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REPUBLIC OF KENYA

THE JUDICIARY

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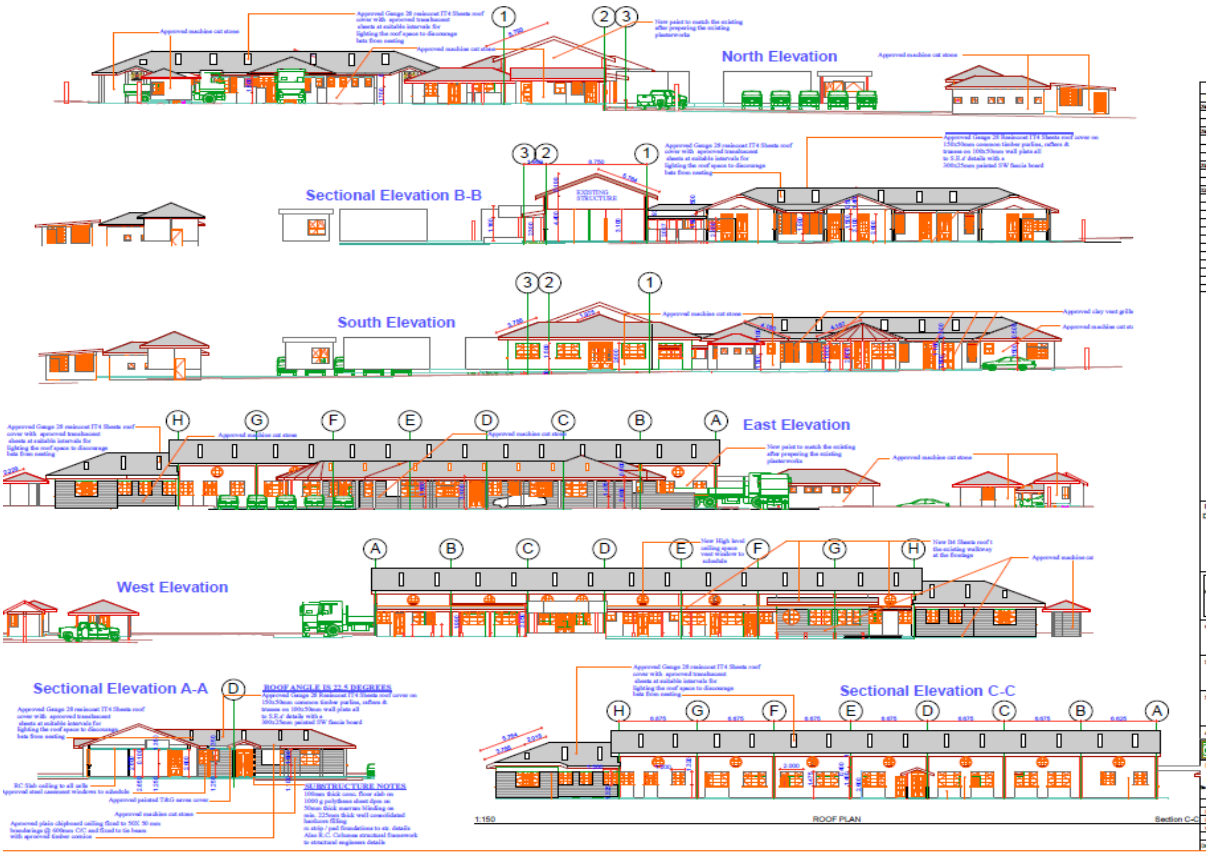
ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA) AND ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP) REVIEW VERSION FOR THE PROPOSED REHABILITATION AND IMPROVEMENT OF FACILITIES AT TAMU LAW COURTS AT MENARA IN MUHORONI TOWN, KISUMU COUNTY



FINAL REPORT

Submitted to:

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

SEPTEMBER, 2017

Client: THE JUDICIARY OF KENYA

Assignment: ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA) AND ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP) FOR THE REHABILITATION ANDIMPROVEMENT OF FACILITIES AT MNARA IN MUHORONI TOWN, KISUMU COUNTY

REVIEW VERSION

Report Title: FINAL REPORT

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The Judiciary of Kenya
Supreme Court Building, City Hall Way,
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EXCECUTIVE 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 ongoing rehabilitation and modernization of Tamu Law courts 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 October11, 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:

a) **Environmental Assessment (OP/BP 4.01):** 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;
b) **Physical Cultural Resources – OP/BP4.11:** 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, county or national level. Chance to find 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.
c) **Involuntary Resettlement (OP/BP 4.12):–** 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.

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 site is located within the existing Tamu Law Courts on the following GPS Coordinates, Latitude **0º 10' 13.32" S** and longitude: **35º 13' 55.21" E,** Altitude **1362** Meters Above Sea Level in Menara in Muhoroni, Kisumu County. The total area of the land is approximately 0.6472Ha and is adjacent Menara Shopping centre which is approximately 4.4 km to Muhoroni Town.

Figure 1: Google Earth excerpt showing the location of the proposed project site

The project neighbours District Commissioner's offices one side the other side it borders some residential houses. There were no sensitive receptors that could be affected by the project.

The Proposed Project

The project activities will be according to conventional engineering scheduling, procedures and practices. The works will include but not limited to; -

- Renovations to existing court and registry building
- Extensions to existing building
- A new single storey court building
- Ancillary outbuilding: washrooms, expansion of existing septic tank, waiting shed
- Development of external works/services – Perimeter fence, waiting bay, driveway, car parking lots, vehicular gate access, pedestrian access.
- Site landscaping

The project cost is estimated to be Kshs. 75 Million inclusive VAT.

The proponent has committed himself to undertake this ESIA 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 ESIA 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 rehabilitation and modernization of the law court buildings and ancillary services for improved judicial service provision. 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. The procedural steps involved in the study include the following: Identification of the key stakeholders; Scoping and development of the TORs using a variety of methods and tools; Baseline studies; Consultation and public participation; Impacts identification and analysis; Development of the mitigation measures; Analysis of the project alternatives and Development of the Environmental Management Plan.

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 Authority Act (Cap. 265), Physical Planning Act, 1999, Land Planning Act (Cap. 303), Water Act, 2002, Building Code 2000, Penal Code Act (Cap.63), Occupational Safety and Health Act, 2007.

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 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, Populations of disease vectors, Generation of construction and demolition waste amongst other impacts.

Some of the proposed mitigation measures include Reduction of Impacts at Extraction Sites and Efficient Use of Raw Materials, Minimization of Construction Waste, Minimization of Noise and Vibration, Reduction of Energy Consumption, Landscaping and Minimization of Water Use. Impacts mitigation during operation phase includes Ensuring Efficient Solid Waste Management, Minimization of Sewage Release, Ensuring Efficient Energy Consumption, inclusion of fire and life safety systems and Ensuring Efficient Water Use. Social impacts such as HIV/AIDS prevalence rates, gender issues have been addressed.

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 Kisumu 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 1: 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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1.2 Scope of the ESIA Study

The primary objective of this short term consultancy is to prepare an ESIA project report with a comprehensive ESMP for the proposed rehabilitation and modernization of the Tamu Law Courts in Menara in Muhoroni town, Kisumu County under the proposed JPIP. 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 75 Million.

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
(viii) Analysis of Alternatives
(ix) Environmental and Social Management Plans
(x) Action Plans for mitigation of health and safety element

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 2wwspace 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 in Menara in Kisumu County, 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 ESMMP 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

The consultant is an independent Lead Expert, registered by NEMA (Registration No. 0562) to carry out Environmental Impact Assessments in Kenya.

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

CHAPTER 2: PROJECT DESCRIPTION

2.1 Project Location

The proposed site is located within the existing Tamu Law Courts on the following GPS Coordinates, Latitude **0º 10' 13.32" S** and longitude: **35º 13' 55.21" E,** Altitude **1362** Meters Above Sea Level in Menara in Muhoroni, Kisumu County. The total area of the land is approximately 0.6472Ha and is adjacent Menara Shopping centre which is approximately 4.4 km to Muhoroni Town. The proposed project area can be accessed by a murram road. It is conveniently located within a short distance of government facilities including the Muhoroni Town Council Office and local commercial establishments such as Menara Shopping centre.

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

The project neighbours District Commissioner's offices one side the other side it borders some residential houses. There were no sensitive receptors that could be affected by the project.

2.2 The Proposed Project

The project will involve rehabilitation and improvement of facilities at Tamu Law Courts In Menara in Muhoroni, Kisumu County on PDP Ref: N965/2012/02 – Approved Plan NO.01 which measures approximately 0.6472 hectares in size. The project activities will be according to conventional engineering scheduling, procedures and practices. The works will include but not limited to; -

- Renovations to existing court and registry building
- Extensions to existing building
- A new single storey court building
- Ancillary outbuilding: washrooms, expansion of existing septic tank, waiting shed
- Development of external works/services – Perimeter fence, waiting bay, driveway, car parking lots, vehicular gate access, pedestrian access.
- Site landscaping

The proposed Tamu Law 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,
26. Allow for minimal Landscaping.
27. Allow for any other issue that is unique to the sites,
28. Allow for ICT cabling.

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 its 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; Air Quality Regulations, 2014

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 equipment 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 equipment 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. Firefighting 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 of 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 fir 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 (sitting, 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

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 interactions of the proposed projects with natural habitats nor presence of wildlife in the area. 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 rehabilitation and improvement of facilities at Tamu Law Courts 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 – rehabilitation and improvement of facilities at Tamu Law Courts 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 Menara in Muhoroni Constituency which is in Kisumu County. Kisumu County is located on latitude $0^0$15'S and longitude $34^0$55'E and covers an area of 2,085 km^2. The county has 5 Local Authorities (Municipal Council of Kisumu, County Council of Kisumu, County Council of Nyando, County Council of Muhoroni and Town Council of Ahero) Kisumu Town is the administrative capital.

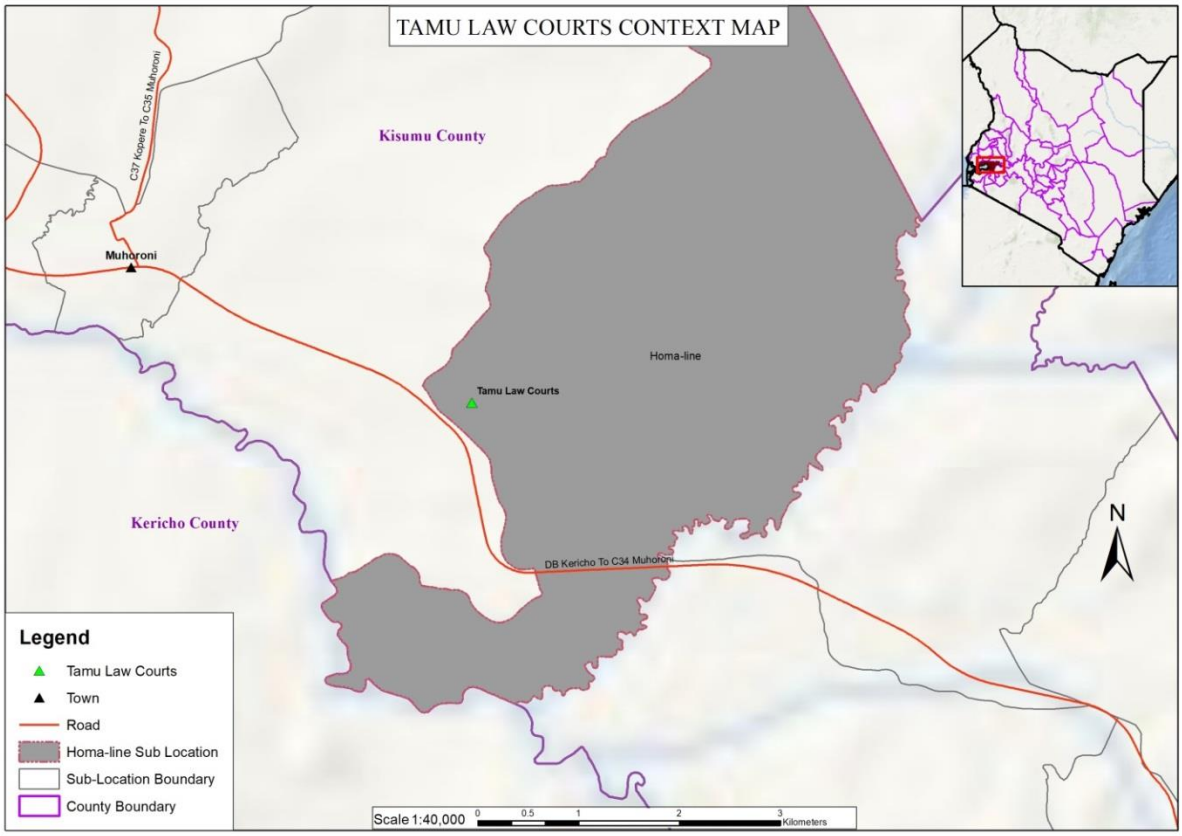

Figure 3: Map showing Tamu Law Courts in Muhoroni Town

The main local industry in Muhoroni is agriculture, including rice fields. Menara which is in the town together with its surroundings has got many environmental and social similarities with the rest of Kisumu 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 Kisumu region. Social and cultural characteristics were also drawn from interviews and historical knowledge of Kisumu 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

Kisumu County lies in a down warped part of large lowland surrounding the Winam Gulf, at the tip of which is Kisumu Town. East of Kisumu Town is the Kano Plains occasionally broken by low ridges and rivers. There are some notable physical features such as the scarps in the north, east and south. Others include the hill slopes and piedmont plains spreading across the vast Kano Plains. The county can be divided into 3 topographical zones namely: the Kano Plains, the upland area of Nyabondo Plateau and the midland areas of Maseno. The Kano Plains lie on the floor of the Rift Valley, which is a flat stretch bordered to the North and East by the escarpment, while the upland area comprise ridges which rise gently to an altitude of 1,835m above sea level.

The major physical features in the Kisumu county are the overhanging huge granite rocks at Kisian and the legendary Kit Mikayi in Kisumu West Sub-county, the Lake Victoria, which is the second largest fresh water lake in the world, the geographically famous rice-growing Kano Plains, and lake islands (e.g. Ndere National Park which are major tourist attraction). The granite rocks are exploited (in small scale) by the local population to produce building ballast. While the varying types of soils and rivers deposits are mined for building sand and baked bricks for building in Maseno and Nyakach.

4.2.2 Drainage

There are three major rivers flowing into the Winam Gulf namely: the Nyando, Kibos and Sondu. The rivers are heavily silted, resulting in the extensive formation of lakeside swamps. The Kano Plains, due to the structure on the floor of these escarpments is vulnerable to flooding during heavy rains especially the lower Kano Plains and in particular low lying areas of Nyando. Kisumu county has a long shoreline along Lake Victoria. This shoreline is 90 km long and has more than 17 beaches all of which are fish landing bays. Within Kisumu City, the shores have been used to put up beautiful tourist hotels like Kiboko Bay, the Yatch Club and Tilapia Beach Resort.

The proposed project site lies at a plain flat area at a relatively higher slope. The nearest river is the River Ruke/Menara, a seasonal tributary which is approximately 300metres away. River Nyando is the main permanent river found about 3km away from the Tamu Law courts. It is therefore important that the construction phase of the project incorporates reinforcement measures within the drainage and sewerage facilities to curb any imminent leakages that might lead to transfrontier impacts or gravitational seepages.

Plate 1: Ruke/Menara seasonal river

4.2.3 Geology and Soils

The soils in the study area similar to the entire county are dominated by lake sediments, commonly sand and clay soils. In Kano Plains the soils are dark brown and grey, poorly drained and are generally very deep and firm. In the western part of Kano Plains are dark cotton soils commonly associated with the swamps. These types constitute more than 70 per cent of all soil types found in Kisumu County. These soils are suitable for brick making and sand harvesting especially at Maseno and Nyakach. The soil at the project site is a mixture of rich black cotton and loam-clayey soils which support a rich diversity of vegetation including trees, herbs and shrubs. These soils are deep, fertile and well drained, with rich agricultural potential.

Plate 2: Rich loam soils at the tree nursery site

4.2.4 Climatic Conditions

The mean annual rainfall varies with altitude and proximity to the highlands along the Nandi Escarpment and Tinderet. The area has two rainy seasons, with the long rains occurring in March and May while the short rains occur in September to November. During the short rains the average annual rainfall ranges between 450mm and 600mm. Rainfall data indicates that the county largely receives substantial rainfall. Maseno has a mean annual rainfall of 1,630mm, Kisumu 1,280 mm, Ahero 1,260 mm, Kibos 1,290 mm, Muhoroni 1,525 mm, and Koru 1,103 mm. The lowland

area which forms a trough of low rainfall receives a mean annual rainfall of between 1,000mm and 1,800mm. Although there is no entirely dry month, the peak generally falls between March and May, with a secondary peak in September to November. The high rainfall and the nature of soils in the Kano Plains have supported small scale agricultural production. However, small-scale farmers find it difficult to prepare the land for planting since black cotton soils are difficult to work on manually during dry season and also during heavy rains.

The mean annual maximum temperature ranges 25oC to 35oC and the mean annual minimum temperature ranges 9oC to 18oC. The altitude in the county varies from 1,144 metres above the sea level on the plains to 1,525 metres above sea level in the Maseno and Lower Nyakach areas. This greatly influences temperatures and rainfall in the county.

4.2.5 Hydrology

Kisumu County is most known for its association with Lake Victoria the largest lake in Africa and one of the largest lakes in the world. Its highest water source is from direct precipitation. There are approximately 25 major rivers that flow into Lake Victoria from the 194 000 km^2 basin surrounding the lake. The main rivers in the Lake Victoria basin Kenya include the Migori, Mogusi, Nyando, Nzoia and Yala. River Yala and Nyando are of particular interest in this study. The lake outflows into the White Nile and the Katonga River, both part of the upper Nile river system.

4.3 Biological Environment

4.3.1 Flora

Vegetation at the proposed project site includes native and exotic tree species, hedges and grass which have been well maintained. The grasses on site include species like Chrysopogon zizanioides next to the tree nursery, pennisetum clandestinum (kikuyu grass) and chloris gayana. Cupressus spp. predominates the hedged court fence while trees at the site range from exotic to indigenous species. These include; Jacaranda mimisipholia, Kigelia Africana, Acacia abysinicca, Eucalyptus spp. among others. The court station has also been instrumental in pioneering a tree nursery project on-site to boost reforestation initiatives in the sub county.

Plate 3: Well-maintained vegetation at the proposed project site

4.3.2 Fauna

The region is mainly rich in fish species with the Nile perch, the minnow and Nile tilapia alongside a few haplochromines being in abundance. Other fauna found in Kisumu County include: aquatic dependent reptiles, amphibians mammals, planktons and fresh water molluscs. In particular there is a high species richness of frogs with over sixty species. Aquatic species in the Lake Victoria environs include: five species of fresh water turtle, two aquatic snakes, monitor lizard, Nile crocodile, three species of otters and hippopotamus (Hippopotamus amphibious). The waters of Lake Victoria are rich in plankton species for example with around 80 species of planktonic diatoms. Bird species found around lake Victoria but rarely ever seen anywhere else in Kenya include: the blue-breasted, bee-easter, blue swallow, swamp flycatcher, warbler, white-winged warbler, papyrus yellow warbler, carruthers' cisticola, papyrus gonolek, red-chested sunbird, red-headed quelea, slender-billed weaver, yellow-backed weaver, northern brown throated weaver, black throated seedeater and the papyrus canary. Other animals found in around Lake Victoria include: roan antelopes, Rothschild's giraffe, Jackson's hartebeest and tiny orbit antelopes.

4.4 Human Environment

4.4.1 Education

Kisumu County, the percentage of population with primary education is 62%; those with secondary education constitute 15% of the population while those who can read and write form 65.8%. Primary and secondary education is provided by 706 primary schools and 173 public secondary schools, including one of the oldest secondary schools in Kenya; Maseno School, which is also one of the best performers in the whole country. The enrollment in primary school and secondary school stood at 240, 538 and 38, 815 as of 2009. The teacher to pupil ratio was 1:51 for primary and 1:30 for secondary The main schools near the project site are St. Stephens Menara primary and secondary schools which are about 2km away.

4.4.2 Population

According to the 2009 national census, the Population in Muhoroni, the study area was projected to have a total of 28,092 inhabitants with 14,676 being male and 13,416 female.

Table 1: Population Projections of Urban Areas in Kisumu County

Urban Centre	2009			2012			2015			2017		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
Kisumu	131,062	128,196	259,258	166,649	163,005	329,654	211,852	207,220	419,072	248,666	243,228	491,893
Ahero	3912	4663	8,575	4,974	5,929	10,903	6,323	7,537	13,861	7,422	8,847	16,269
Maseno	1720	1581	3,301	2,187	2,010	4,197	2,780	2,556	5,336	3,263	3,000	6,263
Chemelil	4331	3557	7,888	5,507	4,523	10,030	7,001	5,750	12,750	8,217	6,749	14,966
Awasi	1264	1224	2,488	1,607	1,556	3,164	2,043	1,979	4,022	2,398	2,322	4,721
Muhoroni	7,735	7,071	14,806	9,835	8,991	18,826	12,503	11,430	23,933	14,676	13,416	28,092
Total	**150,024**	**146,292**	**296,316**	**190,759**	**186,014**	**376,774**	**242,502**	**236,472**	**478,974**	**284,642**	**277,562**	**562,204**

Source: KNBS, 2009 Kenya Population and Housing Census Vol. 1A, 2010

4.4.3 Gender Aspects

In Muhoroni area, the population of men is proportionately higher than that of women 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

Health in Kisumu County is provided by several institutions that are either private or government funded. There is one provincial hospital, three district hospitals, 5 sub-district hospitals, 53 dispensaries and six health centres in the county. The naming system is set to be changed due to the fact that the system of government has changed. The county government shall now have jurisdiction over the provision of health in the county. The Infant Mortality Rates for Kisumu County is medium, at 95/1000. The under-five mortality rates for the county are 149/1000. The location of Kisumu County puts it in major breeding ground for mosquitos, and malaria has been a perennial problem since time immemorial. The nearest medical facility to the proposed project site is the Menara Government Hospital. However, there is a local clinic at the local market centre.

4.4.3.1 HIV/AIDS

According to the National HIV Surveillance Report 2010, the national prevalence rate stands at 6.3 per cent, Nyanza Province 15.3 per cent, Kisumu 11.2per cent, where Kisumu town has a

prevalence of 15 per cent and Kisumu Rural 8per cent. The impact of HIV/AIDS continues to be felt in most sectors of the economy in the county with the economically active population (20-49) years being the most affected. In the health sector, most resources have been diverted to the prevention and treatment leading to a strain on the entire health sector. Consequently, HIV/AIDS is hindering the efforts to create wealth and employment by draining national economic resources. The education sector has not been spared either as most students continue to drop out of school to either care for the sick or their young siblings leading to an increase in the rates of school drop-outs. The key players in the fight against HIV/AIDS include: the National AIDS Control Council (NACC), the Ministry of Health, Social Services Department, and NGOs such as AMREF Maanisha Programme, Plan International, APHIA II Nyanza, World Vision, Christian Children Fund, ADRA and others, and the private sector e.g. Marie-Stoppes Kenya (Jiokoe Project).

4.4.5 Poverty Aspects

High poverty level is one of the major developmental challenges in Kisumu County. Estimates show that over 60 per cent of the population are poor compared with the national average of 46 per cent as at 2006. Poverty levels are higher in the urban areas (70 per cent) compared with rural (63 per cent). The main causes of poverty include HIV and AIDS pandemic, collapse of local agro-based industries, unemployment, low agricultural and fish production. Food insecurity, inaccessibility to affordable healthcare, lack of proper storage facilities, erratic and unreliable rainfall, poor and inaccessible road network, frequent floods, problems with the sugar, rice, cotton and fish industries, lack of title deeds, poor water and sanitation systems, malaria, and water borne diseases worsens poverty situation in the county.

4.4.6 Land use

Kisumu County is generally a satellite City with 80% of the land area is predominantly rural in character and thus demanding a unique set of planning responses. The land ownership type in the County is mainly freehold, putting direct influence on pattern of development on the individual owner's docket. With the ever rising population especially in and around the City and other areas depicting urban character, emerging land use trends (mainly residential and commercial) are taking up land space that was not initially zoned for them. Areas like the Kibos which was initially zoned for industrial investment has been taken up but residential user, the Riat hills which was reserved for conservation now being a prime residential investment area, parts of agricultural land at Ahero is now being consumed by industrial development(mattress & bread factories) and massive subdivision of initial agricultural land in the hinterland of existing market centres such as Katito/Pap-Onditi, Maseno etc for residential and commercial developments. Also areas of Muhoroni initially set for commercial agriculture being sold out in smaller portions for residential settlements. There is therefore urgent need for reviewing the county spatial planning to address the aforementioned current realities.

4.5 Infrastructure Aspects

4.5.1 Transport

Kisumu city derives its very early origins from being an inland port associated with the arrival of the railway in 1901. Since then it has continued to serve as a regional transportation node for the wider East Africa region, providing road, rail, water and air connections.

4.4.3.2 Water Transport

The main ports on the lake are Kisumu, Mwanza, Bukoba, Entebbe, Port Bell and Jinja. Kisumu port was founded in 1901 as the main inland terminal of the Uganda Railway and named Port Florence. Although trade stagnated in the 1980s and 1990s, it is again growing around oil exports. Today, water transport on the lake is provided mostly by private operators in wooden boats with outboard engines, although a ferry service exists. The services connect towns on the shores and also help in crossing the lake. They also link the county with the other three lakeside counties and the countries of Tanzania and Uganda. The port of Kisumu is very inactive at the moment but has the potential to become a regional centre of lake transport and a gateway for Kenya into the rest of the African Great Lakes region.

4.4.3.3 Air transport

Before the jet airline era, Kisumu was a landing point on the British flying boat passenger and mail route from Southampton to Cape Town. Kisumu linked Port Bell and Nairobi. Kisumu is served by Kisumu Airport which has international status, with regular daily flights to Nairobi and elsewhere. Kisumu International Airport has been upgraded and now has the potential to be an entreport for the entire region. Schedule flights land from Nairobi, Mombasa and several cities in neighbouring countries.

4.4.3.4 Railway transport

The Uganda Railway from the port of Mombasa reached Kisumu in 1901. The city of Kisumu was founded as a terminal for the railway, and therefore has an important railway station. The narrow gauge railway moves both passengers and cargo, linking Kisumu with other cities and towns along the line. Currently there are no passenger trains that operate between Nairobi and Kisumu. A railway is also existent within the locality of the proposed project area but is poorly maintained.

Plate 4: Railway infrastructure in Muhoroni Sub County

4.4.3.5 Road transport

Kisumu County has several paved roads, the major one being the Nairobi-Bondo road, which has a branch at Kisian heading to Busia. Important roads are paved with asphalt. County roads are mostly murram but provide all weather movement all year. Public transport services are provided by matatus and buses either operating singly or as parts of franchises and companies. Bicycle and motorcycle boda-bodas also exist in significant quantities for short distance travel.

The proposed project site has a tertiary class access road that connects it to the main Nakuru-Muhoroni-Kisumu highway which is under construction. The court station is located about 3km from the highway on a hilly area and the main route is a murram road which is motor-able, leading to the court station. The route is mainly used by tractors fetching sugar cane to the factory and motorcycles.

Plate 5: Access road to the proposed project site

4.4.3.6 Intra-city transport

Intra-city transport has seen the emergence of a large influx of bicycle taxis (non-motorised transport) commonly known as 'boda boda'. Since such a development was not anticipated, no commensurate provisions were made for cyclists e.g. bicycle tracks, with a resultant increase in accidents and congestion on the city roads. The challenge remains on how to integrate this economic activity into the urban transport system, while minimising user conflict and ensuring safety.

4.5.2 Water resources

Kisumu City residents obtain water from individual connections, yard tap connections, public tap connections, boreholes, springs and water vendors. As of September 2008, KIWASCO had 7,704 domestic water connections and 287 water kiosks. About 52 percent of Kisumu residents used piped water delivered to dwellings or compounds, and 13 percent depended on protected shallow wells/springs or roof catchment. Hence 65 percent of Kisumu residents had access to an improved water source, while 35 percent relied on unimproved water sources, including water vendors, open wells/springs, streams and ponds.

In informal settlements, although some residents have access to piped water, most residents rely on water kiosks, handcart vendors and boreholes for their water supply. The reliance on shallow wells and boreholes in these neighbourhoods is problematic because water from these sources is of poor quality. Kisumu City has high water tables; consequently, shallow wells are easily contaminated by overflowing pit latrines, poor wastewater management and inadequate drainage systems. Many residents in peri-urban areas also use water from shallow wells situated in close proximity to the pit latrines, thereby increasing the chances of cross-contamination, especially during the rainy season, when dependency on such readily contaminable water sources contributes to dangerous outbreaks of such diseases as diarrhoea, cholera, typhoid, dysentery and malaria.

Plate 6: Rain water harvesting facilities at the courts

4.5.3 Energy

Energy is a key player in the realization of the County's development aspirations. However, the current demand for energy in the County is such that the available supply has been challenged in meeting the County's requirements. This has manifested in the slow economic development obtaining. The positioning of the County vis-a-vis her natural resources is that there is a huge potential to produce enough energy to competitively anchor the expected economic growth within the County and even to release to the National Grid. With construction of two dams on River Nyando and one on River Awach, the County is poised to produce enough energy that should be able to sufficiently supply the proposed industrial zone, the transport system (the proposed standard gauge rail line and the tram ring around the city of Kisumu), the health facilities, the satellite towns and markets and the educational facilities. The area proposed project area is well served by the national Kenya Power mains grid. The facility will be connected to the Kenya Power supply. In addition, a standby generator will be installed to provide electric power during instances of power shortage or loss.

4.5.4 Solid Waste management

In 2001 it was estimated that only 20 percent of the 400 tons of solid waste generated each day in Kisumu City was collected. By 2008, the daily generation of household waste was estimated to be 437 tons. Fortunately, about 63 percent of the waste generated in Kisumu is organic; hence there is enormous potential for composting. The city authority (MCK) only has four trucks (two 2-ton trucks, an old 7-ton compactor truck and an old tractor with a trailer) for collecting waste. These vehicles are in poor condition and often break down. As a result, many households, particularly in the peri-urban areas, have no access to public services and are unable to access private waste collection due to fees levied. They therefore resort to burning or burying their waste. Some common dumping grounds have developed on open lands within densely populated neighbourhoods. The poor management of solid waste blocks sewers and drainage systems, provides a breeding ground for disease vectors and contributes to the generation of leachates, which pollute the ground water and further contribute to waste related diseases.

4.5.5 Liquid Wastes Management

There are two types of sewer systems in Kisumu City: a conventional sewer system and a lagoon system. However, the 6,800m^3 sewer system serves less than 10 percent of the population, and the two sewer systems do not accommodate most of the generated wastewater. In addition, frequent sewer bursts and blockages are water-related diseases. The low-lying areas of Manyatta and Nyalenda have no sewer system, as they are lower than the conventional sewer.

Areas with access to the public sewer network include Lumumba, Makasembo, Milimani, Ondiek and Robert Ouko. However, some toilets are emptied into storm sewers soak pits and cess pits, where faecal waste presents an environmental health hazard. The capacity of the sewerage infrastructure is 17,800m^3/day (if operating at full capacity), far less than what is required. The

sewers were built more than four decades ago, and there has been no rehabilitation or extension of the sewer system, except for the Kibos Trunk sewers, which were built in 1980. Upgrading and expanding the sewerage infrastructure is therefore urgently required.

The proposed project area lacks a sewerage facility for mass treatment of waste from the various facilities within the sub county. The court station is served with 2 washrooms which channel to a septic tank. Pit latrines are also available. The proposed facility will be connected to a new septic tank for treatment of human wastes and later channelled to a soak pit.

4.5.6 Security

The main purpose of the Law courts is to uphold and maintain security through its legal framework. A security office is existent within the facility with trained personnel who provide security. An Administration Police camp is also found a few metres from the court station. A fence is in place as a physical barrier which secures the facility from non-permitted entry.

Plate 7: Fence barrier at the Law Courts

4.6 Social and Economic Environment

4.6.1 Agriculture

Kisumu County is most known for its association with Lake Victoria the largest lake in Africa. Agriculture by far is the main stay of the inhabitants. Food crops include maize, bananas, cassava, sorghum, millet, rice, sweet potatoes and an assortment of vegetables and fruits. Main cash crops include coffee, cotton and sugar cane.

4.6.2 Fishing

The lake contributes a very large part to the economy of the two counties since it supports the fishing and fish processing industry the county's main economic activity. There are a number of fisheries in the Kisumu County at Dunga and Luang'ni beaches. Fishing is undertaken for both subsistence and commercial goals. Most of the fisher folk have been fishing over the years as a

source of their livelihood. In the past decade fishing became increasingly commercialized threatening even the nutrition source for the LVB inhabitants. Most fish and particularly Nile Perch is sold to fish processing plants or other agents as a result increased prices that are out of reach of most poor to average households. Fishing remains a major economic asset to both large and small-scale fishers and the regional economy in general are now common sources of nutrition to these households. Fish catch is also declining due to increased fishing effort and illegal fishing methods. Opportunities exist in further developing this sector for local and export markets. However these efforts could be threatened by the occasional occurrence of water hyacinth.

4.6.3 Economic Activities

Tamu Law courts lie on a high plane locality, and experiences high rainfall amounts all-round the year. The proposed project site is in a rural setting, enriched with a high agricultural potential as reflected in the cash crop farms in the sub county. Sugar cane farming is the main economic activity in this area and Muhoroni Sugar Factory has over the years played an integral part in providing ready market for agricultural products. Tea farming is also practiced in the area while livestock keeping is limited to the cross border communities including the Nandi and Kipsigis communities. Other economic activities include subsistence farming and small scale trading in the local Menara market.

Plate 8: Sugar cane farming in Menara area

4.6.4 Tourism

Kisumu County is endowed with various tourism attractions such as the Kisumu Museum, the Impala sanctuary, the Hippo Point, Kit Mikaye rock formation, Ndere Island in Kisumu West and others. Pollution due to anthropogenic activities has greatly diminished this tourism potential especially in most beaches within the two counties. The following are some of the tourism attractions that are adjacent to the lake that are likely to be affected by pollution.

4.6.5.1 Dunga Beach and Wetlands

Dunga Beach and Wetland is known for its unique eco-cultural attractions due to its biodiversity and cultural rich and diverse papyrus wetland ecosystem and local community respectively. Eco finder Kenya has established Dunga Wetland Pedagogical Centre at Dunga Beach is a grass-root led intervention whose overarching cardinal goal is empowerment of Dunga Wetland Community and improvement of livelihood security of its people. Therefore, some of the main focuses in the centre are promoting Eco-Cultural Tourism and facilitate the conservation of the Dunga Papyrus Wetland Ecosystem.

4.6.5.2 Hippo Point

Hippo Point is a 600 acres (240 ha) viewing area on Lake Victoria. Despite its name, it is better known as a viewing point for its unobstructed sunsets over the lake than for its occasional hippos. Hippo point is near the village of Dunga, a few kilometres South West of the city. The village also has a fishing port and a camping site.

4.6.5.3 Kisumu Impala Sanctuary

As its name suggests, it is home to a herd of impala. Some hippos, as well as many reptiles and birds are also present. Additionally, several caged baboons and leopards that faced difficulties of one sort or the other in the wild are held in cages there. Over 115 different species of birds live there. The Sanctuary is located about 3km from Kisumu city. It was gazetted in 1992 and later branded in March 2010 as 'a lakeshore walk with impalas'. It is a home to both free ranging and captive animals as well as a home to over 115 species of birds, a variety of trees, grass & herbs amongst others. The sanctuary has all the big five animals except the Elephant. Captive animals include the leopard, spotted hyena, blue monkey, pata monkeys, grey parrots, buffaloes, grey duikers, ostriches, hartebeest, cheetahs, lions, lionesses, white rhino, guinea fowls, tortoises and several cats amongst others. The free ranging animals include hippos, impalas, zebras, monitor lizards, Sitatunga, red tailed mongoose etc. The sanctuary holds its annual Kisumu Impala conservation boat racing event in November which is a fundraising event aimed at conserving the endangered Sitatunga antelope found within the sanctuary as well as its neighbourhood. The sanctuary is a key site for research, education and recreation. Activities include: game viewing, picnicking, boat rides, bird watching, nature walks, camping, partying, weddings

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 especially in the Kano Plains 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.

The consultative meetings were undertaken in the neighboring settlement areas of Menara shopping centre 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. Table below summarizes the neighbors and public view and inputs

Name	ID &Tel No.	Occupation /designation	Views, concerns and inputs
Owiti Tom Oketch	ID No. 13234965 Tel. No. 0721351156	Deputy principal, St. Stephens Menara	▪ There is a likelihood of the Menara river being polluted which at times the students use when there is a breakdown of the water pump ▪ Cutting of trees will affect the microclimate ▪ Noise produced during construction might affect students ▪ Project will decongest premises ▪ It will promote instant justice by preventing delays in judgment ▪ Proponent should ensure the river is not polluted during construction ▪ Contractor should ensure appropriate accessibility to the site ▪ Proponent should involve all the concerned stakeholders from the local community
Joshua Awich	ID No. 2548003 Tel. No. 0721416039	Teacher Advisory Centre tutor	▪ The project will contribute to improvement of the physical infrastructure in the area ▪ It will lead to creation of justice and enhancement of security ▪ Houses should be constructed for the staff ▪ Clean water for domestic use should be afforded to the facility
Philip Erambo Muyokhwe	ID No. 1044017	Civil servant/registration officer (II)	▪ The project will improve services to common mwananchi

	Tel. No. 0701780181		▪ Residents expect proper services from newly built court premises
Rebecca Atieno Ogada	ID No. 6787640 Tel. No. 0722643408	Social worker	▪ Project will help in bringing services near the community ▪ Security and road infrastructure will be improved
Francis Misiko	ID No. 11582903 Tel. No. 0720300897	Deputy district probation officer	▪ There will be improved development of Menara area ▪ Expansion of the court should accommodate all court users and staff to be afforded houses ▪ Equalization should be considered ▪ Construction materials and resources should be obtained locally ▪ There should be prudent utilization of available resources
Margaret Chebet	ID No. 8548279 Tel. No. 0733041140	Nurse, Mnara dispensary	▪ Development will create job opportunity for the locals
Fredrick Aloo	ID No. 23678153 Tel. No. 0700753402	Bussiness man	▪ Judiciary should consider investing on social responsibility ▪ Judiciary should consider using local manpower during construction ▪ Project will open up the area economically
Grace Ouko	ID No. 22651372 Tel. No. 07222160924	Business lady	▪ Service delivery at the court will be improved when the court construction is complete ▪ Replanting of any cleared trees should be a priority after completion
Philister Adhiambo	ID No. 7495729 Tel. No. 0712663016	Deputy head teacher, Menara primary	▪ Staff at the court will be afforded a conducive environment to serve the community efficiently ▪ Crime rate will reduce ▪ Court should create awareness on effects of misconducts to enhance moral standards in the community ▪ Court should teach the community about their legal rights

			▪ The court rooms should be large enough to accommodate up to 100people ▪ Cases should take the shortest time possible ▪ Not all cases should be heard in the courtroom to enable families have a sense of satisfaction in the ruling
Daniel Otieno Ooko	ID No. 24737581 Tel. No. 0702874249	Teacher	▪ Locals will be employed during construction ▪ A peaceful and just community will be secured with the introduction of the expanded court ▪ Locals should be involved during construction ▪ More trees must be planted both in the court and village ▪ There should be fairness in allocation of contracts and employment at the court ▪ The judiciary s commended for the initiative
Adana Otieno	N/A	N/A	▪ The area where the court is located is small in size and thus if this project is to be implemented, a large area is required ▪ The project should be implemented as this is the only law court in Muhoroni ▪ Crime rate will be reduced

CHAPTER 6: PROJECT ALTERNATIVES

The followings alternatives were considered during the preliminary planning phases.

5.1 The No Option Alternative

Not going ahead with the project will avoid all the potential environmental and social impacts but deny Muhoroni and Kisumu County in general the economic growth that would come with the proposed rehabilitation and improvement of Tamu Law Courts. The proposed project is expected to ensure better judicial service provision but promote business to the occupants of Menara in Muhoroni. 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.

5.2 Site Alternatives

This is the only site available for this project as the proposed site is owned by the Client. The proximity of the site to Muhoroni town as good and is 4.4km from the town centre. Other alternatives site would mean this project be constructed in another town.

5.3 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 Kisumu 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.

5.4 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 Rehabilitation and Improvement of Tamu Law Courts

Alternative	Reasons for rejection/accepting	Rank
No Project	Current challenges of poor judicial services hence seeking better services in other counties would continue hence affecting county economic development	5
Site of the current law courts	The current site provides the best option as it would entail minimal additional environmental Impacts.	1
Rehabilitation and modernization of the Tamu Law Courts	This would cost the proponent less but the status of Tamu Law Courts would improve	1

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 and energy used

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.

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.

7.1.2.5 Building materials

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. Since substantial quantities of these materials will be required for construction, the availability and sustainability of such resources at the extraction sites will be negatively affected, as they are not renewable in the short term. In addition, the sites from which the materials will be extracted may be significantly affected in several ways including landscape changes, animals and vegetation, poor visual quality and opening of depressions on the surface leading to destruction of agricultural crops, several human and animal health impacts. Additionally, air pollution may arise from dust generation and vehicular emissions during construction materials deliveries through public access roads adjacent to public offices and commercial areas. Moreover, heavy trucks passing through the river will lead to an increase in sediment load thus impairing the riparian zone.

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 such as 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). Menara in Muhoroni is characterised by high unemployment rate and from the general assessment of the population characteristics there is sufficient local labour in Muhoroni. 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 such as pollution of River Menara.

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 so that it is not deposited into River Menara.

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 as well as water harvested by the client. A combination of water provision alternatives such as construction of a borehole coupled with 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 diverted so as to avoid River Menara as well as 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.

8.2.5 Management of Effluent Discharge

The proponent proposes expansion of the already existing septic tanks to cater for the increase in demand. Moreover, the client will ensure the septic tanks are frequently monitored to avoid leakages hence underground contamination. In addition to this, the effluent will be well treated before disposal and water analysis shall be done frequently at the recommended laboratories.

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

Expected Negative Impacts	Recommended Mitigation Measures	Responsible Party	Time Frame	Cost (Ksh)
1. Minimize extraction site impacts and ensure efficient use of raw materials in construction				
High demand of raw material	Source building materials from local suppliers who use environmentally friendly processes in their operations.	Project Manager & Contractor	Throughout construction period	0
	Ensure accurate budgeting and estimation of actual construction material requirements to ensure that the least amount of material necessary is ordered.	Project Manager & Contractor	Throughout construction period	0
	Ensure that damage or loss of materials at the construction site is kept minimal through proper storage.	Project Manager & Contractor	Throughout construction period	0
2. Minimize solid waste generation and ensure efficient solid waste management during construction				
Increased solid waste generation	Use of an integrated solid waste management system i.e. through a hierarchy of options: 1. Source reduction 2. Recycling 3. Composting and reuse 4. Combustion 5. Sanitary land filling.	Project Manager & Contractor	Throughout construction period	50,000
	Through accurate estimation of the sizes and quantities of materials required, order materials in the sizes and quantities that will be needed	Project Manager & Contractor	One-off	0

Expected Negative Impacts	Recommended Mitigation Measures	Responsible Party	Time Frame	Cost (Ksh)
	Ensure that construction materials left over at the end of construction will be used in other projects rather than being disposed of.	Project Manager & Contractor	One-off	0
	Ensure that damaged or wasted construction materials will be recovered for refurbishing and use in other projects	Project Manager & Contractor	One-off	-
	Use of durable, long-lasting materials hence reducing the amount of construction waste generated over time by replacement	Project Manager & Contractor	Throughout construction period	0
	Provide facilities for proper handling and storage of construction materials to reduce the amount of waste caused by damage or exposure to the elements	Project Manager & Contractor	One-off	0
	Use building materials that have minimal or no packaging to avoid the generation of excessive packaging waste	Project Manager & Contractor	Throughout construction period	0
3. Minimization of noise and vibration				
Noise and vibration	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	Project Manager & Contractor	Throughout construction period	0
	Apply for a License from NEMA whereby maximum permissible noise levels are to be exceeded	Project Manager & Contractor	Throughout construction period	5,000

Expected Negative Impacts	Recommended Mitigation Measures	Responsible Party	Time Frame	Cost (Ksh)
	Priority shall be given to the use of equipment designed with noise control elements	Project Manager & Contractor	Throughout construction period	0
	Construction vehicles and machinery are to be switch off engines of vehicles or machinery not being used.	Project Manager & Contractor	Throughout construction period	0
4. Reduce dust emissions				
Dust emission	Provide 2.4 m high hoarding along site boundary	Project Manager & Contractor	Throughout construction period	20,000
	Provide effective dust screens that shall be used on scaffolding erected around the perimeter of the building under construction	Project Manager & Contractor	Throughout construction of building envelope	50,000
	Water all active construction areas when necessary;	Project Manager & Contractor	Throughout construction period	20,000
	Cover all trucks hauling soil, sand and other loose materials or require all trucks to maintain at least two feet of freeboard;	Project Manager & Contractor	Throughout construction period	-
	Personal Protective equipment to be worn	Project Manager	Throughout construction period	30,000
5. Minimization of energy consumption				
Increased energy consumption	Ensure electrical equipment, appliances and lights are switched off when not being used	Project Manager & Contractor	Throughout construction period	0

Expected Negative Impacts	Recommended Mitigation Measures	Responsible Party	Time Frame	Cost (Ksh)
	Install energy saving fluorescent tubes at all lighting points instead of bulbs which consume higher electric energy	Project Manager & Contractor	Throughout construction period	5,000
6 Minimize water consumption and ensure more efficient and safe water use				
High water demand	Promptly detect and repair of water pipe and tank leaks	Proponent	Continuous	2,000/month
	Sensitize construction workers on water conservation measures	Proponent	Continuous	
	Ensure taps are not running when not in use	Proponent	Continuous	
	Install water conserving taps that turn-off automatically when water is not being used	Proponent	One-off	10-40 % higher than ordinary
	Install a discharge meter at water outlets to determine and monitor total water usage	Proponent	One-off	5000
7. Minimize occupational health and safety risks				
Approval of building plans	Ensure that all building plans are approved by the Local Authority and the Local Occupational Health and Safety Office	Developer	One-off	-
Health and safety committee	Provisions must be put in place for the formation of a Health and Safety Committee, in which the employer and the workers are represented	Project Manager	One-off	25,000

Expected Negative Impacts	Recommended Mitigation Measures	Responsible Party	Time Frame	Cost (Ksh)
Sanitary conveniences	Suitable, efficient, clean, well-lit and adequate sanitary conveniences should be provided for construction workers	Project Manager	One-off	-
Machinery/equipment safety	Ensure machinery, equipment, PPE, appliances & hand tools used in construction comply with the prescribed safety & health standards & are appropriately installed & maintained & safeguarded	Project Manager, Developer & Contractor	One-off	20,000
	Ensure that equipment and work tasks are adapted to fit workers & their ability including protection against mental strain	Project Manager, Developer & Contractor	Continuous	0
	All machines and other moving parts of equipment must be enclosed or guarded to protect all workers from injury	Project Manager	One-off	0
	Arrangements must be in place to train and supervise inexperienced workers regarding construction machinery use & procedures/operations	Project Manager	Continuous	5,000 per training
	Equipment such as fire extinguishers must be examined by a licensed authority & reports of examinations presented in prescribed forms, signed by the examiner & attached to the general register	Project Manager	Continuous	5,000 per examination
Storage of materials	Ensure that materials are stored or stacked in such manner as to ensure their stability and prevent any fall or collapse	Project Manager	Continuous	35,000

Expected Negative Impacts	Recommended Mitigation Measures	Responsible Party	Time Frame	Cost (Ksh)
	Ensure that items are not stored/stacked against weak walls and partitions	Project Manager	Continuous	0
Safe means of access and safe place of employment	All floors, steps, stairs and passages must be of sound construction and properly maintained	Project Manager & Contractor	Continuous	-
	Securely fence or cover all openings in floors	Project Manager & Contractor	One-off	-
	Provide all staircases with suitable handrails			-
	Ensure that construction workers are not enclosed such that they would not escape in case of an emergency	Project Manager & Contractor	Continuous	0
	All ladders used in construction works must be of good construction and sound material of adequate strength and be properly maintained	Project Manager & Contractor	One-off	10,000
Emergency preparedness and evacuation procedures	Design suitable documented emergency preparedness and evacuation procedures to be used during any emergency	Project Manager & Contractor	One-off	65,000
	Such procedures must be tested at regular intervals		Every 3 months	25,000
	Ensure that adequate provisions are in place to immediately stop any operations where there in an imminent and serious danger to health and safety and to evacuate workers	Project Manager & Contractor	One-off	10,000

Expected Negative Impacts	Recommended Mitigation Measures	Responsible Party	Time Frame	Cost (Ksh)
	Ensure that the most current emergency telephone numbers are prominently & strategically displayed within construction site	Project Manager & Contractor	One-off	10,000
	Provide measures to deal with emergencies & accidents	Project Manager & Contractor	Continuous	20,000
First aid	Well stocked first aid kit which is easily available & accessible should be provided	Proponent & Contractor	One-off	15,000
	Provision must be made for certified first aid personnel			15,000
Fire protection	Firefighting equipment such as fire extinguishers should be provided at strategic locations	Proponent & Contractor	One-off	15,000
	Regular inspection & servicing of the equipment must be undertaken by reputable service provider & proper records maintained	Proponent & Contractor	Every 3 months	10,000
	Signs such as “NO SMOKING” must be prominently displayed especially in parts where inflammable materials are stored	Proponent & Contractor	One-off	10,000
Electrical Safety	Circuits must not be overloaded	Project Manager & Contractor	Continuous	-
	Distribution board switches must be clearly marked to indicate respective circuits		One-off	-
	There should be no live exposed connections		Continuous	-

Expected Negative Impacts	Recommended Mitigation Measures	Responsible Party	Time Frame	Cost (Ksh)
	Electrical fittings near all potential sources of ignition should be flame proof		One-off	-
	All electrical equipment must be earthed		One-off	-
Supply of clean drinking water	Ensure that construction workers are provided with an adequate supply of wholesome drinking water which should be maintained at suitable and accessible points.	Project Manager & Contractor	One-off	-
HIV / AIDS	The contractor should provide public education information about HIV/AIDS and other related diseases prevention measures. Condoms should be made available to project workers at no cost.	Project Manager & Contractor	Continuous	30,000
Labor influx	Encourage use of local labour especially for unskilled work Enhance safety and security screening at the entry points of the project site	Project Manager & Contractor	Continuous	-
Gender Imbalance	Encourage employment of women in the labor force and this should be monitored frequently	Project Manager & Contractor	Continuous	-

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

Expected Negative impact	Recommended Mitigation Measures	Responsible Party	Time Frame	Cost (Ksh)
1. Minimization of solid waste generation and ensuring more efficient solid waste management				
Solid waste generation	Provide solid waste handling facilities e.g. waste bins , skips & dustbin cubicles	Proponent/ Property manager	One-off	25,000
	Ensure that solid waste generated at the site is regularly disposed of appropriately at authorized dumping sites by a NEMA licensed garbage collector	Proponent/ Property manager	Continuous	2,000/month
	Ensure that occupants manage their waste efficiently through recycling, reuse and proper disposal procedures.	Proponent/ Property manager	Continuous	_
2. Minimize energy consumption				
Excess energy resource utilization	Sensitize occupants to switch off electrical equipment, appliances and lights when not being used	Proponent/ Property manager	Continuous	_
	Install occupation sensor lighting at various locations such as storage areas which are not in use all the time	Proponent/ Property manager	One-off	

Expected Negative impact	Recommended Mitigation Measures	Responsible Party	Time Frame	Cost (Ksh)
	Install energy saving fluorescent tubes/ energy saving lights at all lighting points within the buildings	Proponent/ Property manager	One-off	10-40 % higher than ordinary lighting
	Monitor energy use during the operation of the project and set targets for efficient energy use Installation of Solar lighting / backup system	Proponent/ Property manager	Continuous	500,000
3. Minimize water consumption and ensure more efficient and safe water use				
Water consumption	Promptly detect and repair water pipe and tank leaks	Proponent/ Property manager	Continuous	40,000/month
	Encourage tenants to conserve water		Continuous	10,000/month
	Ensure taps are not running when not in use	Proponent/ Property manager	Continuous	20000/month
	Install water conserving taps that turn-off automatically when water is not being used		One-off	10-40 % higher than ordinary
	Install a discharge meter at water outlets to determine and monitor total water usage Rain Water harvesting and storage facilities Empty septic tanks as necessary using a NEMA licenced exhausting company	Proponent/ Property manager As required	One-off	50,000 20,000

Expected Negative impact	Recommended Mitigation Measures	Responsible Party	Time Frame	Cost (Ksh)
4. First aid				
	Well stocked first aid kit which is easily available and accessible should be provided within the premises	Proponent/ Property manager	One-off	15,000
5. Fire protection				
Fire outbreaks	Firefighting equipment such as fire extinguishers, smoke detectors, should be provided at strategic locations such as each floors lobby, corridors	Proponent/ Property manager	One-off	50,000
	Regular inspection and servicing of the equipment must be undertaken by a reputable service provider and records of such inspections maintained	Proponent/ Property manager	Every 3 months	10,000
	Provide emergency lighting on emergency staircase	Proponent/ Property manager	One-off	10,000
	Signs such as “NO SMOKING” must be prominently displayed within the buildings where applicable		One-off	
6. Emergency preparedness and evacuation procedures				
	Design suitable documented emergency preparedness and evacuation procedures to be used during any emergency	Proponent/ Property manager	One-off	10,000
	Provide measures to deal with emergencies and accidents including adequate first aid arrangements	Proponent/ Property manager	Continuous	5,000

Expected Negative impact	Recommended Mitigation Measures	Responsible Party	Time Frame	Cost (Ksh)
7. Electrical Safety				
	Circuits must not be overloaded	Proponent/ Property manager	Continuous	
	Distribution board switches must be clearly marked to indicate respective circuits		One-off	
	There should be no live exposed connections	Proponent/ Property manager	Continuous	
	Electrical fittings near all potential sources of ignition should be flame proof		One-off	
8. Insecurity				
	Ensure the general safety and security at all times by providing day and night security guards and adequate lighting within and around the premises.	Security Officer & Police	Continuous	
	Body-search the workers on entry, to avoid getting weapons on site, and leaving site to ensure nothing is stolen.	Security Officer	Continuous	
	Ensure only authorized personnel get to the premises	Security Officer	Continuous	
	Security alarms will be installed	Security Officer	Continuous	
9. Minimization of health and safety impacts				

Expected Negative impact	Recommended Mitigation Measures	Responsible Party	Time Frame	Cost (Ksh)
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		Proponent/ Property manager	Continuous	_
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.		Proponent, Firm of Experts and NEMA	Annually	-

9.3 Decommissioning Phase

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.

Table 5: Environmental Management Plan for the Decommissioning Phase of the Proposed Project

Expected Negative Impacts	Recommended Mitigation Measures	Responsible Party	Time Frame	Cost (Ksh)
Demolition waste management				
Demolition waste	Use of an integrated solid waste management system i.e. through a hierarchy of options: 1. Source reduction 2. Recycling 3. Composting and reuse 4. Combustion 5. Sanitary landfilling.	Project Manager & Contractor	One-off	20,000
	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	Project Manager & Contractor	One-off	0
	All foundations must be removed and recycled, reused or disposed of at a licensed disposal site	Project Manager & Contractor	One-off	0
	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	Project Manager & Contractor	One-off	0
	Donate reusable demolition waste to charitable organizations, individuals and institutions	Project Manager & Contractor	One-off	0

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

c) 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 rehabilitation and modernization of Tamu Law Courts 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 Menara in Muhoroni and the County of Kisumu and therefore it requires licensing to allow for speedy implementation.

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APPENDICES

Annex 1: Proof of Land Ownership (Letter of allotment)

Annex 2: Evidence of public consultations

Annex 3: Design Drawings of the proposed Project

Annex 4: Practicing Certificate of Lead expert