound after construction should be done to reduce the impact of run-off water. Paving of the side walkways, driveways and other open area should be done using pervious materials to encourage recharge and thus reducing water run-off volume.

It is recommended that the client installs roof rainwater catchment and storage facilities for irrigation of lawns and flowers.
8.3 Decommissioning Phase Impacts

8.3.1 Efficient solid waste management
Solid waste resulting from demolition or dismantling works will be managed as described in Section 8.1.1.

8.3.2 Minimization of noise and vibration
Significant impacts on the acoustic environment will be mitigated as described in Section 8.1.2.

8.3.3 Reduction of dust concentration
High levels of dust concentration resulting from demolition or dismantling works will be minimized as described in Section 8.1.3.

8.3.4 Minimization of worker accidents and hazards
Demolition works will inevitably expose workers and the public to occupational health and public safety risks: in particular, working with heavy equipment, handling and use of tools engender certain risks. This will be minimized as described in Section 8.1.6.
CHAPTER 9: ENVIRONMENTAL MANAGEMENT PLAN

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

An environmental management/monitoring plan has been developed to assist the proponent in mitigating and managing environmental impacts associated with the life cycle of the project. It is noteworthy that key factors and processes may change through the life of the project and considerable provisions have been made for dynamism and flexibility of the EMP. As such, the EMP will be subject to a regular regime of periodic review.

Environmental Management Plan (EMP) for development projects provides a logical framework within which identified negative environmental impacts can be mitigated and monitored. EMP is a vital output of an EIA as it provides a checklist for project monitoring and evaluation. The EMP outlined in Tables 3, 4 and 5 has addressed the identified potential negative impacts and mitigation measures of the proposed project during construction, operational and decommissioning phases, based on the Chapters of Environmental Impacts and Mitigation Measures of the expected Negative Impacts.
Table 3: Environmental Management Plan for the Construction Phase of the Proposed Project

<table>
<thead>
<tr>
<th>Expected Negative Impacts</th>
<th>Recommended Mitigation Measures</th>
<th>Responsible Party</th>
<th>Time Frame</th>
<th>Cost (Ksh)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Minimize extraction site impacts and ensure efficient use of raw materials in construction</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High demand of raw material</td>
<td>Source building materials from local suppliers who use environmentally friendly processes in their operations.</td>
<td>Project Manager &amp; Contractor</td>
<td>Throughout construction period</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Ensure accurate budgeting and estimation of actual construction material requirements to ensure that the least amount of material necessary is ordered.</td>
<td>Project Manager &amp; Contractor</td>
<td>Throughout construction period</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Ensure that damage or loss of materials at the construction site is kept minimal through proper storage.</td>
<td>Project Manager &amp; Contractor</td>
<td>Throughout construction period</td>
<td>0</td>
</tr>
<tr>
<td>2. Minimize solid waste generation and ensure efficient solid waste management during construction</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Through accurate estimation of the sizes and quantities of materials required, order materials in the sizes and quantities that will be needed</td>
<td>Project Manager &amp; Contractor</td>
<td>One-off</td>
<td>0</td>
</tr>
</tbody>
</table>
### Expected Negative Impacts

<table>
<thead>
<tr>
<th>Recommended Mitigation Measures</th>
<th>Responsible Party</th>
<th>Time Frame</th>
<th>Cost (Ksh)</th>
</tr>
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<tbody>
<tr>
<td>Ensure that construction materials left over at the end of construction will be used in other projects rather than being disposed of.</td>
<td>Project Manager &amp; Contractor</td>
<td>One-off</td>
<td>0</td>
</tr>
<tr>
<td>Ensure that damaged or wasted construction materials will be recovered for refurbishing and use in other projects</td>
<td>Project Manager &amp; Contractor</td>
<td>One-off</td>
<td>-</td>
</tr>
<tr>
<td>Use of durable, long-lasting materials hence reducing the amount of construction waste generated over time by replacement</td>
<td>Project Manager &amp; Contractor</td>
<td>Throughout construction period</td>
<td>0</td>
</tr>
<tr>
<td>Provide facilities for proper handling and storage of construction materials to reduce the amount of waste caused by damage or exposure to the elements</td>
<td>Project Manager &amp; Contractor</td>
<td>One-off</td>
<td>0</td>
</tr>
<tr>
<td>Use building materials that have minimal or no packaging to avoid the generation of excessive packaging waste</td>
<td>Project Manager &amp; Contractor</td>
<td>Throughout construction period</td>
<td>0</td>
</tr>
</tbody>
</table>

### 3. Minimization of Noise and Vibration

<table>
<thead>
<tr>
<th>Noise and vibration</th>
<th>Comply with maximum permissible noise levels for constructions sites as per Second Schedule of the Environmental Management and Coordination (Noise and Excessive Vibration Pollution) (Control) Regulations, 2009</th>
<th>Project Manager &amp; Contractor</th>
<th>Throughout construction period</th>
<th>0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apply for a License from NEMA whereby maximum permissible noise levels are to be exceeded</td>
<td>Project Manager &amp; Contractor</td>
<td>Throughout construction period</td>
<td>5,000</td>
<td>5,000</td>
</tr>
</tbody>
</table>
### Expected Negative Impacts

<table>
<thead>
<tr>
<th>Expected Negative Impacts</th>
<th>Recommended Mitigation Measures</th>
<th>Responsible Party</th>
<th>Time Frame</th>
<th>Cost (Ksh)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Priority shall be given to the use of equipment designed with noise control elements</td>
<td>Project Manager &amp; Contractor</td>
<td>Throughout construction period</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Construction vehicles and machinery are to be switched off engines of vehicles or machinery not being used.</td>
<td>Project Manager &amp; Contractor</td>
<td>Throughout construction period</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

#### 4. Reduce dust emissions

<table>
<thead>
<tr>
<th>Dust emission</th>
<th>Recommended Mitigation Measures</th>
<th>Responsible Party</th>
<th>Time Frame</th>
<th>Cost (Ksh)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provide 2.4 m high hoarding along site boundary</td>
<td>Project Manager &amp; Contractor</td>
<td>Throughout construction period</td>
<td>20,000</td>
<td></td>
</tr>
<tr>
<td>Provide effective dust screens that shall be used on scaffolding erected around the perimeter of the building under construction</td>
<td>Project Manager &amp; Contractor</td>
<td>Throughout construction of building envelope</td>
<td>50,000</td>
<td></td>
</tr>
<tr>
<td>Water all active construction areas when necessary;</td>
<td>Project Manager &amp; Contractor</td>
<td>Throughout construction period</td>
<td>20,000</td>
<td></td>
</tr>
<tr>
<td>Cover all trucks hauling soil, sand and other loose materials or require all trucks to maintain at least two feet of freeboard;</td>
<td>Project Manager &amp; Contractor</td>
<td>Throughout construction period</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Personal Protective equipment to be worn</td>
<td>Project Manager</td>
<td>Throughout construction period</td>
<td>30,000</td>
<td></td>
</tr>
</tbody>
</table>

#### 5. Minimization of energy consumption

<table>
<thead>
<tr>
<th>Increased energy consumption</th>
<th>Recommended Mitigation Measures</th>
<th>Responsible Party</th>
<th>Time Frame</th>
<th>Cost (Ksh)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ensure electrical equipment, appliances and lights are switched off when not being used</td>
<td>Project Manager &amp; Contractor</td>
<td>Throughout construction period</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Expected Negative Impacts</td>
<td>Recommended Mitigation Measures</td>
<td>Responsible Party</td>
<td>Time Frame</td>
<td>Cost (Ksh)</td>
</tr>
<tr>
<td>---------------------------</td>
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<td>---------------------------</td>
<td>-------------------------------------</td>
<td>------------</td>
</tr>
<tr>
<td></td>
<td>Install energy saving fluorescent tubes at all lighting points instead of bulbs which consume higher electric energy</td>
<td>Project Manager &amp; Contractor</td>
<td>Throughout construction period</td>
<td>5,000</td>
</tr>
</tbody>
</table>

6 Minimize water consumption and ensure more efficient and safe water use

<table>
<thead>
<tr>
<th>High water demand</th>
<th>Recommended Mitigation Measures</th>
<th>Responsible Party</th>
<th>Time Frame</th>
<th>Cost (Ksh)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Promptly detect and repair of water pipe and tank leaks</td>
<td>Proponent</td>
<td>Continuous</td>
<td>2,000/month</td>
</tr>
<tr>
<td></td>
<td>Sensitize construction workers on water conservation measures</td>
<td>Proponent</td>
<td>Continuous</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ensure taps are not running when not in use</td>
<td>Proponent</td>
<td>Continuous</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Install water conserving taps that turn-off automatically when water is not being used</td>
<td>Proponent</td>
<td>One-off</td>
<td>10-40 % higher than ordinary</td>
</tr>
<tr>
<td></td>
<td>Install a discharge meter at water outlets to determine and monitor total water usage</td>
<td>Proponent</td>
<td>One-off</td>
<td>5000</td>
</tr>
</tbody>
</table>

7. Minimize occupational health and safety risks

<table>
<thead>
<tr>
<th>Approval of building plans</th>
<th>Recommended Mitigation Measures</th>
<th>Responsible Party</th>
<th>Time Frame</th>
<th>Cost (Ksh)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Ensure that all building plans are approved by the Local Authority and the Local Occupational Health and Safety Office</td>
<td>Developer</td>
<td>One-off</td>
<td>-</td>
</tr>
<tr>
<td>Health and safety committee</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>Project Manager</td>
<td>One-off</td>
<td>25,000</td>
</tr>
<tr>
<td>Expected Negative Impacts</td>
<td>Recommended Mitigation Measures</td>
<td>Responsible Party</td>
<td>Time Frame</td>
<td>Cost (Ksh)</td>
</tr>
<tr>
<td>--------------------------</td>
<td>----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>------------------------------------------</td>
<td>------------</td>
<td>-----------</td>
</tr>
<tr>
<td>Sanitary conveniences</td>
<td>Suitable, efficient, clean, well-lit and adequate sanitary conveniences should be provided for construction workers</td>
<td>Project Manager</td>
<td>One-off</td>
<td>-</td>
</tr>
<tr>
<td>Machinery/equipment safety</td>
<td>Ensure machinery, equipment, PPE, appliances &amp; hand tools used in construction comply with the prescribed safety &amp; health standards &amp; are appropriately installed &amp; maintained &amp; safeguarded</td>
<td>Project Manager, Developer &amp; Contractor</td>
<td>One-off</td>
<td>20,000</td>
</tr>
<tr>
<td></td>
<td>Ensure that equipment and work tasks are adapted to fit workers &amp; their ability including protection against mental strain</td>
<td>Project Manager, Developer &amp; Contractor</td>
<td>Continuous</td>
<td>0</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>Project Manager</td>
<td>One-off</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Arrangements must be in place to train and supervise inexperienced workers regarding construction machinery use &amp; procedures/operations</td>
<td>Project Manager</td>
<td>Continuous</td>
<td>5,000 per training</td>
</tr>
<tr>
<td></td>
<td>Equipment such as fire extinguishers must be examined by a licensed authority &amp; reports of examinations presented in prescribed forms, signed by the examiner &amp; attached to the general register</td>
<td>Project Manager</td>
<td>Continuous</td>
<td>5,000 per examination</td>
</tr>
<tr>
<td>Storage of materials</td>
<td>Ensure that materials are stored or stacked in such manner as to ensure their stability and prevent any fall or collapse</td>
<td>Project Manager</td>
<td>Continuous</td>
<td>35,000</td>
</tr>
<tr>
<td>Expected Negative Impacts</td>
<td>Recommended Mitigation Measures</td>
<td>Responsible Party</td>
<td>Time Frame</td>
<td>Cost (Ksh)</td>
</tr>
<tr>
<td>--------------------------</td>
<td>-------------------------------------------------------------------------------------------------</td>
<td>---------------------------------</td>
<td>--------------</td>
<td>------------</td>
</tr>
<tr>
<td>Safe means of access and safe place of employment</td>
<td>Ensure that items are not stored/stacked against weak walls and partitions</td>
<td>Project Manager</td>
<td>Continuous</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>All floors, steps, stairs and passages must be of sound construction and properly maintained</td>
<td>Project Manager &amp; Contractor</td>
<td>Continuous</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Securely fence or cover all openings in floors</td>
<td>Project Manager &amp; Contractor</td>
<td>One-off</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Provide all staircases with suitable handrails</td>
<td>Project Manager &amp; Contractor</td>
<td>One-off</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Ensure that construction workers are not enclosed such that they would not escape in case of an emergency</td>
<td>Project Manager &amp; Contractor</td>
<td>Continuous</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>All ladders used in construction works must be of good construction and sound material of adequate strength and be properly maintained</td>
<td>Project Manager &amp; Contractor</td>
<td>One-off</td>
<td>10,000</td>
</tr>
<tr>
<td>Emergency preparedness and evacuation procedures</td>
<td>Design suitable documented emergency preparedness and evacuation procedures to be used during any emergency</td>
<td>Project Manager &amp; Contractor</td>
<td>One-off</td>
<td>65,000</td>
</tr>
<tr>
<td></td>
<td>Such procedures must be tested at regular intervals</td>
<td>Project Manager &amp; Contractor</td>
<td>Every 3 months</td>
<td>25,000</td>
</tr>
<tr>
<td></td>
<td>Ensure that adequate provisions are in place to immediately stop any operations where there in an imminent and serious danger to health and safety and to evacuate workers</td>
<td>Project Manager &amp; Contractor</td>
<td>One-off</td>
<td>10,000</td>
</tr>
<tr>
<td>Expected Negative Impacts</td>
<td>Recommended Mitigation Measures</td>
<td>Responsible Party</td>
<td>Time Frame</td>
<td>Cost (Ksh)</td>
</tr>
<tr>
<td>--------------------------</td>
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<td>------------</td>
<td>------------</td>
</tr>
<tr>
<td></td>
<td>Ensure that the most current emergency telephone numbers are prominently &amp; strategically displayed within construction site</td>
<td>Project Manager &amp; Contractor</td>
<td>One-off</td>
<td>10,000</td>
</tr>
<tr>
<td></td>
<td>Provide measures to deal with emergencies &amp; accidents</td>
<td>Project Manager &amp; Contractor</td>
<td>Continuous</td>
<td>20,000</td>
</tr>
<tr>
<td>First aid</td>
<td>Well stocked first aid kit which is easily available &amp; accessible should be provided</td>
<td>Proponent &amp; Contractor</td>
<td>One-off</td>
<td>15,000</td>
</tr>
<tr>
<td></td>
<td>Provision must be made for certified first aid personnel</td>
<td>Proponent &amp; Contractor</td>
<td>One-off</td>
<td>15,000</td>
</tr>
<tr>
<td>Fire protection</td>
<td>Firefighting equipment such as fire extinguishers should be provided at strategic locations</td>
<td>Proponent &amp; Contractor</td>
<td>One-off</td>
<td>15,000</td>
</tr>
<tr>
<td></td>
<td>Regular inspection &amp; servicing of the equipment must be undertaken by reputable service provider &amp; proper records maintained</td>
<td>Proponent &amp; Contractor</td>
<td>Every 3 months</td>
<td>10,000</td>
</tr>
<tr>
<td></td>
<td>Signs such as “NO SMOKING” must be prominently displayed especially in parts where inflammable materials are stored</td>
<td>Proponent &amp; Contractor</td>
<td>One-off</td>
<td>10,000</td>
</tr>
<tr>
<td>Electrical Safety</td>
<td>Circuits must not be overloaded</td>
<td></td>
<td>Continuous</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Distribution board switches must be clearly marked to indicate respective circuits</td>
<td>Project Manager &amp; Contractor</td>
<td>One-off</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>There should be no live exposed connections</td>
<td></td>
<td>Continuous</td>
<td>-</td>
</tr>
<tr>
<td>Expected Negative Impacts</td>
<td>Recommended Mitigation Measures</td>
<td>Responsible Party</td>
<td>Time Frame</td>
<td>Cost (Ksh)</td>
</tr>
<tr>
<td>--------------------------</td>
<td>-----------------------------------------------------------------------------------------------</td>
<td>------------------------------</td>
<td>------------</td>
<td>------------</td>
</tr>
<tr>
<td>Expected Negative Impacts</td>
<td>Recommended Mitigation Measures</td>
<td>Responsible Party</td>
<td>Time Frame</td>
<td>Cost (Ksh)</td>
</tr>
<tr>
<td>ESIA and ESM</td>
<td>Electrical fittings near all potential sources of ignition should be flame proof</td>
<td>One-off</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>All electrical equipment must be earthed</td>
<td>One-off</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Supply of clean drinking water</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>Project Manager &amp; Contractor</td>
<td>One-off</td>
<td></td>
</tr>
<tr>
<td>HIV / AIDS</td>
<td>The contractor should provide public education information about HIV/AIDS and other related diseases prevention measures.</td>
<td>Project Manager &amp; Contractor</td>
<td>Continuous</td>
<td>30,000</td>
</tr>
<tr>
<td></td>
<td>Condoms should be made available to project workers at no cost.</td>
<td>Project Manager &amp; Contractor</td>
<td>Continuous</td>
<td></td>
</tr>
<tr>
<td>Labor influx</td>
<td>Encourage use of local labour especially for unskilled work</td>
<td>Project Manager &amp; Contractor</td>
<td>Continuous</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Enhance safety and security screening at the entry points of the project site</td>
<td>Project Manager &amp; Contractor</td>
<td>Continuous</td>
<td></td>
</tr>
<tr>
<td>Gender Imbalance</td>
<td>Encourage employment of women in the labor force and this should be monitored frequently</td>
<td>Project Manager &amp; Contractor</td>
<td>Continuous</td>
<td></td>
</tr>
</tbody>
</table>
### 9.2 Operational Phase EMP

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 of proposed Project are outlined in Table 4.

**Table 4: Environmental Management Plan for the Operational Phase of the Proposed Project**

<table>
<thead>
<tr>
<th>Expected Negative Impact</th>
<th>Recommended Mitigation Measures</th>
<th>Responsible Party</th>
<th>Time Frame</th>
<th>Cost (Ksh)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. Minimization of solid waste generation and ensuring more efficient solid waste management</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Solid waste generation</td>
<td>Provide solid waste handling facilities e.g. waste bins, skips &amp; dustbin cubicles</td>
<td>Proponent/ Property manager</td>
<td>One-off</td>
<td>25,000</td>
</tr>
<tr>
<td></td>
<td>Ensure that solid waste generated at the site is regularly disposed of appropriately at authorized dumping sites by a NEMA licensed garbage collector</td>
<td>Proponent/ Property manager</td>
<td>Continuous</td>
<td>2,000/month</td>
</tr>
<tr>
<td></td>
<td>Ensure that occupants manage their waste efficiently through recycling, reuse and proper disposal procedures.</td>
<td>Proponent/ Property manager</td>
<td>Continuous</td>
<td>_</td>
</tr>
<tr>
<td><strong>2. Minimize energy consumption</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Excess energy resource utilization</td>
<td>Sensitize occupants to switch off electrical equipment, appliances and lights when not being used</td>
<td>Proponent/ Property manager</td>
<td>Continuous</td>
<td>_</td>
</tr>
<tr>
<td></td>
<td>Install occupation sensor lighting at various locations such as storage areas which are not in use all the time</td>
<td>Proponent/ Property manager</td>
<td>One-off</td>
<td>_</td>
</tr>
<tr>
<td>Expected Negative Impact</td>
<td>Recommended Mitigation Measures</td>
<td>Responsible Party</td>
<td>Time Frame</td>
<td>Cost (Ksh)</td>
</tr>
<tr>
<td>--------------------------</td>
<td>--------------------------------</td>
<td>-------------------</td>
<td>------------</td>
<td>-----------</td>
</tr>
<tr>
<td></td>
<td>Install energy saving fluorescent tubes/ energy saving lights at all lighting points within the buildings</td>
<td>Proponent/ Property manager</td>
<td>One-off</td>
<td>10-40 % higher than ordinary lighting</td>
</tr>
<tr>
<td></td>
<td>Monitor energy use during the operation of the project and set targets for efficient energy use</td>
<td>Proponent/ Property manager</td>
<td>Continuous</td>
<td>500,000</td>
</tr>
<tr>
<td></td>
<td>Installation of Solar lighting / backup system</td>
<td>Proponent/ Property manager</td>
<td>Continuous</td>
<td>500,000</td>
</tr>
</tbody>
</table>

3. Minimize water consumption and ensure more efficient and safe water use

<p>| Water consumption | Promptly detect and repair water pipe and tank leaks | Proponent/ Property manager | Continuous | 40,000/month |
|                  | Encourage tenants to conserve water | Proponent/ Property manager | Continuous | 10,000/month |
|                  | Ensure taps are not running when not in use | Proponent/ Property manager | Continuous | 20,000/month |
|                  | Install water conserving taps that turn-off automatically when water is not being used | Proponent/ Property manager | One-off | 10-40 % higher than ordinary |
|                  | Install a discharge meter at water outlets to determine and monitor total water usage | Proponent/ Property manager | One-off | 50,000 |
|                  | Rain Water harvesting and storage facilities | Proponent/ Property manager | One-off | 20,000 |
|                  | Empty septic tanks as necessary using a NEMA licenced exhausting company | As required | One-off | 20,000 |</p>
<table>
<thead>
<tr>
<th>Expected Negative impact</th>
<th>Recommended Mitigation Measures</th>
<th>Responsible Party</th>
<th>Time Frame</th>
<th>Cost (Ksh)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4. First aid</td>
<td>Well stocked first aid kit which is easily available and accessible should be provided within the premises</td>
<td>Proponent/ Property manager</td>
<td>One-off</td>
<td>15,000</td>
</tr>
<tr>
<td>5. Fire protection</td>
<td>Fire protection&lt;br&gt;Firefighting equipment such as fire extinguishers, smoke detectors, should be provided at strategic locations such as each floors lobby, corridors&lt;br&gt;Regular inspection and servicing of the equipment must be undertaken by a reputable service provider and records of such inspections maintained&lt;br&gt;Provide emergency lighting on emergency staircase&lt;br&gt;Signs such as “NO SMOKING” must be prominently displayed within the buildings where applicable</td>
<td>Proponent/ Property manager&lt;br&gt;Proponent/ Property manager&lt;br&gt;Proponent/ Property manager&lt;br&gt;Proponent/ Property manager</td>
<td>One-off&lt;br&gt;Every 3 months&lt;br&gt;One-off&lt;br&gt;One-off</td>
<td>50,000&lt;br&gt;10,000&lt;br&gt;10,000&lt;br&gt;</td>
</tr>
<tr>
<td>Expected Negative impact</td>
<td>Recommended Mitigation Measures</td>
<td>Responsible Party</td>
<td>Time Frame</td>
<td>Cost (Ksh)</td>
</tr>
<tr>
<td>--------------------------</td>
<td>-------------------------------------------------------------------------------------------------</td>
<td>------------------------------</td>
<td>-------------</td>
<td>------------</td>
</tr>
<tr>
<td>7. Electrical Safety</td>
<td>Circuits must not be overloaded</td>
<td>Proponent/ Property manager</td>
<td>Continuous</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Distribution board switches must be clearly marked to indicate respective circuits</td>
<td></td>
<td>One-off</td>
<td></td>
</tr>
<tr>
<td></td>
<td>There should be no live exposed connections</td>
<td>Proponent/ Property manager</td>
<td>Continuous</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Electrical fittings near all potential sources of ignition should be flame proof</td>
<td>Proponent/ Property manager</td>
<td>One-off</td>
<td></td>
</tr>
<tr>
<td>8. Insecurity</td>
<td>Ensure the general safety and security at all times by providing day and night security guards and adequate lighting within and around the premises.</td>
<td>Security Officer &amp; Police</td>
<td>Continuous</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Body-search the workers on entry, to avoid getting weapons on site, and leaving site to ensure nothing is stolen.</td>
<td>Security Officer</td>
<td>Continuous</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ensure only authorized personnel get to the premises</td>
<td>Security Officer</td>
<td>Continuous</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Security alarms will be installed</td>
<td>Security Officer</td>
<td>Continuous</td>
<td></td>
</tr>
<tr>
<td>9. Minimization of health and safety impacts</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Expected Negative Impact</td>
<td>Recommended Mitigation Measures</td>
<td>Responsible Party</td>
<td>Time Frame</td>
<td>Cost (Ksh)</td>
</tr>
<tr>
<td>--------------------------</td>
<td>--------------------------------------------------------------------------------------------------</td>
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</tr>
<tr>
<td>Implement all necessary measures to ensure health and safety of the workers and the general public during operation of the project as stipulated in Occupational Health and Safety Act, 2007</td>
<td>Proponent/ Property manager</td>
<td>Continuous</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

11. Environmental monitoring of the project

An Initial Environmental Audit will be conducted in the first year of operation/occupation to confirm the efficacy and adequacy of the EMP and to propose a comprehensive operational Phase EMP in harmony with the buildings custom fittings. Thereafter, annual self-audits should be done and submitted to NEMA.

<table>
<thead>
<tr>
<th>Expected Negative Impact</th>
<th>Recommended Mitigation Measures</th>
<th>Responsible Party</th>
<th>Time Frame</th>
<th>Cost (Ksh)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decommissioning Phase</td>
<td>In addition to the mitigation measures provided in Tables 3 and 4, it is necessary to outline some basic mitigation measures that will be required to be undertaken once all operational activities of the proposed 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 proposed project are outlined in Table 5.</td>
<td>Proponent, Firm of Experts and NEMA</td>
<td>Annually</td>
<td>-</td>
</tr>
<tr>
<td>Expected Negative Impacts</td>
<td>Recommended Mitigation Measures</td>
<td>Responsible Party</td>
<td>Time Frame</td>
<td>Cost (Ksh)</td>
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<tr>
<td></td>
<td>All buildings, machinery, equipment, structures and partitions that will not be used for other purposes must be removed and recycled/reused as far as possible</td>
<td>Project Manager &amp; Contractor</td>
<td>One-off</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>All foundations must be removed and recycled, reused or disposed of at a licensed disposal site</td>
<td>Project Manager &amp; Contractor</td>
<td>One-off</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Where recycling/reuse of the machinery, equipment, implements, structures, partitions and other demolition waste is not possible, the materials should be taken to a licensed waste disposal site</td>
<td>Project Manager &amp; Contractor</td>
<td>One-off</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Donate reusable demolition waste to charitable organizations, individuals and institutions</td>
<td>Project Manager &amp; Contractor</td>
<td>One-off</td>
<td>0</td>
</tr>
</tbody>
</table>
CHAPTER TEN: ENVIRONMENT, HEALTH AND SAFETY (EHS)

10.1 EHS Management and Administration

The EHS is a broader and holistic aspect of protecting the worker, the workplace, the tools / equipments and the biotic environment. It is an essential tool in determining the EIA study. The objective of the EHS on the proposed project is to develop rules that will regulate environmentally instigated diseases and occupational safety measures during construction and the operation phases of the proposed project by:

- Avoidance of injuries
- Provision of safe and healthy working environment for workers comfort so as to enhance maximum output.
- Control of losses and damages to plants, machines, equipment and other products.
- Enhance environmental sustainability through developing sound conservation measures.

10.2 Policy, Administrative and Legislative Framework

It is the primary responsibility of the contractor to promote a safe and healthy environment at the workplace and within the neighbourhood in which the proposed project will be constructed by implementing effective systems to prevent occupational diseases and ill-health, and to prevent damage to property. The EHS Management Plan when completed will be used as a tool and a checklist by the contracted engineers in planning and development of the construction of this project.

10.3 Organization and implementation of the EHS Management Plan

The contactor shall use the EHS plan at the proposed project site both during construction and operation. The engineer will use it during construction phase with the assistance of an EHS consultant who shall enforce its provision throughout the life of the project.

10.4 The Guiding Principles to be adopted by the contractor

The company will be guided by the following principle:

- It will be a conscious organization committed to the promotion and maintenance of high standards of health and safety for its employees, the neighbouring population and the public at large.
- Ensuring that EHS activities are implemented to protect the environment and prevent pollution.
- Management shall demonstrate commitment and exercise constant vigilance in order to provide employees, neighbours of the project and the environment, with the greatest safeguards relating to EHS.
- Employees will be expected to take personal responsibility for their safety, safety of colleagues and of the general public as it relates to the EHS management plan.
10.5 EHS management strategy to be adopted by the contractor

The following strategies will be adopted to achieve the above objectives:

- Create an Environment Health and Safety Management committee and incorporate EHS as an effective structure at various levels and units to manage and oversee EHS programs in all construction and operation phases of the project.
- Maintain an effective reporting procedure for all accidents.
- Provide appropriate tools and protective devices for the success of the project.
- Encourage, motivate, reward and support employees to take personal initiatives and commitment on EHS.

10.6 Safety Agenda for both the proponent and contractor

There will be a permanent EHS agenda during construction.

a) Contractors

The EHS management plan code of practice shall be applicable to the contractors working in the premises, and shall be read and signed. It shall be incorporated into the contract to perform work. This should also remind the contractor of his/her;

- Legal requirements.
- Statutory obligations.
- Obligation to lay-down a system for reporting accidents
- Responsibility to ensure that his/her employees are supplied with personal protective equipment and where applicable as per the EHS management plan for the whole project.
- Responsibilities as it relates to contracting an EHS consultant in liaison with the proponent
- Obligation to ensure that he obtains detail of jobs and areas where permit-to-work must be issued

b) All residents’ and workers’ responsibility

- Know the location of all safety equipment, and learn to use them efficiently

10.7 Safety requirement at the project site during construction and operation Period

a) The contractor

The contractor will ensure that:

- Safe means of entry and exit at the proposed project site.
- Ensure adequate briefing of job at hand on the safe system of work before commencement of work.
- The EHS coordinator must be in attendance at all times throughout the duration of the project.
The EHS consultant must maintain constant assessment of the risk involved as the work progresses
A safety harness must be worn before entry into all confined spaces
An EHS consultant must be posted at the entrance at the project site to monitor progress and safety of the persons working at the construction site.

b) The Traffic / Drivers
Within the construction premises, the following traffic rules will be observed: -
- Observe speed limits and all other signs and obey traffic rules.
- Use the vehicle for the purpose to which it is intended only.
- Install bumps along the murram road heading to the project site

Fire hazard at the construction site,
Workers at the site shall ensure that: -
- Oxy-acetylene cylinders are not contaminated with grease or oil.
- Oxy-acetylene cylinders are not subjected to direct sunlight or heat.
- Oxy-acetylene cylinders are not to be used or stored standing in a vertical position.
- When in use, ensure the inclination should never be over 30° from the vertical.

10.8 Welding at the construction site
It is the responsibility of the contractor during construction to: -
- Ensure that welding clamp is fixed such that no current passes through any moving parts of any machine.
- Ensure that all welding clamps are in good operating condition and conduct current without arcing at the point of contact.
- Ensure that welding clamps are free from any contact with explosive vapors i.e. Oil spillage, Fuel tanks, Coal dusts and miscellaneous combustible material (e.g. Cotton rags filter bags, rubber belting, and wood shavings).
- Ensure that any slag or molten metal arising from welding activities does not start up fires by:
  ✓ Clearing combustible material to a distance of at least 3 meters away from the working area or covering area with metal or asbestos sheet.
  ✓ Appropriate fire extinguisher is to be kept available for immediate use at all times

10.9 Emergency procedure during construction and operation
An emergency situation means:
- Unforeseen happening resulting in serious or fatal injury to employed persons or the neighbouring communities.
- Fire or explosion.
• Natural catastrophe.

In the event of such an emergency during construction, the workers shall:
• Alert other persons exposed to danger.
• Inform the EHS coordinator.
• Do a quick assessment on the nature of emergency.
• Call for ambulance on standby.
• When emergency is over the EHS coordinator shall notify the workers by putting a message: “ALL CLEAR”

In the event of such an emergency during operation the workers shall:
• Alert other persons exposed to danger.
• Ring the nearest police station
• Call for ambulance.

10.10 Project grievance redress mechanism

In the event that either the workers or the neighbours or any stakeholder is aggrieved by an aspect of the project, the following shall be provided;
• An project office shall be provided at the site and shall be open within the working hours of the project
• A telephone number of the project manager shall be provided on the notice board

10.11 Disease Prevention

Health hazards typically associated with development projects are those relating to poor sanitation and living conditions, sexual transmission and vector-borne infections. Communicable diseases of most concern during the construction phase due to labor mobility are sexually-transmitted diseases (STDs), such as HIV/AIDS. Recognizing that no single measure is likely to be effective in the long term, successful initiatives typically involve a combination of behavioral and environmental modifications. In order to prevent disease transmission during construction of this project, the contractor shall:

• Providing surveillance and active screening and treatment of workers
• Preventing illness among workers in local communities by:
  ✓ Undertaking health awareness and education initiatives, for example, by implementing an information strategy to
  ✓ reinforce person-to-person counselling addressing systemic factors that can influence individual behaviour as well as promoting individual protection, and protecting others from infection, by encouraging condom use
  ✓ Training health workers in disease treatment
  ✓ Conducting immunization programs for workers in local communities to improve health and guard against infection
  ✓ Providing health services
Where the contractor will provide campsites for the workers, he shall put up the following measures to prevent vector borne diseases;

- Prevention of larval and adult propagation through sanitary improvements and elimination of breeding habitats close to human settlements
- Elimination of unusable impounded water
- Increase in water velocity in natural and artificial channels
- Considering the application of residual insecticide to dormitory walls
- Implementation of integrated vector control programs
- Promoting use of repellents, clothing, netting, and other barriers to prevent insect bites
- Use of chemoprophylaxis drugs by non-immune workers and collaborating with public health officials to help eradicate disease reservoirs
- Monitoring and treatment of circulating and migrating populations to prevent disease reservoir spread
- Collaboration and exchange of in-kind services with other control programs in the project area to maximize beneficial effects
- Educating project personnel and area residents on risks, prevention, and available treatment
- Monitoring communities during high-risk seasons to detect and treat cases
- Distributing appropriate education materials
- Following safety guidelines for the storage, transport, and distribution of pesticides to minimize the potential for misuse, spills, and accidental human exposure
CONCLUSION AND RECOMMENDATION

This EIA report has identified reasonable measures to mitigate the potential impacts arising from the construction and operation of the proposed New Siaya High Court building and has assessed the significance of each of these impacts under both the pre- and post-migration of labour force scenarios. Professional experience, specialist knowledge, relevant literature and local knowledge of the area have all been used to assess the potential impacts associated with the proposed project.

The proposed court house will have a number of positive impacts including creation of employment, access to justice, local and national growth. The negative environmental impacts that will result from the establishment of the project include noise and dust pollution during both construction and decommissioning phases.

The proponent is advised that if new facilities such as an Incinerator are considered for installation, a separate new EIA must be conducted.

The proponent of the proposed project shall be committed to putting in place several measures to mitigate the negative environmental, safety, health and social impacts associated with the development cycle of the proposed development project. It is recommended that in addition to this commitment, the proponent shall focus on implementing the measures outlined in the EMP as well as adhering to all relevant national and international environmental, health and safety standards, policies and regulations that govern establishment and operation of such projects.

It is also recommended that the positive impacts that emanate from such activities shall be maximized as much as possible. It is expected that these measures will go a long way in ensuring the best possible environmental compliance and performance standards.

In conclusion, the Consultant finds the proposed project to be environmentally credible and socially friendly. Further, in view of the information collected and analysed, the consultant recommends that the proposed project is desirable for Siaya town centre and the County of Siaya and therefore it requires licensing to allow for speedy implementation.
REFERENCES

- KNBS, 2009 Kenya Population and Housing Census Vol. 1A, 2010
- Kenya gazette supplement Acts *Land Planning Act (Cap. 303)*. Government printer, Nairobi
- Kenya gazette supplement Acts *The Occupational Safety and Health Act 2007*, Government printer, Nairobi
- Kenya gazette supplement Acts *Public Health Act (Cap. 242)*. Government printer, Nairobi
APPENDICES

Annex 1: Design Drawings of the proposed Project

Annex 2: Practicing Certificate of Lead expert
ESIA and ESMP for the proposed construction of Siaya High Court
ESIA and ESMP for the proposed construction of Siaya High Court