



THE JUDICIARY

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT PROJECT REPORT

Proposed Construction of Kajiado County High Court

Contract No: JPIP/IC/04/2015-2016

Tom Omenda & Alex O.Obara

September, 2016

**The Chief Registrar of the Judiciary,
Supreme Court of Kenya, City Hall Way,
P. O. Box 30041 – 00100, Nairobi, Kenya**

Copyright and Non-Disclosure Notice

The contents and layout of this report are owned by E-CUE ASSOCIATES LTD save to the extent that copyright has been legally assigned by us to another party or is used under licence. To the extent that we own the copyright in this report, it may not be copied or used without our prior written agreement for any purpose other than the purpose indicated in this report.

The methodology (if any) contained in this report is provided to you in confidence and must not be disclosed or copied to third parties other than for use by NEMA without the prior written agreement of E-CUE. Disclosure of that information may constitute an actionable breach of confidence or may otherwise prejudice our commercial interests. Any third party who obtains access to this report by any means will, in any event, be subject to the Third Party Disclaimer set out below.



Third Party Disclaimer

Any disclosure of this report to a third party is subject to this disclaimer. The report was prepared by E-CUE at the instruction of, and for use by, our client named on the front of the report. It does not in any way constitute advice to any third party who is able to access it by unauthorized means. E-CUE excludes to the fullest extent lawfully permitted all liability whatsoever for any loss or damage howsoever arising from reliance on the contents of this report. We do not however exclude our liability (if any) for personal injury or death resulting from our negligence, for fraud or any other matter in relation to which we cannot legally exclude liability.

Document Revisions

No.	Details	Date
1	Draft	August 2016
2	Final	September 2016

Report for:

The Chief Registrar of the Judiciary
Supreme Court of Kenya
City Hall Way, P. O. Box 30041 – 00100, Nairobi Kenya

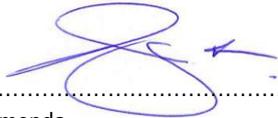
Main Contributors:

Alex Obara
Tom Omenda
Emily Kamau

Issued by

Alex Obara
E-CUE ASSOCIATES LTD

Approved by

A handwritten signature in blue ink, consisting of a large, stylized 'T' and 'O' that loops together, with a small arrow pointing to the right.

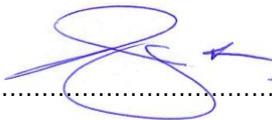
Tom Omenda
E-CUE ASSOCIATES LTD
P. O. BOX 28976 - 00200
NAIROBI

CERTIFICATION

I, **Mr, Tom Omenda** of E-Cue Associates, submit the following Environmental Impact Assessment (ESIA) Project Report for the Construction of Kajiado Law Court in Kajiado County.

The ESIA study has been carried out according to the Environmental Management and Coordination Act, 1999 and the 2011 NEMA National Guidelines for Strategic Environmental Assessments in Kenya.

To my knowledge, all information contained in this report is accurate and a truthful representation of all findings as relating to the Project.

SIGNATURE :  DATE 01 September 2016

The Proponent's Declaration:

As the proponent of the proposed project, we confirm that the information given in this ESIA study report is true to the best of our knowledge.

Name.....

Designation.....Signature.....

Date.....

The Judiciary
Nairobi, Kenya

EXECUTIVE SUMMARY

- This document presents findings of the proposed construction of Kajjado, law court in Kajjado County by the Kenya's Judiciary Performance Improvement Project (JPIP). The Report has been prepared in compliance with Section 58 of the Environmental Management and Coordination Act No. 8 of 1999 and in line with the Legal Notice No. 101 of June 2003. The subject of this Environmental and Social Impact Report is the proposed construction of Kajjado law court on a land parcel donated to the Judiciary by the Kajjado County government and occupies an area of approximately 0.67 hectares.
- The objective of this report is to ensure compliance with the Environmental Management and Coordination Act, (EMCA) 1999 whose Section 58 requires that *all development projects be preceded by an ESIA undertaken by the project proponent*. Baseline data on proposed development was generated through desktop studies, site visits and interviews with the proponent, stakeholders and Court Users, project engineers and architect. To identify, predict, analyze and evaluate the various impacts that may emanate from the project, various study methods and tools including use of checklists, matrices, expert opinion and observations were employed.
- A number of impacts both direct and indirect were identified. Positive implications of the project emanate from its improvement of services to the court user, economic contribution to society in terms of creation of business and employment opportunities which is in line with the current government of Kenya's policy on economic recovery and wealth creation (GoK, 2003). The new court will be more accessible court users due to its location on the Kajjado-Namanga main highway and will make some contribution towards provision of modern and decent working environment and effective services to all court users.
- Some negative impacts will be triggered during the construction phase and they include generation of solid wastes, noise, vibrations and dust emissions. At the operation phase, no significant impacts are expected other than those normally associated with institutional operations being solid waste generation and effluent discharge.
- An analysis of all adverse impacts indicated that most are of a short-term nature and will cease once the civil works ends. Further, all impacts have readily available means for mitigation, which have been identified and disclosed in this report. Such mitigation measures have already been incorporated in the project designs as described elsewhere in the report and are proposed for implementation during construction. The contract for construction has been verified to ascertain that it includes relevant clauses specifying measures to be installed to guarantee safety, health and environmental quality during construction and commissioning of project.
- The proponent is looking forward to putting up an investment that is environment friendly, economically viable and socially acceptable as per the laws of the land. Towards this, all appropriate rates will be paid to the Kajjado County government and the property will be managed in line with reigning government policy and legislation including being subjected to annual environmental audits in line with the Environmental Management and Coordination Act of 1999 with its amendment in 2015. This will guarantee maintenance of high standards of environmental quality.
- In view of this study therefore, the proposed project is environmentally sound. Further, the project will generate minimal adverse impacts, whose means of effective mitigation have been disclosed in this report and have already been incorporated in the project design plan. In overall, the project will confer a net positive impact on the local environment as it will provide a decent working environment to all court users and stakeholders.
- Our recommendation is therefore that this project does not require to be subjected to further environmental impact assessment and on the basis of this report, an Environmental License should be issued to the proponent (JPIP) by the National Environmental Management Authority (NEMA).



TABLE OF CONTENTS

1	INTRODUCTION	11
1.1	About this Report	11
1.2	Location of proposed Law courts	11
1.3	Objectives, Criteria and Methodology	12
1.3.1	Objectives of Study.....	12
1.3.2	Scope	13
1.3.3	Screening and Scoping	13
1.3.4	Description of Baseline Conditions.....	14
1.3.5	Collecting and Reviewing Existing Documents	14
1.3.6	Public Consultations with Local Residents	14
1.3.7	Undertaking Field Investigations	15
1.3.8	Equipment and tools used to collect important data in this Report.....	15
1.3.9	Analysis of Potential Environmental and Social Impacts.....	15
1.3.10	Development of Mitigation and Compensatory Measures	16
1.3.11	Design of Environmental Management Plan (EMP)	16
1.3.12	Design of Environmental Monitoring Plan	16
1.4	Project Budget.....	16
1.4.1	Architectural formula used at arriving at the project cost estimates	16
2	POLICY, LEGAL AND ADMINISTRATIVE FRAMEWORK.....	18
2.1	The Constitution of Kenya, 2010	18
2.2	Environmental Management and Coordination Act, 1999 (Revised 2015)	18
2.2.1	The Environmental Management and Co-ordination (Waste Management) Regulations, 2006	19
2.2.2	Procedure for development of Project Reports under EMCA	20
2.2.3	Inter-Sectoral Coordination in Environmental Management.....	21
2.3	The Urban Areas and Cities Act, No. 13 of 2011	21
2.4	The Occupational Safety and Health Act, 2007 (No. 15 of 2007)	22
2.5	The Public Health. Act (Cap. 242).....	24
2.6	The Physical Planning Act, Cap 286	24
2.7	The Land Planning Act (Cap. 303).....	25
2.8	The Building Code 2000	25
2.9	The Penal Code (Cap. 63)	25
2.10	The World Bank Safeguard Policies	25

2.10.1	Operational Policy (OP)/Bank Procedure (BP) 4.01: Environmental Assessment	25
2.10.2	OP/BP 4.04 Natural Habitats	26
2.10.3	OP/BP 4.10 Indigenous People	26
2.10.4	OP/BP 4.12 Involuntary Resettlement	27
3	PROJECT DESCRIPTION	28
3.1	Overview of project	28
3.2	The Project Design	28
3.3	Operation phase	37
4	PRODUCTS, BY-PRODUCTS AND WASTE	38
4.1	Project Waste Management Strategy	38
4.2	Project Waste Management Principles	38
4.3	DECOMMISSIONING PHASE	40
5	BASELINE ENVIRONMENTAL CONDITIONS	42
5.1	Project location and Ownership	42
5.2	Climate	42
5.3	Topography, geology and Soils	42
5.4	Upper Athi Series	43
5.5	Biological Resources	43
5.5.1	Flora	43
5.5.2	Fauna	44
5.6	Water Resources	45
6	SOCIO-ECONOMIC BASELINE CONDITIONS	46
6.1	High Population growth rate	46
6.2	Livelihood	46
6.3	Poverty Levels	46
6.4	Project Area as Part of Nairobi Metropolis	46
6.5	Land Tenure and Land Use	48
6.6	HIV/AIDS	48
6.7	Gender	48
7	CHAPTER 5: PUBLIC CONSULTATION	49
7.1	Approach to Public Consultations	49
7.2	Approach to the consultations	49
7.3	Key outcome of the Consultations	49
8	STAKEHOLDERS ANALYSIS	51
8.1	The Projected Labor (Man Power) Influx at the Proposed Construction of Kajado Law Courts	51
8.2	Foreseeable issues associated with labor influx	52
8.3	Actions to address the above issues -including the proposed contractual and ESMP terms	52
9	ANALYSIS OF POTENTIAL ENVIRONMENTAL IMPACTS	53
9.1	Impact Assessment Methodology	53
9.1.1	General Overview on Environmental Impacts	53
9.2	Positive Impacts	53
10	POTENTIAL ADVERSE SOCIAL AND ENVIRONMENTAL IMPACTS	55
10.1	Construction Phase Negative Impact	55
10.1.1	Solid waste at the site	55
10.1.2	HIV / AIDS and STIs	56
10.1.3	Gender Balance	56
10.1.4	Vegetation loss and soil erosion	56
10.1.5	Construction works noise – auditory nuisance	57
10.1.6	Dust Emission – air quality degradation	57
10.1.7	Spillage of hazardous materials	58
10.1.8	Fire outbreak – environmental disaster	58
10.1.9	Construction works induced traffic – traffic congestion	58
10.1.10	Construction works water demand – Increased pressure on existing supply	59
10.2	Potential Operation Phase Negative Impacts	59
10.2.1	Solid waste	59
10.2.2	Traffic disruption on Nairobi-Namanga Road	59
10.3	Decommissioning phase negative impacts	60
10.3.1	Solid Waste Generation	60
	Dust emission	60
	Noise and vibration	61
11	OCCUPATIONAL HEALTH AND SAFETY	62
11.1	Possible Occupational Hazards	62

11.2	Physical hazards	62
11.3	Rotating and Moving Equipment	62
11.4	Noise	63
11.5	Vibration	63
11.6	Electrical	63
11.7	Eye Hazards	64
11.8	Welding / Hot Work	65
11.9	Industrial Vehicle Driving and Site Traffic	65
11.10	Working Environment Temperature	65
11.11	Ergonomics, Repetitive Motion, Manual Handling	66
11.12	Working at Heights	66
11.13	Chemical hazards	66
11.14	Air Quality	67
11.15	Fire and Explosions	67
11.16	Corrosive, oxidizing, and reactive chemicals	68
11.17	Area Signage	68
11.18	Labeling of Equipment	69
11.19	Communicate Hazard Codes	69
11.20	Personal Protective Equipment (PPE)	69
11.21	Communication and Training	70
11.21.1	OSH Training	70
11.21.2	Visitor Orientation	70
11.21.3	New Task Employee and Contractor Training	70
11.21.4	Basic OSH Training	71
11.22	Monitoring	71
11.22.1	Accidents and Diseases monitoring	71
12	PROPOSED ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN	73
12.1	Overview of the Environmental Management Plan (EMP)	73
13	ENVIRONMENTAL AUDIT AND MONITORING PLAN	78
13.1	Net Impact after Mitigation	78
13.2	Rehabilitation Implementing Agency	78
13.3	Impact Monitoring Procedures	79
14	CONCLUSION AND RECOMMENDATIONS	81
15	REFERENCES	83

TABLE OF FIGURES

Figure 1-1	Location of Kajaiido county in Kenyan context	12
Figure 1-2	Google earth point of the proposed site within Kajaiido town	12
Figure 3-1:	Site Plan	29
Figure 3-2:	Ground Floor Plan for the Proposed Kajaiido Law Court	29
Figure 3-3:	First Floor Plan for the Proposed Kajaiido Law Court	30
Figure 3-4:	Second Floor Plan for the Proposed Kajaiido Law Court	30
Figure 3-5:	Third Floor Plan for the Proposed Kajaiido Law Court	31
Figure 3-6:	Fourth Floor Plan for the Proposed Kajaiido Law Courts	31
Figure 5-1:	General representation of lion dispersal outside the NNP	44
Figure 6-1:	The extent of the proposed Nairobi Metropolitan area	47
Figure 6-2:	Employment and other activities within Nairobi	48

TABLE OF TABLES

Table 2-1:	Coordinates of boundaries corners of the parcel of land where Kajaiido law courts will be situated	11
Table 2-2:	The plinth area table used by the consulting architecture to arrive at the approximate Construction cost of the Proposed Kajaiido Law courts	17
Table 3-1:	Categories for Environmental Assessment	26
Table 5-1:	Characteristics of Potential Project Wastes	39
Table 6-1	The Coordinates of the 4 corners of the land parcel on which the Kajaiido Law Court is proposed	42
Table 11-1:	Noise Limits for Various Working Environments	63
Table 11-2:	No Approach Zones for High Voltage Power Lines	64
Table 11-3:	Summary of Recommended Personal Protective Equipment According to hazard	69

Table 12-1: Environmental and Social Management Plan during construction	74
Table 12-2: Environment Management Plan during operation	77
Table 13-1: Monitoring Schedule.....	78
Table 13-2: <i>Matrix for compliance monitoring</i>	79

1 INTRODUCTION

1.1 About this Report

This report presents an Environmental and social Impact report for the proposed construction of Kajiado law court in Kajiado County. The Report has been prepared in compliance with Section 58 of the Environmental Management and Coordination Act No. 8 of 1999 and in line with Legal Notice No. 101 of June 2003.

The subject of this Report is the proposed construction of a ground plus three floored Kajiado law courts and their chambers on a parcel of land number donated by the Kajiado county government to the Judiciary occupying an area of approximately 0.67 ha and situated on Kajiado-Namanga Highway. The Report has been prepared under contract by Tom Omenda an Environmental Lead Expert registered by NEMA and other of his associates. Profiles of key staff who undertook the study is presented in Annex 1.

1.2 Location of proposed Law courts

The site is located within Kajiado Township on the Kajiado-Namanga highway on a parcel of land measuring approximately 0.67 ha which was donated to the Judiciary by the Kajiado County government. The site is elevated at an attitude of 1,748 meters above sea level with coordinates of the boundaries corners as shown in table 1 below:

Table 1-1: Coordinates of boundaries corners of the parcel of land where Kajiado law courts will be situated

Corners	Southing (Y)	Easting (X)
A	01° 50.828'	036° 47.315'
B	01° 50.884'	036° 47.320'
C	01° 50.906'	036°47.361'
D	01° 51.011'	036° 47.281'



Figure 1-1 Location of Kajiado county in Kenyan context



Figure 1-2 Google earth point of the proposed site within Kajiado town

1.3 Objectives, Criteria and Methodology

1.3.1 Objectives of Study

The Objectives of this EIA include;

- 1 Identification of all potential significant adverse environmental and social impacts of the proposed project and recommend measures for mitigation
- 2 Verification of compliance with the environmental regulations and industry's standards
- 3 Generation of baseline data for monitoring and evaluation of how well mitigation measures will be implemented to mitigate against expected impacts
- 4 Providing guidelines to stakeholders participating in the mitigation of adverse social impacts of the project

- 5 Preparing an Environmental Impact Assessment report compliant to the Environmental Management Coordination Act (1999) and detailing findings and recommendations.
- 6 Preparing an Environmental and Social Management Plan.

1.3.2 Scope

The scope of work to be undertaken by the Consultant included;

1. Description of the baseline environment. This description involved:
 - a. Physical environment – topography, landforms, geology, soils, climate and meteorology, air quality, hydrology, etc
 - b. Biological environment – flora and fauna types and diversity, endangered species, sensitive habitats, etc
 - c. Social and cultural environment – including present and projected population, land use, planned development activities, community structure, employment and labour market, sources and distribution of income, cultural properties etc
2. Detailed description of the proposed project including its geographic location, ecological, general layout of facilities including maps at appropriate scales, where necessary.
3. Description of applicable legislative and regulatory framework including identification and description of all pertinent regulations and standards governing the environmental quality, solid and liquid waste management, health and safety, protection of sensitive areas, land use control at the national and local levels and ecological and socio-economic issues.
4. Identification of potential environmental impacts that could result from the project.
5. Description and analysis of all occupational health and safety concerns likely to arise as a result of construction and operation of the proposed junction.
6. Carry out public participation and consultations on the positive and negative impacts of the project.
7. Propose mitigation measures for potential environmental and social impacts.
8. Develop an Environmental Management Plan to mitigate negative impacts.
9. Development of Environmental Monitoring Plan.
10. Preparation of an Environmental and Social Impact Assessment report.

1.3.3 Screening and Scoping

At the screening stage, we determined the potential magnitude of impacts and hence the depth of study required.

Scoping process was undertaken to define what could and what could not be accomplished during this study. It enabled us understand the proposed project in the context of its environment and in relation to other engineering solutions. The process involved:

- i) Defining the geographic boundary of the study in relation to possible impacts;
- ii) Identifying the time constraints and time horizons of the study (i.e. project time limits and how far into the future one should predict project effects)

1.3.4 Description of Baseline Conditions

Baseline conditions define the characteristics of the existing environment and shape, projected future conditions, assuming no project is undertaken. This information provides the basis from which project impact comparisons are made. This task involved:

- (i) Collecting and analyzing existing basic documents including topographic maps, vegetation maps, scientific and technical reports, past or current project appraisal reports, other ESIA documents, and government reports.
- (ii) Assembling technical, social, demographic, and economic information from various government departments at county or local levels, as well as from other research, business, professional, or non-governmental organizations.
- (iii) Consultation with local residents and professionals to assist baseline data gathering by validating information from other sources and identifying important local expertise as well as technical gaps.
- (iv) Undertaking field investigations based on careful planning and consideration of the environmental context of the project, the available time, and available funding.
- (v) Tracking project-induced versus natural environment changes to enable the proper understanding of the differences between project-induced environmental variations and those that occur naturally in the study area.

1.3.5 Collecting and Reviewing Existing Documents

Documents which were reviewed included;

- i. Central Bureau of Statistics - Analytical report on migration and urbanization Vol. VI
- ii. Design Report for the Court.
- iii. Kenya National Bureau of Statistics, 2007: Basic Report on `well-being in Kenya,
- iv. Kenya National Bureau of Statistics; District Development Plans,1997-2001, 2002 – 2008 and 2008 – 2012 (draft)
- v. Republic of Kenya (Kenya National Bureau of Statistics 1999 population census Vol. 1
- vi. Republic of Kenya, Environmental Management and Coordination Act, 1999
- vii. Republic of Kenya, Road Design Manuals,
- viii. Republic of Kenya, The Water Act, 2002,
- ix. Republic of Kenya, Topographic map sheets covering the project area
- x. Various Acts Laws of Kenya (See Chapter 4)
- xi. Documents listed in the Bibliography

1.3.6 Public Consultations with Local Residents

In addition to data collection, fieldwork involved a series of consultations with the Court Users and stakeholders, mainly neighbours to the Kajjido law Court (Appendix: 2), randomly sampled whose views were solicited in line with requirements of the National Environmental Management Authority-NEMA, use of public participation forms, site checklist, photography, and discussions with other stakeholders. The views / comments of court users and stakeholders have been appended to this Report as a manifest of the public attitude towards the proposed development.

1.3.7 Undertaking Field Investigations

The study process involved review of the architectural plans with a view to familiarizing with the project. Secondary data available for the Kajiado law Court area and its area of influence was also reviewed so as to provide an insight into the socio-environmental baseline. Preliminary opinions formed as regarding potential impacts were re-validated through onsite-discussions with the project proponent, stakeholders, Court Users and project design team.

1.3.8 Equipment and tools used to collect important data in this Report

Field equipments and machines mentioned here below were used to acquire important data during the Kajiado law courts field work survey;

1. Garmin 12 Global Positioning System (GPS) to get the coordinates and altitude of the law court.
2. Suuto Clinometer Height Meter, to get the percentage slope of the land/area on which the court is located and to estimate the heights of tree currently in the compound of the law courts.
3. Silver campus, to determine the directions of the law courts in relations to other developments structures etc.
4. Sony Cyber-shot digital camera to acquire photographs and images of relevant features etc.
5. Shears for plant/tree specimen collection. The specimens collected during the field work were then taken to the National Botanical Herbarium at the National Museums of Kenya, followed by literature review their suitability in where they were noted to be growing. Their overall silvicultural behaviours formed an interest and hence the recommendations below at what stem diameter at breast height (DBH) they should be felled and replaced.
6. Tree diameter tape, to measure tree diameters always determined at 1.3 meters from the ground level. Some indigenous and exotic tree species tend to rot from their birth outwards as they approach their silvicultural rotation (life cycle), and at that age of diameter size, they are susceptible to wind falls hence making them dangerous to be left standing due to their vulnerability to fall with potential destructive consequences.

1.3.9 Analysis of Potential Environmental and Social Impacts

In this task, we compared the expected changes in the biophysical and socioeconomic environment with and without the project. For each type of potential impact or environmental concern, we predicted the nature and significance of the expected impacts (some were quantitative, others qualitative), or explained why no significant impact was anticipated. This task involved: (i) Determining the significance of the impacts; (ii) Impact characteristics; and, (iii) Impact types.

Upon data analysis, potential environmental impacts (both positive and adverse) were predicted based on available tools. In particular, impact prediction in this study drew heavily on the *Reference Guidelines for Environmental Assessments* developed by USAID/ REDSO/ WCA – Abidjan. The magnitude, significance, and acceptability of predicted impacts were evaluated with a view to determining whether observed adverse impacts are significant enough to warrant mitigation. To achieve this, predicted impacts were described in both quantitative and qualitative terms through application of existing body of knowledge, checklists, flow charts, monographs and input from diverse stakeholders. Impacts were further screened for occurrence and significance of residual (those which cannot be mitigated satisfactorily) and cumulative impacts with a view to providing a basis of making recommendations on the way forward for the rehabilitation of the Kajiado law Courts.

1.3.10 Development of Mitigation and Compensatory Measures

Mitigation and/or compensatory measures were proposed to mitigate the identified negative environmental and social impacts. The following measures were considered:

- i) Mitigation measures against negative environmental impacts
- ii) Consultation in mitigation planning through effective engagement with the design team
- iii) Compensation where steps to reduce impacts were not sufficient

1.3.11 Design of Environmental Management Plan (EMP)

The EMP is the synthesis of all proposed mitigation and monitoring actions, set to a timeline with specific responsibility assigned and follow-up actions defined. It addresses issues related to both the construction and operation phases of the project. It includes:

1. A list of all project-related activities and impacts, organized by development stage (planning, construction, and operation);
2. A list of institutions involved and their responsibilities;
3. Specific remedial and monitoring measures presented for:
 - i) Construction period activities and impacts;
 - ii) Operational period activities and impacts;
 - iii) A clear reporting schedule, including discussion of what to submit, to whom, and when; and,
 - iv) Cost estimates and sources of funding for both one-time costs and recurring expenses for EMP implementation.

1.3.12 Design of Environmental Monitoring Plan

The Environmental Monitoring Plan developed for this study shows the environmental components likely to be affected by the proposed construction of the project, qualitative and quantitative measurements to be taken in order to assess the effectiveness of proposed mitigation activities, and the frequency of monitoring.

1.4 Project Budget

It is not possible to accurately evaluate the project cost due to the unexpected increases in the construction industry. These increases include Government taxes; duties on building materials; labour increases; currency devaluations and unexpected rates of inflation etc. However the consulting architecture has anticipated an estimated amount for the entire project to Cost Kenya shillings Three Hundred Sixty Nine Million Seven Hundred and Forty Nine Thousand Seven Hundred and Six (369,749,706.00) – See Annex 1. This anticipated cost has been arrived at using architectural formula in the detailed table and texts below

1.4.1 Architectural formula used at arriving at the project cost estimates

The consultant has used the construction index taken from the indices published by the Institute of Quantity Surveyors of Kenya who monitor the construction prices and appropriate indices in East Africa on a quarterly basis. Such indices are used to estimate the cost of projects particularly at inception stages. The consultant recommends that the construction index to be applied be approximately Kshs. 50,000 per square metre of plinth area. The total plinth area used in the cost estimate in this project is 7,432m² and highlighted in the Table 2 below.

Table 1-2: The plinth area table used by the consulting architecture to arrive at the approximate Construction cost of the Proposed Kajiado Law courts

No.	Description	Area (m²)
1	Ground Floor	1,926 m ²
2	First Floor	1,736 m ²
3	Second Floor	1,720 m ²
4	Third Floor	1,517 m ²
5	Fourth Floor	450 m ²
6	Generator Switch and Transformer Room	78 m ²
7	Gate House	5 m ²
8	Total	7,432m²

2 POLICY, LEGAL AND ADMINISTRATIVE FRAMEWORK

2.1 The Constitution of Kenya, 2010

The Constitution of Kenya, promulgated into law on 27 September 2010 is the supreme law of the Republic of Kenya and binds all persons and all State organs at all levels of government. It provides the broad framework regulating all existence and development aspects of interest to the people of Kenya, and along which all national and sectoral legislative documents are drawn.

In relation to environment, Article 42 of Chapter 4, the Bill of Rights, confers to every person 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 measures, particularly those contemplated in Article 69, and to have obligations relating to the environment fulfilled under Article 70.

Chapter 5 of the new constitution provides the main pillars on which the 77 environmental statutes are hinged and covers "Land and Environment" and includes the aforementioned articles 69 and 70. Part 1 of the Chapter dwells on land, outlining the principles informing land policy, land classification as well as land use and property. Part 2 of the Chapter directs focus on the environment and natural resources. It provides for a clear outline of the state's obligation with respect to the environment. The Chapter seeks to eliminate processes & activities likely to endanger the environment. Article 69 states that 1) The State shall:

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

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

In conformity with the Constitution of Kenya 2010, every activity or project undertaken within the Republic of Kenya must be in tandem with the state's vision for the national environment as well as adherence to the right of every individual to a clean and healthy environment. The proposed access junction project is a development activity that will utilize sensitive components of the physical and natural resources hence need for a clearly spelt out environmental management plan to curb probable adverse effects to the environment.

2.2 Environmental Management and Coordination Act, 1999 (Revised 2015)

The Act (provides for the legal framework for the management of the Kenyan environment. Part II of the Environment Management & Coordination Act, 1999 states that every person in Kenya is entitled to a clean and healthy environment and has the duty to safeguard and enhance the environment. In order to achieve this, section 58 of the Act (EMCA) No. 8 of 1999, second schedule 9 (i), and the environmental (Impact Assessment and Audit) Regulations, 2003, requires all new enterprises and projects to undergo Environmental Impact Assessment (EIA). Section 58 (2) states, second schedule, lists projects that shall undertake a full environmental impact assessment

study and submit an environmental impact assessment report to the authority prior to being issued with a licence by the authority.

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

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

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

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

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

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

2.2.1 The Environmental Management and Co-ordination (Waste Management) Regulations, 2006

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

- domestic waste
- industrial waste,
- hazardous and toxic waste
- pesticides and toxic substances
- biomedical wastes and
- radioactive waste

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

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

- i) Improvement of production process through-
 - Conserving raw materials and energy :

- Eliminating the use of toxic raw materials and waste~
- Reducing toxic emissions and wastes
- ii) Monitoring the product cycle from beginning to end by-
 - Identifying and eliminating potential negative impacts of the product
 - Enabling the recovery and re-use of the product where possible, and
 - Reclamation and recycling and
- iii) Incorporating environmental concerns in the design and disposal of a product

The Proponent shall ensure that the main contractor adopts and implements all possible cleaner production methods during the construction phase of the project.

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

- The identity of the hazardous waste
- The name and address of the generator of waste
- The net contents
- The normal storage stability and methods of storage
- The name and percentage of weight of active ingredients and names and percentages of weights of other ingredients or half-life of radioactive material
- Warning or caution statements which may include any of the following as appropriate-

-the words "WARNING" or "CAUTION"

- the word "POISON" (marked indelibly in red on a contrasting background; and

-the words "DANGER! KEEP AWAY / NO ENTRY FOR UNAUTHORIZED

PERSONS" and

-a pictogram of a skull and crossbones

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

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

2.2.2 Procedure for development of Project Reports under EMCA

EMCA is the principle legislation governing conduct of EIA in Kenya. The Second Schedule of EMCA-1999 specifies projects that require to be subjected to EIA studies and under this schedule; there is no minimum size threshold below which an EIA is not necessary. Thus, in line with this requirement, the proposed

construction of Kajjado Law court was screened and found to trigger concerns that required to be addressed through a Project Report which should hopefully dispense with the need for a full cycle EIA.

Towards preparation of a Project Report, the NEMA screening procedure as expounded in Legal Notice (LN) 101 of June 2003 was adopted. This entails development of a Project Report whose focus and scope are defined in Regulation 6, 7 and 8 of Legal Notice 101. Section 6 of part 1 of the LN 101 stipulates that *“An application for an Environmental Impact Assessment License shall be in the form of a Project Report in the form set out in the First Schedule to these Regulations, and the applicant shall submit the application together with the prescribed fee to the Authority. Section 7(1) of Part 11 of the Legal Notice 101 specifies the contents (scope) of the project report.*

A proponent shall prepare a project report stating: -

- *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, by-products, including waste to be generated by the project and the methods of disposal;*
- *The potential environmental impacts of the project and the mitigation measures to be taken during and after implementation;*
- *An action plan for the prevention and management of possible accidents 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;*
- *The project budget;*
- *And any other information that the Authority may require*

Section 10(2) of Part II of Legal Notice 101 allows for approval of proposed projects at the Project Report Stage and has been effectively used by NEMA to grant Environmental Licenses to small projects without requiring a full EIA. This is the process and stage at which the EIA process for construction of Kajjado law court is expected to end.

2.2.3 Inter-Sectoral Coordination in Environmental Management

In recognition that EMCA is an umbrella law coordinating diverse sectoral statutes all of which are still in force, the Legal Notice 101 of EMCA requires that the respective sectors be consulted as Lead Agencies in making decisions pertaining to environmental assessment for projects in respective sectors. This is to ensure that NEMA does not approve projects that contradict sector policies and legislation. The proposed construction of Kajjado law court has been screened to ensure harmony with other sectoral policies and legislation relevant to environmental protection in Kenya.

2.3 The Urban Areas and Cities Act, No. 13 of 2011

The Act requires that every urban district shall have powers-

- a) To establish and maintain sanitary services for the removal and destruction of, or otherwise dealing with, all kinds of refuse and effluent and, where any such service is established, to compel the use of such service by persons to whom the service is available;
- b) To establish and maintain one or more fire brigades and to take all necessary steps for the prevention and extinguishing of fires and to compensate the owners of property demolished or damaged for the purpose of preventing or extinguishing fires; the Act provides that a municipal council may establish and maintain any such sewage forms or sewage disposal works either within or without its area.
- c) To prohibit businesses which by reason of smoke, fumes, chemicals, gases, dust, smell, noise, vibration or other cause, may be or become a source of danger, discomfort or annoyance to the neighbourhood, and to prescribe conditions subject to which such business shall be carried on.

The Act, allows the right of access to private property at all times by local authorities, its officers and servants for purposes of inspection, maintenance and alteration or repairs of sewers. To ensure sustainability in this regard, the local authority is empowered to make by-laws in respect of all such matters as are necessary or desirable for the maintenance of health, safety and well-being of the inhabitants of its area.

The Act states that any person who, without prior consent in writing from the authority, erects a building on; excavate or opens-up; or injures or destroys a sewers, drains or pipes shall be guilty of an offence. Any demolitions and repairs thereof shall be carried out at the expense of the offender.

It is on the basis of this Act that the proponent is determined to ensure conservation of the project site by adhering to the above act while maintaining environmental and public health safety. The contractor and the proponent will mitigate against any impacts that may arise as a result of the project implementation by ensuring strict adherence to the Environmental Management Plan provided in this study report throughout the project cycle.

2.4 The Occupational Safety and Health Act, 2007 (No. 15 of 2007)

This is an act of Parliament to provide for the safety, health and welfare of workers and all persons lawfully present at workplaces, to provide for the establishment of the National Council for Occupational Safety and Health and for connected purposes.

The key areas addressed by the Act include:

- General duties including duties of occupiers, self-employed persons and employees.
- Enforcement of the act including powers of an occupational safety and health officer.
- Registration of workplaces.
- Health General Provisions including cleanliness, ventilation, lighting and sanitary conveniences.
- Machinery safety including safe handling of transmission machinery, hand held and portable power tools, self-acting machines, hoists and lifts, chains, ropes & lifting tackle, cranes and other lifting machines, steam boilers, air receivers, refrigeration plants and compressed air receiver.
- Safety General Provisions including safe storage of dangerous liquids, fire safety, evacuation procedures, precautions with respect to explosives or inflammable dust or gas.
- Chemical safety including the use of material safety data sheets, control of air pollution, noise and vibration, the handling, transportation and disposal of chemicals and other hazardous substances materials
- Welfare general provisions including supply of drinking water, washing facilities, and first aid.

Under section 6 of this act, every occupier is obliged to ensure safety, health and welfare of all persons working in his workplace. The occupier shall achieve this objective by preparing and as often as may be appropriate, revising a written statement of his general policy with respect to the safety and health at work of his employees and the organization and arrangements for the time being in force for carrying out that policy (Section 7). He is also required to establish a safety and health committee at the workplace in a situation where the number of employees exceeds twenty (section 9) and to cause a thorough safety and health audit of his workplace to be carried out at least once in every period of twelve months by a registered safety and health Advisor (Section 11). In addition, any accident, dangerous occurrence, or occupational poisoning which has occurred at the workplace needs to be reported to the occupational safety and health officer of the respective area by an employer or self-employed person (section 21).

According to section 44, potential occupiers or users of any premises as work places are required to apply for registration to the Director for all premises intended for use as workplaces. Such places shall be maintained in a clean state during the operation phase (section 47).

To ensure machinery safety, every hoist or lift - section 63 and/ or all chains, ropes and lifting tackles - section 64 (ld), shall be thoroughly examined at least once in every period of six months by a person approved by the Director of Occupational Health and Safety Services. Similarly, every steam boiler - section 67 (8) and/or steam receiver section 68 (4) and all their fittings and/or attachments shall be thoroughly examined by an approved person at least once in every period of twelve months whereas every air receiver shall be thoroughly cleaned and examined at least once in every period of twenty four months or after any extensive repairs - section 69 (5). According to section 71 (3), every refrigeration plant capable of being entered by an employee also needs to be examined, tested and certified at least once in every period of twelve, months by an approved person.

In relation to fire safety, section 78 (3) requires spillage or leaks of any flammable liquid to be contained or immediately drained off to a suitable container or to a safe place, or otherwise treated to make it safe. Furthermore, a clear and bold notice indicating that smoking is prohibited should be conspicuously displayed in any place in which explosive, highly flammable or highly combustible substances, are manufactured, used, handled or stored-section 78 (5). In addition, necessary precautions for dealing with fire incidents should be implemented including provision of means for extinguishing fire and means for escape, in case of fire, for the persons employed in any workplace or workroom - section 81. As far as disaster preparedness and emergency response program is concerned, section 82 (1) makes it a mandatory requirement for every occupier of a workplace to design evacuation procedures to be used during any emergency situation and to have them tested at regular intervals.

To promote health and safety of employees who are at risk of being exposed to chemical substances, section 84 (3) and 85 (4) requires every employer to maintain at the workplace material safety data sheets and chemical safety data sheets respectively for all chemicals and other hazardous substances in use and ensure that they are easily available to the employees.

The employers' positive contribution towards the welfare of the employees include provision and maintenance of adequate supply of wholesome drinking water - section 91 and a first aid box or cupboard of the prescribed standard - section 95 at suitable point (s) conveniently accessible to all employees.

Other precautionary measures include: issuance of a permit to work to any employee, likely to be exposed to hazardous work processes or hazardous working environment, including such work processes as the maintenance and repair of boilers, dock work, confined spaces, and the maintenance of machinery and equipment, electrical energy installations, indicating the necessary precautions to be taken - section 96 (1); provision and maintenance for the use of employees, adequate, effective and suitable protective clothing including suitable gloves, footwear, goggle and head coverings in any workplace where employees are likely to be exposed to wet, injurious or offensive substance section 101 (1).

During project implementation and operations, a large labour force will be required. This Act makes provisions for safety, health and welfare of persons upon which provision of their protection will be based. This will protect them against hazards to health and safety arising out of or in connection with their activities at work especially during the construction phase. This Act therefore safeguards workers welfare during the project phases by ensuring capacity building on Health and safety of workers at work place. In summary, this act will be used as a guideline to ensure health and safety of workers is guaranteed. The proponent will ensure that the contractor includes in the contract adequate measures to promote safety and health of workers during all phases of the proposed project.

2.5 The Public Health. Act (Cap. 242)

Section 115 of the Act states that no person/institution shall cause nuisance or, conditions likely to be injurious or dangerous to human health. Section 116 require local Authorities to take lawful, necessary and reasonably practicable measures to maintain areas under their jurisdiction clean and sanitary to prevent occurrence of nuisance or condition liable for injurious or dangerous to human health.

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

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

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

The proponent will be required to contract a licensed solid waste collector to collect all solid waste from the site to an approved dumping site. Sewage from the site will be discharged into a treatment plant which is the appropriate method for this area awaiting construction of the sewer line.

2.6 The Physical Planning Act, Cap 286

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

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

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

The proponent has complied with this provision by appointing EIA/Audit experts prepare and submit this Environmental Impact Assessment study report to National Environmental management

Authority (NEMA). Formal approval of architectural and engineering drawings will be required prior to commencement of the project.

2.7 The Land Planning Act (Cap. 303)

Section 9 of the subsidiary legislation (The development and use of land regulations 161) under this Act requires that before the local authorities submit any development plans to the Minister for approval, steps should be taken as may be necessary to quaint the owners of any land affected by such plans.

Particulars of comments and objections made by the landowners should also be submitted. This is intended to reduce potential conflict between the interests of the authorities and those of landowners in respect of settlement, social and economic activities

2.8 The Building Code 2000

Section 194 requires that where a sewer exists, the occupants of the nearby premises shall apply to the local authority for a permit to connect to the sewer line and that all wastewater must be discharged into the sewers. The code also prohibits construction of structures or buildings on sewer lines.

Compliance to all building codes will be required. For this development sewerage treatment plant will be constructed for effluent management.

2.9 The Penal Code (Cap. 63)

Section 191 of the Penal Code states, that any person or institution that voluntarily corrupts or foils water of public springs or reservoirs, rendering it less fit for its ordinary use is guilty of an offence. Section 192 of the same act says a person who makes or vitiates the atmosphere in any place to make it noxious to health of persons/institution in dwellings or business premises in the neighbourhood or those passing along public way commit an offence.

The Proponent will be required to ensure strict adherence to the Environmental Management Plan throughout the project cycle in order to mitigate against any possible negative impacts.

2.10 The World Bank Safeguard Policies

The objective of the World Bank's environmental and social safeguard policies is to prevent and mitigate undue harm to people and their environment in the development process. These policies provide guidelines for the bank and borrowers in the identification, preparation, and implementation of programs and projects. Safeguard policies have often provided a platform for the participation of stakeholders in project design, and have been an important instrument for building ownership among local populations.

The World Bank's environmental assessment policy and recommended processes are described in Operational Policy (OP)/Bank Procedure (BP) 4.01: Environmental Assessment. Its purpose 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.

2.10.1 Operational Policy (OP)/Bank Procedure (BP) 4.01: Environmental Assessment

Environmental Assessment is one of the ten (10) environmental, social, and legal Safeguard Policies of the World Bank. Environmental Assessment is used in the World Bank to identify, avoid and mitigate the potential negative environmental impacts associated with operations likely need the Bank assistance. In World Bank 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.

Projects of interest to the Bank are categorized as indicated in the Table 1 below.

Table 2-1: Categories for Environmental Assessment

Category	Requirements
A	A full (comprehensive) EIA is normally required as the project may have significant adverse environmental impacts that may be sensitive, irreversible and diverse. These are mainly new construction project
B	More limited environmental analysis is appropriate, as the project may have specific environmental impacts and mitigation measures can be more easily designed. Projects under this category entail rehabilitation, maintenance or upgrading rather than new construction.
C	Environmental analysis is normally unnecessary. Projects focus on education, family planning, health and human resource development.
D	Environmental projects, for which separate EIAs may not be required, as environment would be a major focus of project preparation.

According to these guidelines, the project falls under a Category B project requiring a limited environmental analysis as the project may have specific impacts and mitigation measures can be more easily designed.

Environmental and Social Assessment is one of the 10 environmental, social, and legal Safeguard policies.

The other World Bank safeguard policies relevant to this study include the following;

- Bank Safeguard Policy 4.04 Natural Habitats;
- Bank Safeguard Policy 4.10 Indigenous People; and
- Bank Safeguard Policy 4.12 Involuntary Settlement.

2.10.2 OP/BP 4.04 Natural Habitats

This safeguard policy requires a precautionary approach to natural resources management and requires the conservation of critical environments during project development. In order to ensure conservation and project sustainability, this policy requires that Project alternatives are sought when working in fragile environments; and that key stakeholders are consulted during the project design, implementation, monitoring and evaluation of mitigation.

The site is within an urban setting and the specific site was previously used as grazing field by the local community. The site therefore does not qualify as a natural habitat having been degraded over the years. Furthermore the site was previously used as a construction camp.

2.10.3 OP/BP 4.10 Indigenous People

The World Bank recognizes that the identities and cultures of Indigenous Peoples are inextricably linked to the lands on which they live and the natural resources on which they depend. These distinct circumstances expose Indigenous Peoples to different types of risks and levels of impacts from development projects, including loss of identity, culture, and customary livelihoods, as well as exposure to disease. Indigenous Peoples are frequently among the most marginalized and vulnerable segments of the population. As a result, their economic, social, and legal status often limits their capacity to defend their interests in and rights to lands, territories, and other productive resources, and/or restricts their ability to participate in and benefit from development. At the same time, the Bank recognizes that Indigenous Peoples play a vital role in

sustainable development and that their rights are increasingly being addressed under both domestic and international law.’

The rights of indigenous people will not be contravened by the proposed Kajjado law court construction since there are no indigenous people who currently occupy or use the site for any of their activities or dependent on the site to any reasonable extent. Furthermore there was no indication by the local people that the fencing off or of donating the site to the Judiciary will in any way affect any of their indigenous practices.

2.10.4 OP/BP 4.12 Involuntary Resettlement

The World Bank’s experience indicates that involuntary resettlement under development projects, if unmitigated, often gives rise to severe economic, social, and environmental risks: production systems are dismantled; people face impoverishment when their productive assets or income sources are lost; people are relocated to environments where their productive skills may be less applicable and the competition for resources greater; community institutions and social networks are weakened; kin groups are dispersed; and cultural identity, traditional authority, and the potential for mutual help are diminished or lost. This policy includes safeguards to address and mitigate these impoverishment risks.’

The site of the proposed law court has been donated to the Judiciary by the Kajjado County government. The 0.67 ha parcel of land is currently not occupied by any group of people and so will not necessitate Involuntary Resettlement of any group of people. Since the time it was donated to the Judiciary, it was fenced off and there is no occupancy by any group of people. This policy will therefore not be contravened.

3 PROJECT DESCRIPTION

3.1 Overview of project

The proposed project entailed construction of a ground floor plus three floored Kajjado law courts and their chambers and whose design is described under 3.2 below.

3.2 The Project Design

The project design comprises the following:-

(i)	Ground Floor	:	1,926 m ²
(ii)	First Floor	:	1,736 m ²
(iii)	Second Floor	:	1,720 m ²
(iv)	Third Floor	:	1,517 m ²
(v)	FourthFloor	:	450 m ²
Total			7,349 m²
(b) Ancillary Outbuildings:-			
(i)	Generator Switch and Transformer Room	:	78 m ²
(ii)	Gate House	:	5 m ²
The approximate overall floor area of the buildings is			7,432 M²

The Architectural Drawing Details

Below is a detailed architectural design plans of the proposed new Kajjado law courts from the gate structure all the way to the fourth floor herewith named figures 1a, 1b 1c, 1d, 1e, 1f, 1g, 1h and 1i for Ground floor plan, First floor Plan, Second Floor Plan, Third Floor Plan, Fourth Floor Plan, Front View Perspective of finished Court; Back Side Perspective of Finished Court Building and Chambers Perspective View of Finished Court respectively.



Figure 3-1: Site Plan

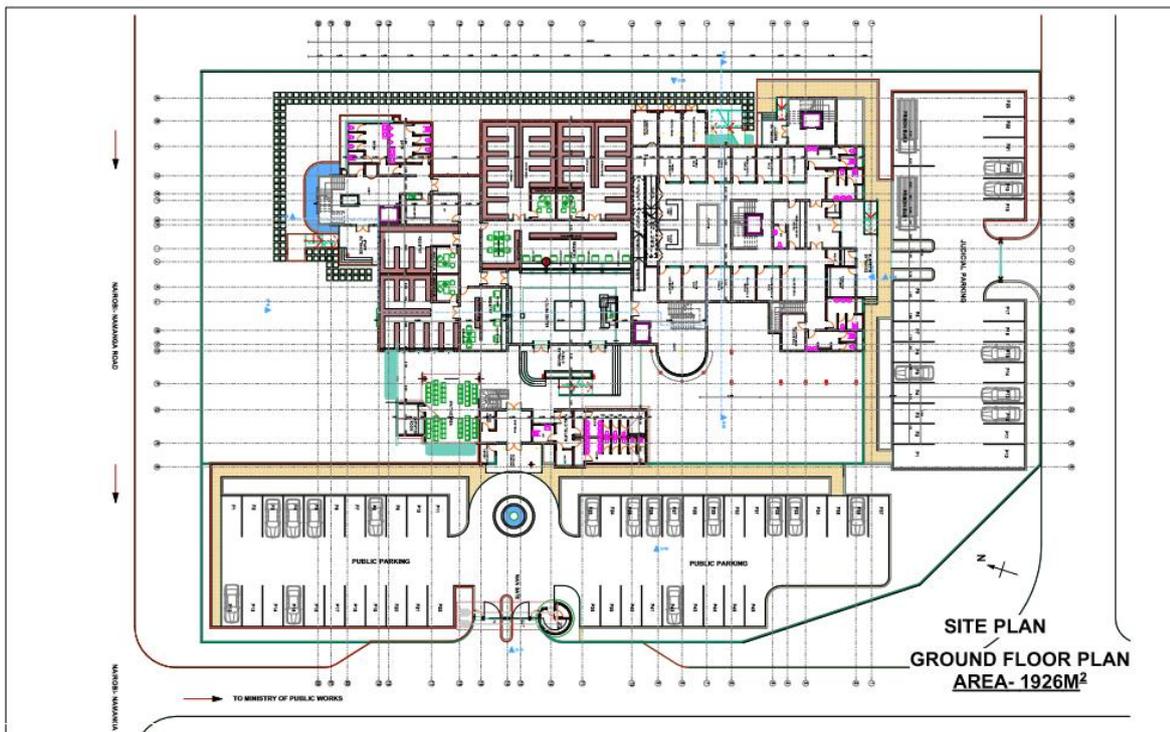


Figure 3-2: Ground Floor Plan for the Proposed Kajiado Law Court

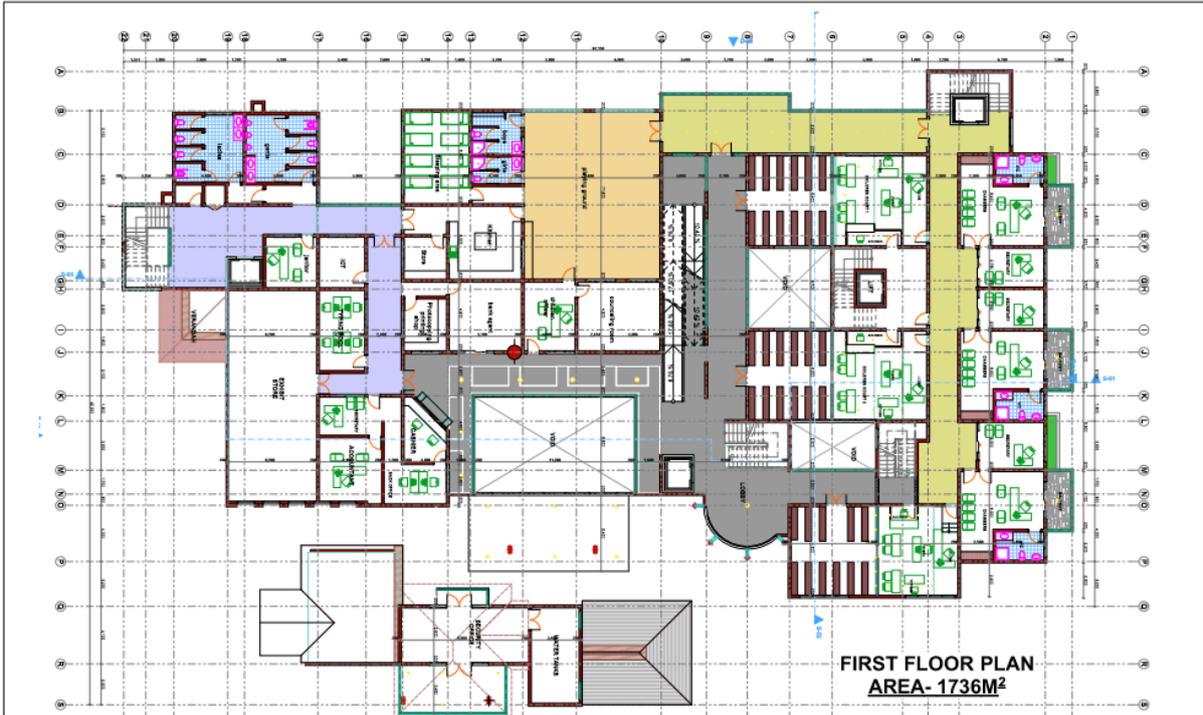


Figure 3-3: First Floor Plan for the Proposed Kajiado Law Court

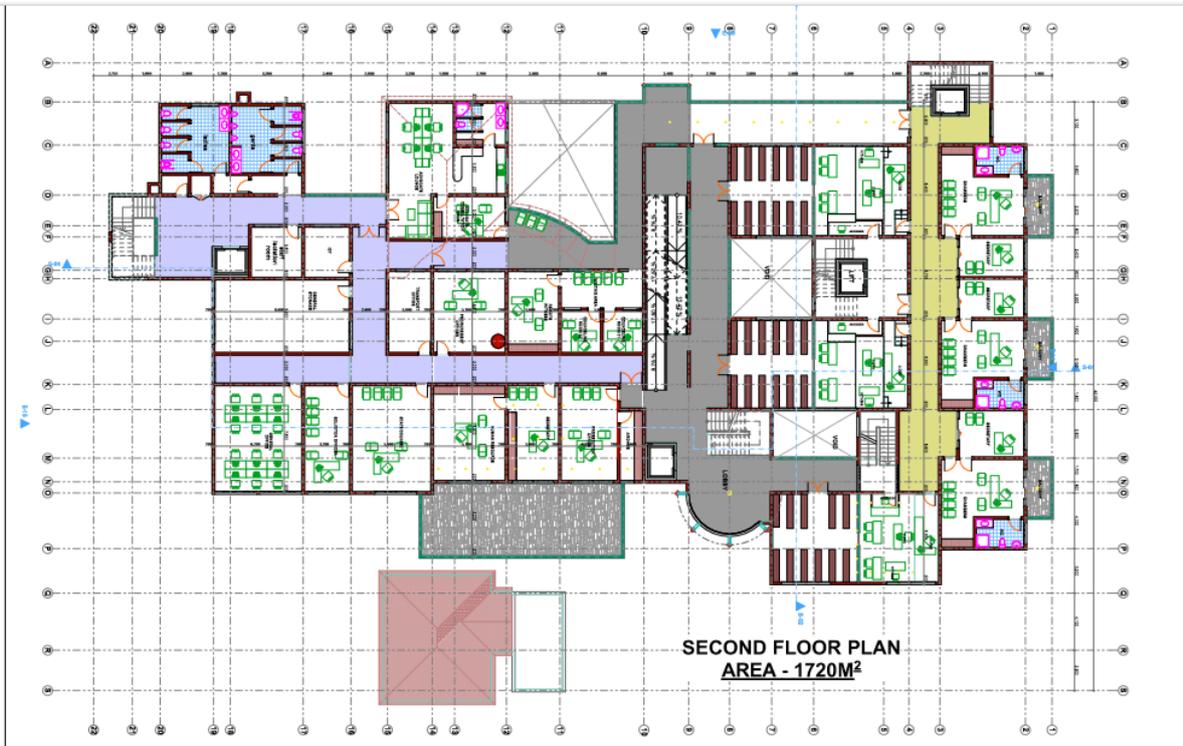


Figure 3-4: Second Floor Plan for the Proposed Kajiado Law Court

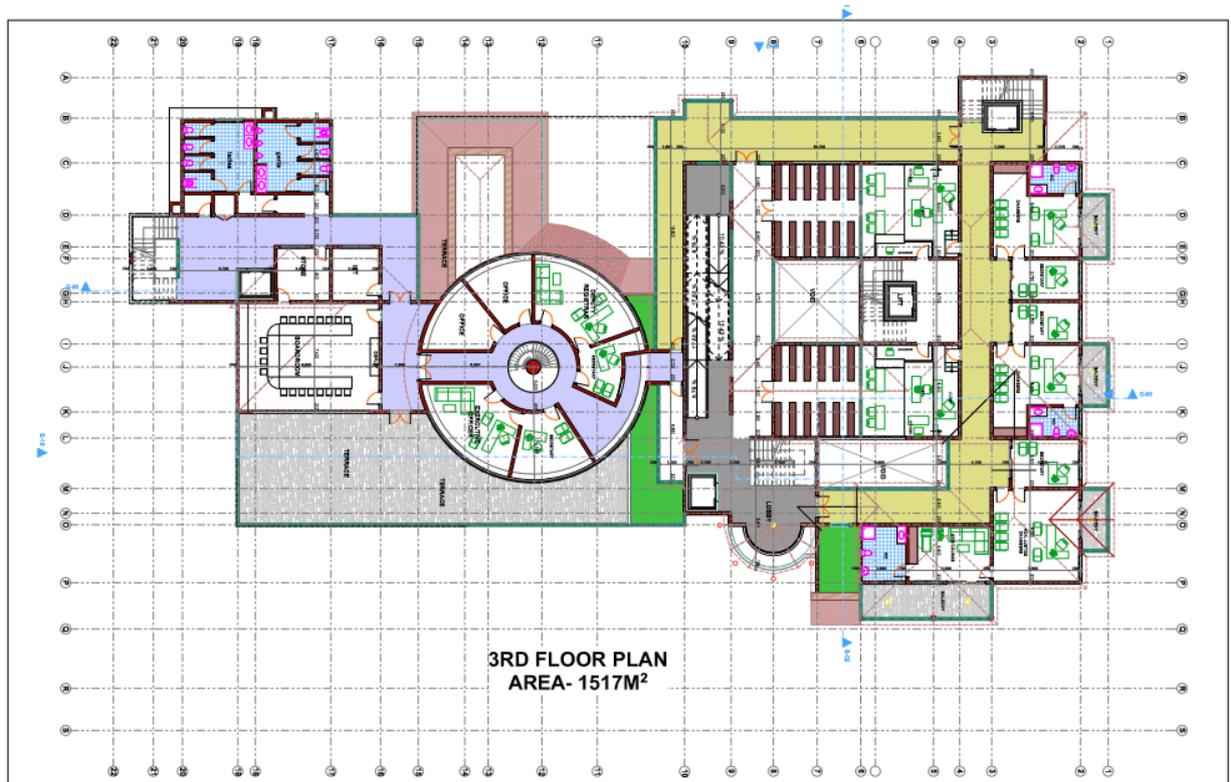


Figure 3-5: Third Floor Plan for the Proposed Kajado Law Court

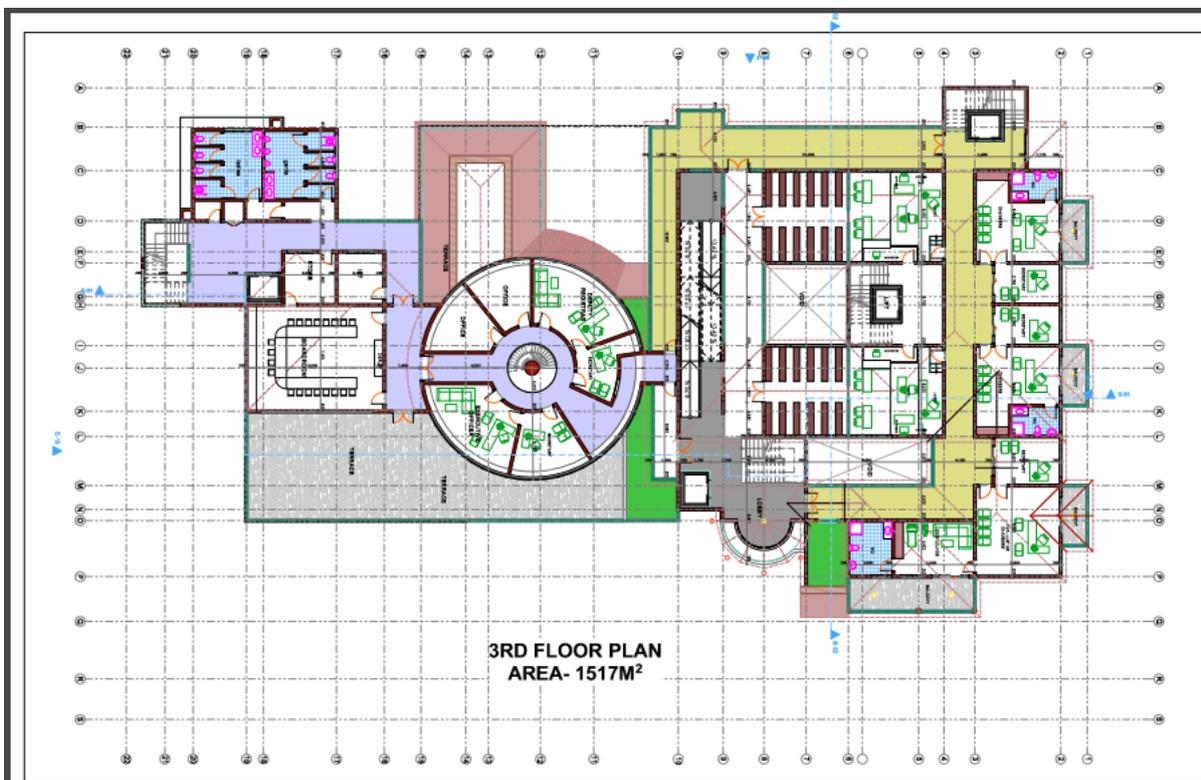


Figure 3-6: Fourth Floor Plan for the Proposed Kajado Law Courts

(c) Site Works

The General Construction description is as follows:-

- Reinforced concrete foundations and stone foundation walls
- Reinforces concrete framed superstructure of Machine dressed stone walls and Aluminium and timber doors
- Plaster and paint to all internal walls, Gypsum and acoustic ceilings with Site Works consisting of the following i) Driveways, Parking and Walkways ii) Water Reticulation iii) Foul Drainage
-

The Main Building Services will comprise of:-

- Electrical and related Installations
- Plumbing, Drainage and Fire Fighting Installations
- Two Lifts Installations

Programme for Completion of the Works

- a. The new court building must be completed as early as possible and be carried out in accordance with the Contractor's preferred and approved programme of works.
- b. The general specifications for reference in this contract are as follows:
 - Ministry of Works General Specification for Building Works (1976 Edition)
 - Kenya Bureau of Standard Specifications.
 - Any other relevant specification material issued by the Project Manager or his representative to amplify, compliment or clarify the primary specification material.

The Contractor will be required to maintain a set of the specification documents on Site for ease of reference by the management team and all material and workmanship used in the execution of the works shall be of the best quality and specification unless otherwise described.

Labour and Plant Returns

The Contractor shall deliver to the Project Manager detailed weekly returns showing the supervisory staff and the number of the several classes of labour and plant.

Visitor's Book and Site Diary

The Contractor shall keep on the Site a visitors' book for recording the names of all persons who visit the site for the purpose of the project. He shall also maintain on the Site a diary in which he shall record site activities on a daily basis and particularly any occurrence which bears on the progress of the Works in any way. The visitors' book and the diary shall be surrendered to the Project Manager at the completion of the project or at any other time that he may be directed.

Signboard

The Contractor shall allow for providing, maintaining and later clearing away on completion a site sign board. The positioning, the size, type of construction and lettering shall be to the Project Manager's approval.

Site Telephone

The Contractor must arrange for and provide a telephone at the site throughout the contract period and pay for all charges in connection herewith.

Hoarding

The Contractor shall allow for providing, maintaining and later clearing away completion such as hoarding, fencing, gates and the like as may be required for the security of the site and as instructed by the Project Manager.

Security of Works

The Contractor shall be entirely responsible for the security of all the Works, stores, materials, plant, personnel, etc, both his own and sub-contractors' and must provide all necessary watching, lighting and other precautions as necessary to ensure security against theft, loss or damage and the protection of the public.

Site Offices

The Contractor shall allow for providing, maintaining and later clearing away on completion adequate (about 40m²) site offices with standard furniture for the use of the Project Manager and site meetings. The Contractor shall also provide and maintain a lock-up hut containing a pedestal water closet and wash basin for the sole use of the Project Manager and other consultants including making connections to water. All the above facilities must be made as early as possible and must be properly maintained throughout the duration of the contract.

Sanitation of the Works

The Contractor shall make arrangements for sanitary conveniences for his own staff and workmen on the site. Any arrangement so made shall be in conformity with the Public Health requirements for such facilities and the contractor shall be solely responsible for any infringements of the requirements.

Government Acts Regarding Workpeople, Etc.

Allow for complying with all government Acts, Orders and Regulations in connection with employment of labour and other matters related to the execution of the Works. In Particular, the Contractor's attention is drawn to the provisions of the Occupational Safety and Health Acts 2007, and his tender must include for all costs arising or resulting from any Act, Order or Regulations relating to insurances, pensions and holidays for workpeople. The Contractor must make himself fully acquitted with the current Acts and regulations, including police regulations regarding the movement, housing security and control of labour camps, passes for transport, etc. It is most important that the Contractor before tendering shall obtain from the relevant Carried to Collection authority the fullest information regarding all such regulations, and/or restrictions which may affect the organisation of the Works, supply and control of labour etc. and allow accordingly in his tender and no claim in respect of want of knowledge in this connection will be entertained.

Blasting Operations

Blasting will only be allowed with express permission of the Project Manager in writing

All blasting operations shall be carried out at the Contractors sole risk and cost in accordance with any Government regulations in force for the time being, and any special regulations laid down by the Project Manager governing the use and storage of explosives.

Existing Property

The Contractor shall take every precaution to avoid damage to all existing property including roads, cables, drains and other services, and he will be held responsible for and shall make good all such damage arising from the execution of this contract at his own expense to the satisfaction of the Project Manager.

Removal of Rubbish

Remove all rubbish and debris from the building and Site as it accumulates and cart away and be dumped in designated dump sites in Kajjado Township.

Environmental Impacts and Mitigation Measures

Solid Waste Generation and Other Related Wastes;

- All workers shall be sensitized to ensure waste production is minimised.
- Use of integrated soil waste management systems, including prevention,
- Installation of colour coded waste bins that should be covered to minimise attraction of animals.

Interruption of Existing Logistics and Services

- Relocation of power lines to be done at off peak hours to prevent interruption of neighbourhood service delivery.
- Provision of a temporary direct access route via the main highway in to the court station to prevent traffic snarl - up and interruptions.

Soil Erosion, Hydrology and Drainage

- All new vehicle routes shall be provided with side drains, culverts and metre drains that lead to recovery points.
- Excavated earth shall be held away from areas susceptible to surface run - off of storm waters.
- Excavations shall be confined only to the approved plans.
- Excavations and substructure works shall be limited to the approved plans to prevent subsurface impacts.

Generation of Sewage and Waste Water

- All waste water and sewage shall be channelled into NEMA licensed conservancy tank of treatment and an application shall be made for an effluent discharge licence from NEMA

- The construction site should be secured by site hoarding to prevent dust propagation by wind and limit noise production within the site.
- Truck drivers shall be instructed to prevent unnecessary hooting and idling of engines.
- Hoarding and netting for dust control shall be implemented.
- Transportation of waste debris for disposal shall be done aboard secured vehicles.
- Construction sites generating dust shall be sprinkled with water to prevent emission.
- Construction and demolition works, and movement of trucks shall be limited to normal working hours.
- Machinery and equipment used on the site shall be regularly serviced.
- The Contractor shall erect a billboard to notify neighbours on cautionary practices and ongoing works and adequate job supervision shall be prioritised.
- Generators and power equipment used shall be fitted with noise control devices such as silencers or fitted on rubber surfaces.

Work Accidents during Construction

- All workers shall be included on occupational health and safety before commencement.
- A comprehensive contingency plan shall be developed to offset any major injuries.
- Material safety data sheets (MSDS) shall be available at all work areas.
- All machinery and equipment used shall be serviced regularly by qualified personnel.
- An EHS management system shall be formulated and a safety officer appointed.
- All workers, pursuant to WICA regulations, shall accordingly be insured against accidents.
- All truck drivers shall be instructed to exercise caution while turning.
- The Contractor shall subject employee selection to criteria based on health and safety parameters.
- All workers should have protective gears.
- Safety signage shall set up to caution the public.

Besides the above, the consulting Architecture has also recommended the following to ensure conformity and protection of the environment;

Landscaping

That excavate pits for planting trees, 600mm diameter x 750mm deep, remove excavated soil and fill with imported soil mixed with manure in the ratio of (1:5) ready for planting assorted trees recommended by a tree expert. Dig up ground, add manure and plant “Kikuyu” or “Mardi river grass” at 150m centres, water until the trees and grass are well established.

Storm Water Drainage (Culverts)

That a 450mm diameter pre-cast concrete pipes laid in trench with 100mm thick concrete class Q surround including all necessary excavations. A head water of 2500mm Girth x 1250mm high headwalls comprising 200mm thick natural stone rendered wall with 150mm thick concrete class Q strip foundations, including all necessary excavations and formwork. Allow for maintaining and upholding sides of excavations and keep free from fallen materials and also for keeping excavations free from water by means of pumping, bailing or

any other approved method and allow for connecting invert block drain to existing Storm water Manholes to the satisfaction of the Project Manager and County Authority.

Under ground Water Tank

That a 200,000 Litres reinforced concrete Underground Water Tank be constructed for Domestic water supply through Rain Water Collection and Fire Fighting/Gardening to Structural Engineers drawings/details.

Paved Areas around the Building and Courtyards

That over site excavations average 200mm deep, load and cart away from site, 100mm Thick murrum filling well compacted with 50mm Thick fine sand cushion bed. Round up "weed killer applied in accordance with the manufacturer's printed instructions. A 600 x 600 x 50mm Thick pre-cast concrete paving slabs bedded on sand bed (m.s) and jointed in cement and sand (1:4) mortar.

Main Power Supply and Control Cabling Excavations

That excavates trenches not exceeding 1.50 metres deep and average 600mm deep, for power supply and control cables (m.s) part return, fill in and ram and cart away surplus excavated materials.

Incinerator House

That an Incinerator House overall size 3400 x 4100 x 2100mm high with masonry up to 1200mm high and 900mm high weld mesh on top of Walling all to the Architects drawings/details and NEMA Standards.

Boundary Walls and Gates

That Mild steel gate overall size 5000 x 2400mm high in two equal leaves; each leaf comprising 75 x 25 x 3mm R.H.S. frame, one 75 x 25x 3mm RHS vertical and horizontal members welded to frame, middle rail and to each other at 75mm centres and plugged top and bottom each hung on gate columns (m.s), three number purpose made heavy duty hinges with brass bush set in and provided with one 200mm long barrel drop bolt and brass wheel to run on rails.

3.3: Construction Phase

No construction work of the intended Kajjado law courts has begun yet and will start as soon as the intended project is approved and certified by the National Environmental Management Authority (NEMA). Since the construction of the proposed new law court will be in a virgin site the following activities will have to be accomplished prior to starting the actual construction:-

Site Preparation:-

Bulk excavation over the entire site to remove top soil will be done to the average depth of 0.50 metres deep and termite nests will be removed and unwanted soil excavated, will be cart away from site as has been recommended by the design programme of work.

Clearance of Vegetation

Strategic construction of gravelled car parks within tree spacing to retain existing desirable tree species with controlled root disturbance and scale down the extent of clearance of tree species on site. Clearly demarcate boundaries for construction of open vehicle bays and avoid ambiguous unnecessary clearance of vegetation.

Filling

Imported filling material will be used to make up levels. 300mm Thick hand packed hardcore, filling levelled, well rammed and consolidated in 150mm thick layers with 50mm thick quarry dust blinding, 60mm thick pre-cast concrete paving blocks 250 x 125mm High pre-cast concrete kerb bedded and jointed in cement and sand in the ratio of 1:4 mortar including 325x100mm thick mass concrete class 20/20 in foundation and hunching at the back, all necessary formwork and excavations will be done.

Civil works: This will entail delivery of construction materials, masonry works, casting, roofing, metal and wooden fittings, plastering, particularly the interior, finishing and ancillary fittings to complete the project.

Ancillary facilities will comprise of connection of the site to existing sewage if any and storm drainage network, connection to mains electricity and water supplies. These must however be done according to the recommendations here below;

- The Contractor shall provide, at his own risk and cost, all necessary water, electric light and power required for use on the Works and make his own arrangements for connection to the nearest suitable water main and for metering the water use.
- He must also provide temporary tanks and meters as required at his own cost and clear away when no longer required and make good on completion to the entire satisfaction of the Project Manager. The Contractor shall pay all charges in connection therewith. No guarantee is given or implied that sufficient water will be available from the main and the Contractor must make his own arrangements for augmenting this supply at his own cost if necessary. Nominated sub-contractors are to be made liable for the cost of any water or electricity used and for any installation provided especially for their own use.

Raw Materials Required: The materials to be used during the construction will include building quarry stones, aggregate, sand, cement, steel, timber, electric cables, electric conduits, water pipes, drain pipes, electric fittings and accessories. Piped water from the mains will be used during the construction, supplemented by water from roof catchments and surface runoff whenever possible. As is typical of other construction projects, the proposed civil works phase of the project will be labour-intensive utilizing different cadre of skills and casual labour in the building industry. A huge number of workers will thus be engaged on the site mostly from the local community where applicable on a daily basis till the end of the project.

3.3 Operation phase

On completion, the Kajiado law court will host judiciary offices in the county, lactating room for mothers, cash offices, exhibits store, canteen, kitchen, stake holders' waiting rooms and modern vehicle parking bays for both the judicial officers, court users and stakeholders.

4 PRODUCTS, BY-PRODUCTS AND WASTE

During the construction and operations phase of the project, there will be different types of waste that will be produced as described in this section. The construction of the project will generate inert, non-hazardous and hazardous wastes over the period of construction. During occupation, mainly domestic waste which will include organic waste will be produced. However maintenance and repair activities during the operational lifetime of the project will generate limited volume of waste and only sporadically.

4.1 Project Waste Management Strategy

Prior to the commencement of the construction, the contractor(s) will prepare a Project Waste Management Plan (PWMP). The PWMP will:

- i. Propose a minimization/collection/storage/treatment/re-use/disposal route for each waste stream;
- ii. Identify potential third party re-users;
- iii. Propose incinerator types, if any;
- iv. Propose location of waste storage and duties of site personnel with regard to waste management;
- v. Identify and describe possible locations of landfills or long-term storage sites;
- vi. State the methods for properly managing (i.e. training, storing, containerizing, labelling, transporting, disposing) wastes; and,
- vii. Describe the transition of control from the contractors to the proponent, including arrangements for wastes associated with commissioning.

4.2 Project Waste Management Principles

Standards

The waste management standards to be used for the construction, operation and decommissioning of the project will be aligned to Legal notice 121: Waste Management Regulations 2006. If these regulations do not cover certain aspects of the project then the Contractor and Proponent shall comply with international regulations on environmentally sound management of waste.

Duty of Care

The principles of 'duty of care' (i.e. the responsibility of a generator or owner of waste to ensure that it is handled, transported and disposed of in an appropriate manner) for waste and waste ownership by the waste generator will be adopted by the proposed project throughout the construction, commissioning and operation phases. During construction and commissioning, the contractor will be responsible for duty of care whereas during operations, the home owners and business people within commercial buildings will be the duty holder.

Waste Inventories and Classification

Waste inventories will be created to quantify and characterize waste streams at each stage of the project. Separate inventories will be developed for construction wastes and for commissioning/operational wastes.

The volumes of waste requiring ultimate disposal will be minimized both through the control of waste generation, re-use of materials and through incineration where applicable. Inert and non-hazardous wastes that cannot be re-used or re-cycled may be disposed of at designated site in general accordance with Kenyan waste management guidelines.

Hierarchy of Waste Management Practices

Each waste stream will be managed according to the following hierarchy of techniques, in which the technique chosen should be the first in the hierarchy that is safe and practicable:

- i. Eliminate or minimize the waste stream by choice of procedure or technology
- ii. Re-use as a material
- iii. Re-use as a fuel
- iv. Process and re-use as a material
- v. Process and re-use as a fuel
- vi. Incinerate or re-use or dispose the ash.
- vii. Disposal site
- viii. Landscape- disposal site with appropriate vegetation planted
- ix. Discharge to a receiving water course (applicable only to wastewater) **BUT must meet the standards**

Transfer of Waste to Third Parties

It is expected that there will be a variety of potential third parties that may receive wastes generated during construction. These third parties will include commercial waste disposal contractors and entities (corporate or individual) that have the capacity to reuse or recycle individual waste materials.

In general, transfer to third parties for ultimate disposal will only be permitted if the part of their operation that is used for the proposed project waste is licensed. However, items such as timber wastes and other re-useable project wastes may be disposed to local population on the basis of case by case review by the contractor.

Construction Waste and Emission Inventories

Construction commissioning waste management

The Table below presents indicative characteristics of wastes that will be generated by the Proposed Project.

Table 4-1: Characteristics of Potential Project Wastes

Solids	Metals
Bituminous material for parking area	Welding Rods
Cement (Dust)	Isolated Steel Piles Wasted Lengths
Paper and Cards	Reinforcement steel
Plastic bottles, cans, drums & packaging bags (both polythene and biodegradable)	Sludge
Aggregates	Grease
Vehicle parts	Paint
Glass	Oil
Rags and Oil Adsorbents	Liquids
Light bulbs and tubes	Wash down water and drum water
Paint cans and brushes	
Stone and Rocks	Oily water

Tyres	Domestic
Cleared Trees & Branches	Food waste
Cleared undergrowth, shrubs etc	
Waste Timber	
Concrete Shuttering	

It is expected that the special specifications will obligate the contractor to dispose of different categories of waste appropriately. For example, steel wasted lengths may easily be taken by the Jua Kali industry.

In general, the contractor will be required to develop construction specific waste management plans prior to the start of construction work. At the start of the construction contract, the contractor will undertake a waste minimization/treatment/disposal study, guided by the project waste management strategy. The study will identify and quantify the expected wastes and describe:-

- i. Proposals for reduction, treatment processing
- ii. Third parties to whom waste will be transferred for re-use
- iii. Liaisons with the local Councils to identify and document suitable council disposal sites ground, landfill and incineration facilities.
- iv. Other locations of landfills or waste storage sites to be adopted if local Council facilities are inadequate.
- v. On site incineration facilities to be adopted if desirable and if local Council facilities are inadequate.

The findings of the study will be used in the development of the construction waste management plans. At a minimum, these plans will include:-

- i. A consolidated summary of the applicable regulations and restrictions governing the generation, handling, treatment and disposal of wastes generated during the construction/commissioning phases of the Project.
- ii. Any permitting requirements for waste treatment or disposal.
- iii. Detailed method statement for each element of the waste management handling, treatment and disposal process
- iv. Any third party agreements for waste handling, transfer or disposal

After construction of the office block, the waste handling/disposal facilities established by the contractor under the construction program will be closed.

If a waste handling/disposal facility procured by the contractor is closed, the contractors will be required to ensure that it is appropriately de-commissioned (i.e. including capping of any landfills) and the surface will be re-instated according to the Project Reinstatement Strategy. If the facility is retained, it will be transferred to the proponent.

4.3 DECOMMISSIONING PHASE

Decommissioning is a general term for a formal process to remove something from active status. It brings to closure, or terminates the useful life of business operations in a certain building. The owner or licensee normally decides when the facility is to permanently cease operations. The following shall be done before and during decommissioning;

- The management shall come up with a decommissioning plan that addresses:

- Facility description and history
- Project scope and objectives
- Characterization data summary
- Specific decommissioning methods
- Health and safety plans
- Risk assessment
- Site release criteria
- Waste generation estimates and waste disposal procedures
- When a decommissioning plan is developed, it will be based on
 - Adequately protecting public and occupational safety and health
 - Potential environmental and ecological impacts
 - Compliance with statutory, contractual and regulatory requirements
 - Effective project management, including selection among viable alternatives based on risk, cost and desired facility end state
 - Human capital management, consistent with future site utilization plans
- Show that a proposed decommissioning project plan can be conducted safely.
- Show that at completion the facility will comply with regulatory requirements
- Prepare formal documentation of the decommissioning of the facility
- Adhere to the occupational, health and safety regulations while conducting the decommissioning
- Evaluate potential for re-use and recovery of material and equipment
- Consider waste minimization and appropriate disposal
- Release all tenants after giving them one month notice

NB: The product of this project will have a long life span of more than fifty years. By having this consideration in my mind, the proponent will adequately invest the construction and finishing processes by ensuring appropriate technology and materials of high quality and durability are used to increase the proposed project life span. The decommissioning will therefore take many more decades.

5 BASELINE ENVIRONMENTAL CONDITIONS

5.1 Project location and Ownership

As been mentioned in chapter 1.2 above the proposed new Kajjado law court is located in Kajjado township just off the Kajjado-Namanga highways on a 0.67 Ha parcel of land that was donated to the Judiciary by the Kajjado County government. The site which is 2km away from the current Kajjado law court is on an empty parcel of land which prior to this used by those who were constructing the Nairobi-Namanga road and which was allocated to the road construction company by the Kajjado County Government as their camp and offices. The site is elevated at an altitude of 1,748 meters above sea level on a County of Kajjado government parcel of land in Kajjado Township and is fenced off by barbed wire to prevent illegal occupation and use by the locals etc for grazing animal or settlement. The distinct corners of the site boundaries are as shown in table 6-1 here below;

Table 5-1The Coordinates of the 4 corners of the land parcel on which the Kajjado Law Court is proposed.

Corners	Southing (Y)	Easting (X)
A	01° 50.828'	036° 47.315'
B	01° 50.884'	036° 47.320'
C	01° 50.906'	036°47.361'
D	01° 51.011'	036° 47.281'

5.2 Climate

The climate of the area is pleasant for most of the year. The area experiences a double (bi-modal) seasonal rainfall pattern (which peaks during the months of April and November) with high to moderate rainfall from April-May and November-December.

The mean annual rainfall is in the range of 500-800mm/year. Relative humidity observed has no significant seasonal variation and the mean values range from 70 to 80%. Temperatures in and around this area are generally constant throughout the year. Temperature fluctuates between 15°C and 30°C in most areas.

5.3 Topography, geology and Soils

The project area lies in Kajjado County and on the south east of Nairobi city. The general area is gentle slopping with relatively plain areas. The proposed project site is level/flat. Soils in this area include Vertisols and Aerosols and Ferrasols. Vertisols are made up of shrinking and swelling clays (2: 1 clay types). They are imperfectly drained to well drain.

Cenozoic volcanic and sediments, the lavas showing an easterly flow direction away from the Great Rift Valley underlie the area. The formations are quite deep, resting directly on the basement rocks. They are considered to be of post-Miocene era and this are the Nairobi Trachytes, Nairobi Phonolites, Upper Athi series and the Kapiti Phonolites.

Geology of the project area consists of the Cenozoic volcanic, which, in geo-chronological order, consists of the following formations, with the topsoil cover composed of greyish soil: - The Nairobi Trachytes; Nairobi Phonolites; Upper Athi series; Kapiti Phonolites and the Basement System Rocks

5.4 Upper Athi Series

The Upper Athi Series underlying the Nairobi Trachytes consists mainly of sandy sediments, tuffs and welded tuffs with subordinate quantities of clay. These Tuffs and sediments were deposited sub-aerially on the eastern slopes of the rift margin. The series may occur as Lake Deposits as observed in samples of borehole near the project area and eastwards. The Upper Athi series are weathered and provides various aquiferous zones within the layered thickness of the series and increases westwards, but its thickness has not been accurately established in this area.

5.5 Biological Resources

5.5.1 Flora

The Kajiado Ecosystem is part of the large Kaputei Open Plains. It is occupied predominately by the Pastoral Maasai Community of Kaputei Sub Clan. It is bounded by Nairobi National Park (NNP) to the north, the Rift Valley Escarpment to the west, the Machakos highlands to the northeast and a rugged broken terrain to the south. The escarpment, which runs due north-south, includes a vertical drop of about 300 m, and thus includes a drastic change in topography, climate and vegetation.



Plate 1: Open savannah vegetation type at the site

The original vegetation is short grass and trees adapted to dry weather conditions. This is because moving further southeast from the Nairobi City Centre, dry conditions dominates. The surrounding of the project site is characterized by dry semi-deciduous trees. Tree species within the site include; *Balanites aegyptiaca*, *Acacia xanthophlea*, *Acacia mearnsae*, *Cactus sp*, *Sodom apple*.



Plate 2: Scattered *Acacia seyal* bushes at the site

5.5.2 Fauna

Kaputei Open Plains is an arid/semi-arid savannah ecosystem. The Plains are a critical wildlife dispersal area for the Nairobi National Park (NNP). It was once a large ecological unit supporting pastoral livelihood and had some of the most spectacular concentration of wildlife in East Africa. However, due to privatization of land and fencing, most of the land for livestock and wildlife has shrunk rapidly. The fencing of land has curtailed the movement of livestock and closed down a number of wildlife migratory corridors. NNP has a large variety of habitats providing niches for a great diversity of species, including sizable populations of endangered species such as cheetah and black rhino. It also has one of the highest densities of lions in East Africa, as well as leopard, hyena, giraffe, hippo, Grant's and Thomson's gazelle, eland, hartebeest, wildebeest and zebra, and over 450 recorded species of birds. The traditional Maasai lifestyle of livestock pastoralism and the seasonal migration of large ungulates into and out of NNP are severely threatened by human settlements, industrial development, flower farming and an array of other competing land uses.

The area is already developed and the site is in situation within an industrial cum residential zone where development activities have altered the natural habitat for wildlife over the years. There are no animals to be affected by the proposed development.

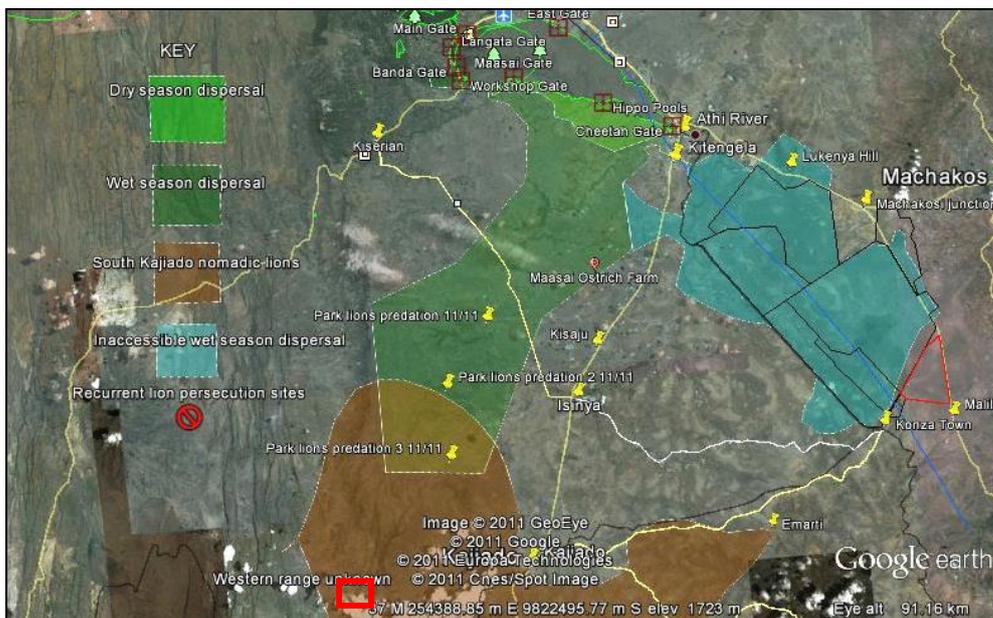


Figure 5-1: General representation of lion dispersal outside the NNP

It includes the now mainly inaccessible wet season Athi dispersal and the area used sporadically by nomadic lions from south of Kajiado

5.6 Water Resources

In general the Kaptutei area where Kajiado Town marks the southern boundary is part of a major watershed, containing the Kitengela, Loitigoshi, Kesajui and Senya rivers and their tributaries. All of these rivers collect surface water from the Plains and join at the Athi River.

Kajiado township is a highly water deficient town with small water vendors who supply water to the residence from small bore holes which are relatively unreliable. It has been ascertained however that the proposed Kajiado law Courts site may not have water connection to any water supply network since most government and private organizations in Kajiado town are supplied by private water vendors with the major one known as HARAF, a privately owned water vendor who has two most reliable bore holes and supplies most private and government organizations in Kajiado town. It is therefore recommended that the new law courts should have its own bore hole to supply it with water and supplement that with investing in proper roof water catchments systems connected to owned storage facilities to effectively and reliably serve court users and stakeholder.

6 SOCIO-ECONOMIC BASELINE CONDITIONS

6.1 High Population growth rate

The annual population growth rate in the county is estimated at 5.5 percent which is higher than the national average of 2.9 percent. Challenges posed by high population growth rate include rapid urbanization, pressure on land, human/wildlife conflict, increased crime rate due to unemployment and mushrooming of informal settlements.

6.2 Livelihood

The area is dominated by the Masai community that belong to Kaputei clan. The range of household characteristics, size of land and livestock holdings, choice of land–use and other activities is wide across the area. On average, family sizes have been shrinking, more children are going to school and for longer, and land and herd sizes are smaller than before. One-half of the cattle are owned by the 20% of households with the highest incomes, earning more than US\$4,842/year/household, or US\$13/day/household.

The lowest income households, on the other hand, own only 11% of the cattle and earn less than US\$1,917/year/household, or US\$5/day/household). Despite the fact that cattle ownership is not equally distributed, livestock-related earnings (including the value of the meat and milk they consume) still account for over 50% of incomes across all income categories.

Poorer households actually have more income sources than the wealthier ones, although non-livestock earnings are considerably lower and from less reliable sources. Higher income-earning households have a larger proportion of their incomes coming from wages and business, for example, while those in the lower ones depend more on petty trading and other informal sector activities to help them diversify their incomes.

6.3 Poverty Levels

There are high levels of poverty in the county with more than 47 percent of the population living below the poverty line. Major causes of poverty include illiteracy, frequent droughts, poor infrastructure and inadequate water resources. A major effect of poverty is high rate of school dropouts as parents are unable to raise school fees. The high dropouts subsequently result to child labour as the school going children work to supplement family income. In addition, the poor often experience nutrition related conditions that contribute to high morbidity rate among children and women. Poverty has also forced some people into commercial sex work thus exposing them to HIV/AIDS especially in the urban areas. This may result to increased number of orphaned and vulnerable children and high dependency rates.

6.4 Project Area as Part of Nairobi Metropolis

Nairobi is an international, regional, national and local hub for commerce, transport, regional cooperation and economic development. It connects together eastern, central and southern African countries. Nairobi employs 25% of Kenyans and 43% of the country's urban workers; as it generates over 45% of GDP, it is a major contributor to Kenya's economy. Over 60% of the population lives in slums and only 22% of slum households have water connections. The proportion of people living below the national poverty line in Nairobi has risen from 26% in 1992 to 50% in 1997 (UN HABITAT)

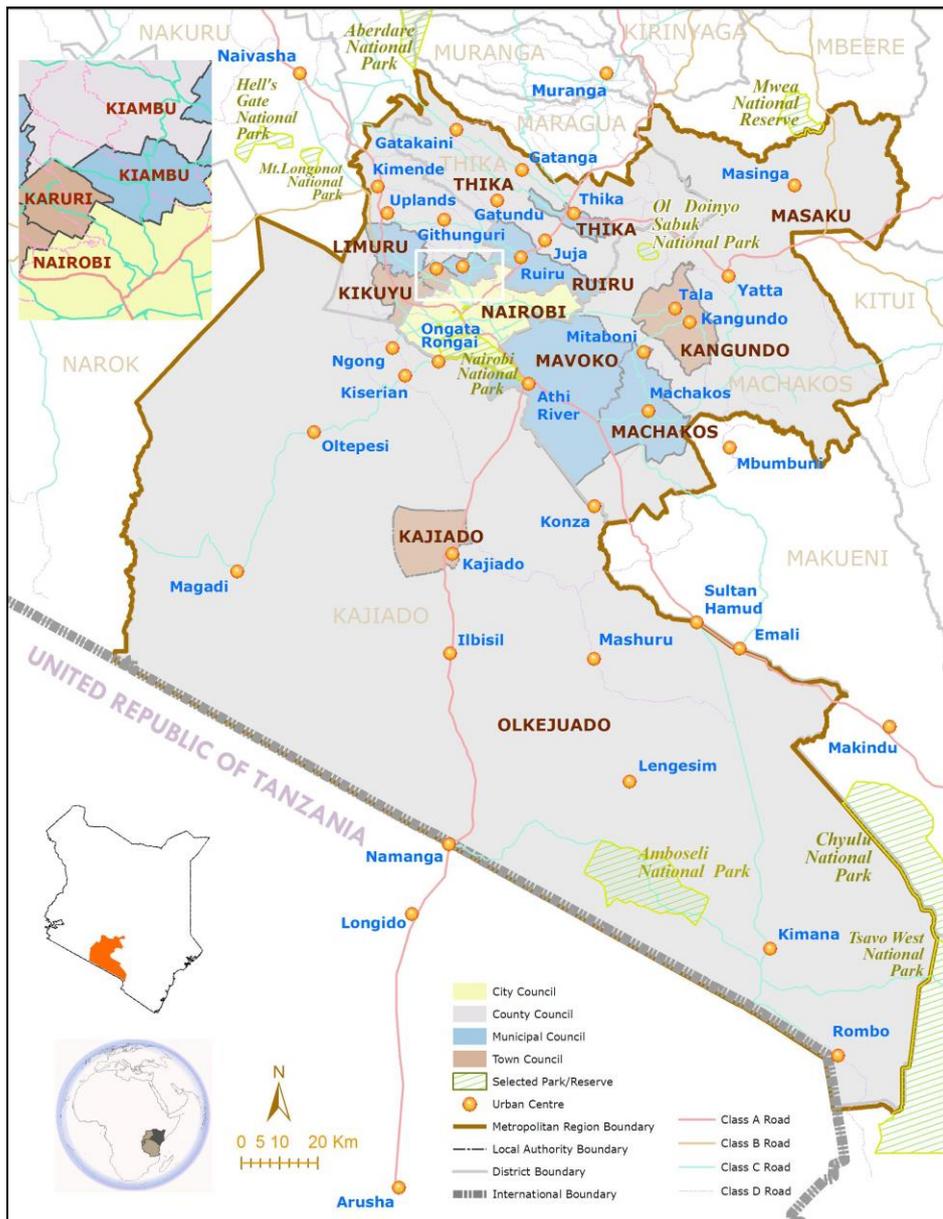


Figure 6-1: The extent of the proposed Nairobi Metropolitan area

The monthly household income among Nairobi's urban poor ranges from US\$ 65 (KES 5,500) to US\$ 78 (KES 6,600) with a disposable income of \$4 (KES 350) to \$17 (KES 1,500) (Cities Alliance, 2007). The level of income is indeed low considering the per capita poverty line of 1 US\$ (KES 85) per day.

As Nairobi's population increases, so does the demand for jobs. Currently, 56.6 per cent of women and 68.6 per cent of men aged between 15 and 50 are economically active (CBS, et al. 2004). Between 1989 and 1997, the combined formal and informal sector employment growth in Nairobi was 2.3 per cent per annum, less than half that of the rate of population growth (Post Buckley International Inc. 1998). It is estimated that about 500,000 people join the labour force annually. Most of these are unable to secure employment and thus remain unemployed or end up in traditional agriculture and in the informal sector (Odhiambo and Manda, 2003). The 1997–1998 labour force survey showed that 9 per cent of people in Nairobi were employed and 24 per cent were unemployed (CBS 2003b). Figure 3.13 shows the major areas of occupation for men and women.

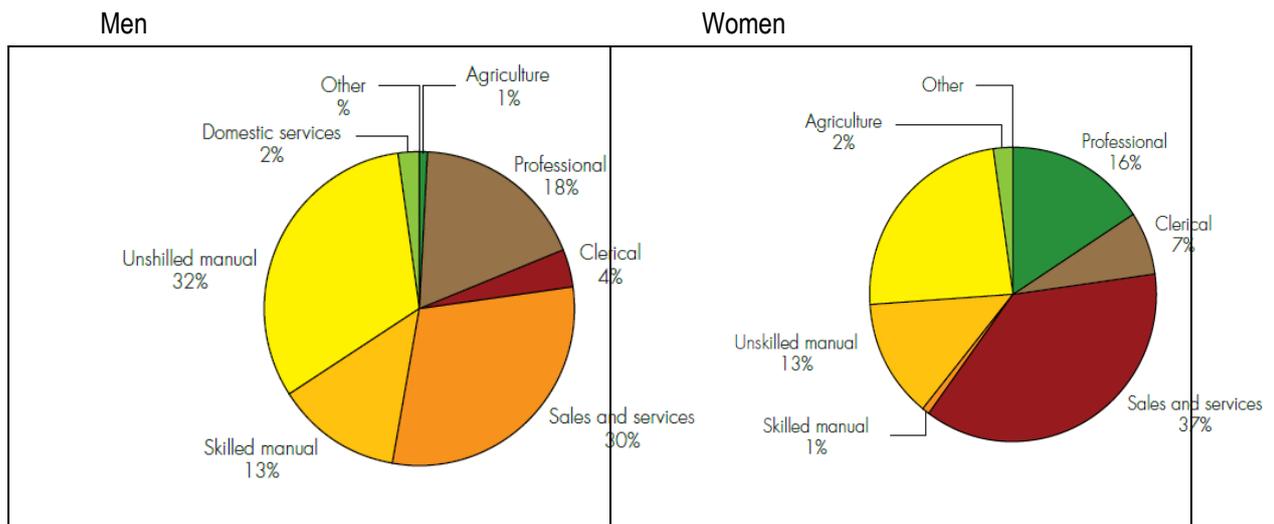


Figure 6-2: Employment and other activities within Nairobi

6.5 Land Tenure and Land Use

Most of land in Kajiado town is privately owned. Privatization and subsequent subdivision of the land has led to the sedentarization of the pastoral/nomadic Maasai community that inhabit this area. The area is experiencing rapid socio-cultural, economic, and physical changes.

Households with larger herds and more livestock wealth tend to be living on less valuable land (farther from Nairobi), versus landowners living on extremely valuable land, that are more likely to be located nearer Kajiado town and good roads, but with smaller herds and generally lower livestock assets.

6.6 HIV/AIDS

HIV/AIDS HIV prevalence in the county stands at 6.1 percent compared to the national prevalence of 6.3 percent. The contributing factors to the high prevalence rate are alcohol and drug abuse, rapid urbanization and cross border movements. Preventive activities and support for those infected and affected should be focused at the family unit.

6.7 Gender

Gender Inequality Women's ability to make economic decision is constrained by the fact that they are not the owners of productive resources like land and livestock. Wealth in the form of livestock and land are often owned by men. From the foregoing it is clear that Gender Inequality index for Kajiado is heavily skewed against the female gender. Whereas the Gender Inequality Index for Kajiado was not available, this index is a composite measure which captures the loss of achievement within a country or region due to gender inequality. It uses three dimensions to do so namely reproductive health, empowerment, and labor market participation. All these indices are fairly poor for Kajiado county although it is the second richest county in Kenya.

7 CHAPTER 5: PUBLIC CONSULTATION

7.1 Approach to Public Consultations

Legal Notice 101 of June 2003 requires that all environmental assessment process in Kenya incorporates Public Consultation. The aim is to ensure that all stakeholders interested are identified and catered for in project development implementation and operation. Of necessity, stakeholder consultations should take place alongside project design to ensure that project design puts in place measures to cater for stakeholder concerns in all project phases.

7.2 Approach to the consultations

In this case of the proposed new Kajjado law court, public consultations followed several steps as detailed below:

5.2.1: Review of selected documents relevant to the project

These included relevant guidelines on environmental assessment, the design report and other technical reports containing data and information on the baseline environment of the project. Such data was subsequently analyzed to bring out potential adverse environmental impacts of the proposed project activities.

Towards this, the consultants carefully analyzed the available materials and then made a check-list on what would be done in the field especially regarding collection of primary data to fill observed information gaps. A suitable data capturing tool in form of a semi structured questionnaire to facilitate participatory data collection on the project was then prepared by the ESIA. Identification of core stakeholders: Like in all construction, offices or housing development projects, the core stakeholders comprised people resident within the vicinity of the project as they are the ones likely to be directly affected by the project. This is the group that is likely to benefit or be afflicted by the proposed construction of the proposed Kajjado law court project and therefore contacted in this study. A list of those consulted, their professions and their stakes is shown in Annex 2.

5.2.2: On site consultations with neighbours of the project:

In line with requirements of the National Environmental Management Authority (NEMA), the views of neighbours to the proposed development were solicited as part of the ESIA process. Table 4 provides a matrix of impact analysis for all project activities. The nature and severity of impacts is provided in columns 2 and 3 in table 4.

For this category, of stakeholders, a questionnaire survey was designed and executed. A total of 30 respondents of different gender and professions, all living or working within the vicinity of the site proposed for the new Kajjado law courts were covered in the questionnaire survey-Annex 3a and 3b. The survey aimed at informing them of the proposed project and to sign their most pertinent concerns on the intended project. Records of what transpired during the consultations are herewith summarized in 5.3 below.

7.3 Key outcome of the Consultations

Essentially, the questionnaire determined that nobody felt threatened by the proposed construction of the new Kajjado law courts on completion. None of the respondents identified a hazard or adverse environmental or social impact that would ensue or result from the proposed completion and operation of the court under reference. However key concerns of the residents consulted on the proposed new Kajjado law court are as follows;

- That recruitments of casual workers by the appointed contractor in areas such as plumbing, painting, masonry, electrical appliances etc be restricted to the local population and should not be imported

from other counties where possible so that the local population will also directly benefit from the project.

- That the appointed contractor gets supplies for building materials such as quarry stones, aggregate, sand, cement, steel, timber, electric cables, electric conduits, iron sheets, water pipes, drainage pipes, electric fittings and accessories etc from the local markets so that the project benefits local traders too.
- That the appointed contractor uses all professional ways to minimize noise and dust generation from the construction site of the new court work so as to protect locals and other offices in the neighborhoods from unnecessary health hazards.
- That the contractor uses a designated and approved dumping site by the Kajjado Township for all the waste generated at the construction works.
- That the construction of the new law court should commence at once to reduce the current delays of justice and reduce congestion currently being experienced in the current law court.
- That where possible skilled and unskilled employment opportunities arising from the construction be given to the locals and county residence first during the construction and on completion of the new law courts.
- That the design of the new court should cater for the physically challenged court users and stakeholders as that has been ignored a lot in the planning processes of such facilities in the past.

8 STAKEHOLDERS ANALYSIS

A Stakeholder engagement plan was prepared to obtain and retain broad based stakeholder participation. The broad based stakeholder participation was aimed at building and strengthening beneficial relationships among all project stakeholders, improved understanding and decision making and identifying and managing project impacts. Broad participation is also a requirement under the Kenya constitution and World Bank policy requirement. The engagement plan involved the following:

Rapid interviews with communities within Kajiado Town;

In-depth interviews and discussions with county government officials, the civil society, court users, national government officials and the public. A list of participants during these stakeholder meeting is contained in the **Annex**.

8.1 The Projected Labor (Man Power) Influx at the Proposed Construction of Kajiado Law Courts

On commencement of the construction of the proposed Kajiado Law Court, there are expected to be an influx of laborers to help in the construction work. Some of these laborers shall be those from local communities or from the Kajiado Township or immigrants from outside of the County. However the following are the likely scenario during the construction of the proposed law court;

2.3.14 Laborers likely to be employed at the Kajiado Law Court Construction Site

The number of laborers likely to be employed at the construction site for the proposed Kajiado Law court will be the desecration of the contracted contractor. This will be expected to vary in different phases of the construction and will depend on the deadline the contractor is given by the Judiciary to accomplish given tasks. It is expected however that a good number of laborers will be employed throughout the construction of the law court up to its completion and handing over. It is expected that between 25 and 45 laborers will be required at different phases of the construction on daily basis but as been said above, these will be as the need for them are determined by the contractor.

2.3.15 Likely source of laborer to work on the site (Local or Migrant Workers)

Given the local labor market and the proximity of the proposed Kajiado law court site to the Kajiado County headquarters/Township, all the required laborers are likely to be sourced locally since Kajiado Township is a cosmopolitan city. However given that the local population who are predominantly Maasai community and pastoral communities as such and are known for their love for cattle and migrate with their cattle looking for pastures and water, they may only be attracted to work on the construction of the law court site if the daily pay is very attractive/lucrative, otherwise the local laborers will be residence in the Kajiado Township who are likely to be migrants from other communities bordering Kajiado County and beyond. Those who will work on the site too will be the preference of the contracted contractor depending on whether he/she had meets the task requirements.

2.3.16 Need for Special Workers' Camps

Based on the existing and availability of housing in Kajiado Township, definitely migrant laborers will require special workers camps otherwise the migrants will suffer in getting where to reside while working at the site. It is however recommended that migrant workers' camps be situated away from the actual construction site since the site will hold expensive materials, some of which are also required by other people doing construction work in the vicinity. To avoid losses of materials and other equipments meant for the proposed law court's construction, migrant workers should only report to the construction site only when they are working there and vacate the construction site after completing their daily duties to their camp and leave the

site to those contracted security firms who will be tasked with guarding the construction materials and equipment.

8.2 Foreseeable issues associated with labor influx given the size of the urban center, the composition of the local population and other conditions.

The labor influx in Kajjado Township as a result of construction of the law court will bring with it a number of challenges. Some of these will be as follows;

- Destruction or deterioration of environment as a result of the increased population and lack of prior preparedness for such sudden population increase.
- Pressure in local amenities such as water, social facilities, provision of added sewage facilities etc.
- Mushrooming of informal residential places as a result of added demands for housing due to the influx of laborers.
- Insecurity brought about by immigrant workers some of whom are criminals and may require new hiding places into areas where they are not known. That will strain on the current security provision in the urban center.
- The sudden increased population will strain on the supply of food and that may be beneficial to local population because their farm products will fetch them more money while some locals with low incomes will suffer due to increased food prices.

8.3 Actions to address the above issues -including the proposed contractual and ESMP terms

Some of the issues the contractor and the Judiciary should do to address the above issues are as follows;

- Insist that as much as possible, the contractor and the Judiciary engage only the local laborer in the construction site so as to limit the influx of laborers in the town.
- The contractor must have strict rules and regulations on things that the contracted laborers should do on the site and those that are not allowed in the environment for the construction site so as to preserve the environment.
- Those immigrants coming to work on the site must possess recently acquired certificate of good conduct from the police showing that they have not been linked to any criminal activities in the past.
- The contractor and the Judiciary must ensure that the special workers' camps are demolished after the completion of the new law court and the site where they were constructed rehabilitated to their original conditions before handing over the completed law court to the Judiciary.
- To reduce the pressure brought about by the influx of the laborers on the supply of water and sewage facilities in the town, the contractor and the Judiciary must make arrangement to sink bore-holes for its employees in the special camp, make arrangement for water catchment from roof water harvesting for their camps uses and construct septic and pit latrines to reduce pressure on the existing sewage facilities in the town.

9 ANALYSIS OF POTENTIAL ENVIRONMENTAL IMPACTS

9.1 Impact Assessment Methodology

This chapter provides an analysis of the potential impacts likely to ensue from implementation of project activities. In predicting the impacts, a checklist of environmental impacts developed by diverse authorities (FAO, 1986; World Bank, 1999) has been employed. Interpretation of impacts was based on a ranking system of high, moderate and low, depending on the nature, scope and resilience of the impacts. In order to determine the net impact after mitigation, a ranking system of 2P, P, N, 2N has been adopted to categorize impacts (Table 4). The net sum of the P and N is used to provide an indication of the net impact of the project following the methodology of FAO, 1986.

For the purpose of this study, a number of tools and methods were applied to arrive at desired information. An inventory of the current environmental status was conducted in order to establish the baseline situation. This required generation of both primary and secondary data on both the physical and socio-economic environment. It is against such baseline that impacts of proposed civil works were evaluated. Impacts likely to occur in environmental parameters as a result of the proposed civil works and project operation were predicted against established baseline status and their potential scope described in both quantitative and qualitative terms using available environmental checklists. The magnitude, importance, and acceptability of the impacts were evaluated with the aim of determining whether the predicted adverse impacts are significant enough to warrant mitigation. The significance and extent of residual impacts, those which cannot be mitigated satisfactorily have been used as a basis for making fundamental decisions on way forward for the intended construction Kajjado law court project. This assisted in prioritizing the impacts and hence dealing more in-depth with those viewed as being significant or high impacts.

9.1.1 General Overview on Environmental Impacts

The proposed construction of Kajjado law courts is a small-scale construction project whose impacts are generally short-term and of low severity ranking. The project will not involve opening of large virgin ground and will have no impacts on natural biodiversity since it will be on a site which was previously used as base for a road construction company and which has no significant natural biodiversity resources on it. Further, the project will not encroach on new lands and will therefore not trigger relocation of human settlements as there are no human settlements on the site currently. All developments will be confined to the boundaries of the current parcel of land.

9.2 Positive Impacts

- The construction and operation of the Kajjado law court will definitely require the input of many people both within and without the project premises. At the construction phase the budget earmarked by the project architect and quantity surveyor is an investment of up to Kenya Shillings Three Sixty Nine Million Seven Hundred and Forty Nine, Thousand Seven Hundred and Six (KES. 369,749,706.00) which will be used to procure inputs (building stones, aggregate, sand, cement, steel, timber, electric cables, electrical conduits, water pipes, drainage pipes, electric fittings accessories, skilled and semi-skilled labour, etc) and this will create diverse opportunities and benefits to many people while the government will earn tax revenue through the Value Added Taxes (VAT). At this time when the Kenyan Government is striving to create employment for its people, the project emerges as a plus in this direction.
- In the past some cases were taken to Machakos for determination but with the proposed new court, all cases will be heard and determined in Kajjado, making justice be more accessible and reduce possibilities of delayed justice and also reduce costs of travelling to Machakos.

- The proposed court will reduce congestion since it will be more spacious than the current Kajjado law court.
- The proposed new law court will have modern and important facilities such as banking halls within its self, lactating facilities for mothers in need of such facilities, standard canteens, juvenile cells separate from that of adults etc which will make it more convenient and accommodative.
- The location of the new proposed Kajjado law court will be more convenient and easier to access since its location on the main road compared to the location of the current Kajjado law court.

10 POTENTIAL ADVERSE SOCIAL AND ENVIRONMENTAL IMPACTS

10.1 Construction Phase Negative Impact

10.1.1 Solid waste at the site

Considerable volumes of solid waste will be generated during site preparation and construction works, which would include some vegetation and typical construction waste such as wasted concrete, steel, wooden scaffolding and forms, pulp and polythene bags, waste earth materials, etc. This waste will negatively impact the aesthetic value of the site and surrounding environments if not properly managed and disposed of at an approved dumpsite. Solid waste, if allowed to accumulate on the ground, could cause localized pooling and flooding. Pooling of water, in turn, would create conditions conducive to the breeding of nuisance and health-threatening vectors such as mosquitoes. Improper management of construction waste constitutes a short-term negative impact.

The other type of waste is excavated over-burden soil that must be removed for foundation works. Unfortunately the site has a deep overburden, of approximately 1.5 meters.

It is estimated that up to 20,000 cubic meters of soil will be excavated. This amount of soil must be deposited at a site where it will neither be of visual intrusion nor adversely alter the landscape of the site.

Proposed Mitigation Measures

- *A site waste management plan should be prepared by the contractor prior to commencement of construction activities. This should include designation of appropriate waste storage areas, collection and removal schedule, identification of approved disposal site, and a system for supervision and monitoring.*
- *Preparation and implementation of the plan must be made the responsibility of the building contractor with the system being monitored independently.*
- *Special attention should be given to minimizing and reducing the quantities of solid waste produced during site preparation and construction.*
- *Any vegetation and combustible waste must not be burned on the site.*
- *Reusable inorganic waste (e.g. excavated sand/soils) should be stockpiled away from drainage features and used for in filling where necessary and/or possible.*
- *Unusable construction waste, such as damaged pipes, formwork and other construction material, must be disposed of at an approved dumpsite.*
- *Provide solid waste receptacles and storage containers, particularly for the disposal of plastic bags, boxes, so as not to block drainage system and to prevent littering of the site.*
- *Make arrangements for the daily collection of litter from the site and appoint a licensed solid waste transporter to collect and transport it for dumping at approved site.*

10.1.2 HIV / AIDS and STIs

During the construction phase, some of the skilled and semi-skilled workers may come from outside the project. This category of workers are likely to engage in extra-marital sex with the locals. This may raise the strong possibility of contracting sexually transmitted diseases including HIV-AIDS.

Mitigation measures

- *The contractor and the Judiciary are advised to seek the services of a recognized HIV and AIDS councilor to come and offer training and teachings on site on the danger of HIV and AIDS in the society to all those who will be engaged in the construction of the proposed law court. Such a councilor should be engaged on a per time or temporary basis and will only be called upon to come and give such trainings on agreed days in a month throughout the construction period. It is recommended that the councilors should be two in number, one a man and the other a female so that the female councilor can talk to the female laborers while the man councilor can engage the male laborers to enhance freedom during discussions and trainings. Documented handouts for HIV/AIDS and other sexually transmitted diseases be provided and their preventive measures such as female and male condoms be freely available and arrangements made by the contractor and the Judiciary for those working on the site but would have liked to undergo voluntary testing while on the site to know their status, such information should also be available to all those engaged on the construction site. These activities will attract a small budget of approximately KES. 1,000,000 annually.*

10.1.3 Gender Balance

It is the policy of the Kenyan Government and is a constitutional provision that gender equality be emphasized in all work environments. Construction is a particularly masculine industry and has over the years been dominated by the male gender. This applies to the construction of the Kajiado Law Courts.

Proposed mitigation measures:

- *The contractor must ensure a minimum of 30% of the workforce comprise of women*
- *The supervisor and the Judiciary should ensure that this minimum ratio is maintained throughout the construction period.*

10.1.4 Vegetation loss and soil erosion

The site is covered in a mixture of shrubs, grasses and trees. The ground cover has protected the site from erosion but construction will necessitate excavations and site clearance that will expose the soil to agents of erosion including wind.

Site preparation, vegetation clearance and excavations using heavy construction equipment usually expose soils in the affected areas and leave them vulnerable to erosion by heavy rainfall and surface run-off. Improper location of stockpiles of sand, gravel, cement, etc., at the construction site could also cause fine materials to be washed into the drainage system during heavy rainfall events. This would not only represent a waste of materials but would also contribute blockage of drainage systems.

Proposed Mitigation Measures

- *Stage site clearance works so as to minimize the area of exposed soil at any given time.*
- *Re-cover exposed soils with grass and other ground cover as soon as possible.*

- *Monitor areas of exposed soil during periods of heavy rainfall throughout the construction phase of the project to ensure that any incidents of erosion are quickly controlled.*
- *Levelling of the project site to reduce run-off velocity and increase infiltration of storm water into the soil*
- *Building of physical barriers to prevent mass movement where necessary.*
- *The stockpiling of construction materials should be properly controlled and managed. Fine-grained materials (sand, etc.) should be stockpiled away from any surface drainage channels and features.*
- *Low bumps should be placed around the piles of sand and marl and/ or tarpaulin used to cover open piles of these materials to prevent them from being washed away in the event of heavy rains.*
- *Safe storage areas should be identified and retaining structures put in place prior to the arrival*
- *Materials to be delivered on site in installments.*

10.1.5 Construction works noise – auditory nuisance

Although not expected to create a significant negative impact because the immediate settled area is over 300 m from the site, the use of vehicular activities and heavy equipment during construction and building works will inevitably generate noise. The generated noise could, nonetheless impact on the construction workers. Albeit annoying, this negative impact will be short-term (limited to the construction phase). Noise beyond some level is itself a nuisance and need to be avoided. Such noise emissions should be minimized as much as possible from the source point through appropriate measures.

Proposed Mitigation Measures

- *Restrict noisy construction activities to normal working hours (8am – 5pm).*
- *Inform local residents beforehand, via notices and advisories, of pending noisy periods and solicit their tolerance well before the commencement of piling works.*
- *Workers operating equipment that generate noise should be equipped with noise protection gear including ear muffs and plugs. Workers operating equipment generating noise levels greater than 80 dBA continuously for 8 hours or more should use earmuffs whereas those experiencing prolonged noise levels of 70 – 80 dBA should wear earplugs.*
- *Limit idling time for pick-up trucks and other smaller equipment, observe a common-sense approach to vehicle use, and encourage workers to shut off vehicle engines whenever possible.*
- *All construction equipment should be regularly inspected and serviced*

10.1.6 Dust Emission – air quality degradation

During the construction phase air quality is expected to decline as a result of an increase in levels of fugitive dust from excavation works, the stockpiled earth materials, dusty roads and concrete mixing. Respirable particulates are a public health hazard and may otherwise create considerable nuisances to the public. This is expected to be a short term, reversible impact lasting only for the duration of the construction activity.

Proposed Mitigation Measures

The main contractor will be required to train workers on appropriate methods for minimizing dust emission during construction phase. Proposed methods for minimizing dust emission include;

- *Covering of all haulage vehicles carrying sand, aggregate and cement*
- *Stockpiles of fine materials (e.g. sand and ballast) should be wetted or covered with tarpaulin*

during windy conditions.

- *Access roads and exposed ground must be wetted in a manner and at a frequency that effectively keeps down the dust.*
- *Workers in dusty areas on the site should be issued with dust masks during dry and windy conditions*
- *Providing appropriate enclosure for the concrete mixer and Use of dust nets at high levels of the building*

10.1.7 Spillage of hazardous materials

All sorts of motorized equipment, from generators to trucks, requiring fuel, lubrication and maintenance will be used at the construction site. Many will also be fitted with lead batteries. Spillage of hazardous materials on the ground surface has a potential of contaminating the soil and underground water.

Proposed Mitigation Measures

Spillage of hazardous materials shall be managed by implementing the following measures;

- *Refueling and maintenance of vehicle fleet will not take place at the construction site*
- *All hazardous materials to be stored in appropriately bonded containers and placed on concrete floor*
- *Maintaining spill response kits at the site office*
- *Prepare and display on site spill response procedures and*
- *Training of workers on spill response and management*

10.1.8 Fire outbreak – environmental disaster

Some intensive dry processes will be conducted on site. Such a process may result to a fire outbreak within the project site especially if flammable materials such as locomotive fuel will be stored on site. Minor welding works will be carried out on site so as to repair broken down machines or vehicles and this increases the chances of fire outbreak.

10.1.9 Construction works induced traffic – traffic congestion

Activities related to construction works will undoubtedly induce uncharacteristic levels of additional vehicular traffic along Namanga road and the private road leading to the site. Related issues of vehicle congestion and reckless driving by truck drivers delivering construction materials to the site will be sources of annoyance, if not accidents, to local residents during the construction phase.

Proposed Mitigation Measures

- *Issue notices/advisories of pending traffic inconveniences and solicit tolerance by local residents before the commencement of construction works.*
- *As far as possible, transport of construction materials should be scheduled for off peak traffic hours. This will reduce the risk of traffic congestion and of road accidents on the roads leading to the site.*
- *Appropriate traffic warning signs, informing road users of a construction site entrance ahead and instructing them to reduce speed, should be placed along the main road in the vicinity of the entrance to the site during the construction period.*

- *Flagmen should be employed to control traffic and assist construction vehicles as they enter and exit the project site.*
- *Train drivers on road safety*
- *Maintain on site a record of incidents and accidents*

10.1.10 Construction works water demand – Increased pressure on existing supply

A considerable amount of fresh water will be required during the construction works, especially for use by construction workers (washing), for cement mixing and for wetting of the site to control dust. This may place some amount of strain on water supply and may exacerbate current shortage of water supply in the country.

Proposed Mitigation Measures

The proposed development will increase water demand throughout the construction phase. Increase in water demand can be minimized by;

- *Providing adequate water storage reservoirs at the construction site and filling up during the wet season and sourcing supplies from other sources should there be total supply failure.*
- *Implementing appropriate water conservation measures*

10.2 Potential Operation Phase Negative Impacts

10.2.1 Solid waste

The quantities of solid waste to be generated by the families who will occupy the houses are expected to be significant. Such waste will include foodstuffs, empty plastic containers, cartons, waste papers, plastic bags, etc. Improper management of solid waste will result to aesthetic degradation and breeding of disease vectors.

Proposed Mitigation Measures

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

10.2.2 Traffic disruption on Nairobi-Namanga Road

The number of vehicles within the area is likely to increase and this may lead to congestion and road accidents along Kitengela-Namanga highway. It is estimated that about 150 vehicle movements through the access road will occur daily. Assuming traffic will be controlled at the gate, it may take up to one minute either way of entry and exit, implying about 150 minutes or about 2 hours of continuous traffic movements.

Proposed Mitigation Measures

The proponent will be required to implement the following measures in order to control flow of traffic during operational phase.

- *Appropriate traffic warning signs instructing occupants and visitors to reduce speed, 'should be placed at the vicinity of the entrance to the site*
- *Security guards should be instructed to control traffic along the private road leading to the site and assist vehicles as they enter and exit the project site efficiently.*
- *Security guards should maintain a record of incidents and accidents at the site*

- *Contacts of emergency service providers including ambulance, breakdown recovery vehicle and traffic police, should be displayed at the main entrance area*

10.3 Decommissioning phase negative impacts

During the decommissioning phase, another comprehensive EIA study based on the intended new use of the site will be conducted.

10.3.1 Solid Waste Generation

Demolition of the integrated development and related infrastructure will result in large quantities of solid waste. The waste will contain the materials used in construction including concrete, metal, drywall, wood, glass, paints, adhesives, sealants and fasteners. There is growing evidence that large quantities of such waste may lead to release of certain hazardous chemicals into the environment. In addition, even the generally non-toxic chemicals such as chloride, sodium, sulphate and ammonia which may be released as a result of leaching of demolition waste, are known to lead to degradation of ground and surface water quality.

Proposed mitigation measures

- *A site waste management plan should be prepared by the contractor prior to commencement of demolition activities. This should include designation of appropriate waste storage areas, collection and removal schedule, identification of approved disposal site, and a system for supervision and monitoring.*
- *Any vegetation and combustible waste must not be burned on the site.*
- *Demolition debris should be stock piled at a safe place*
- *Reusable materials like doors, windows and timber should be sold to licensed scrap dealers*
- *Provide solid waste receptacles and storage containers, particularly for the disposal of plastic bags, boxes, so as not to block drainage system and to prevent littering of the site.*
- *Make arrangements for the daily collection of litter and demolition debris from the site by a licensed solid waste transporter for dumping at approved site.*

Dust emission

Large quantities of dust will be generated during demolition works. This will impact negatively on the demolition staff as well as the neighbouring residents.

Proposed Mitigation Measures

High levels of dust concentration resulting from demolition or dismantling works will be minimized by implementing the following measures;

- *Covering of all haulage vehicles carrying debris for dumping at approved sites*
- *Stockpiles of fine materials should be wetted or covered with tarpaulin during windy conditions.*
- *Access roads and exposed ground must be wetted in a manner and at a frequency that effectively keeps down the*
- *Workers should be issued with proper protective equipment.*
- *Proper hording (fencing with three metre high galvanized iron sheets) of the site prior to demolition*

Noise and vibration

Demolition activities are always accompanied by excessive noise

Mitigation measures

Significant impacts on the acoustic environment will be mitigated as described below;

- *Restrict demolition activities to normal working hours (8am – 6pm).*
- *Inform local residents beforehand, via notices and advisories, of pending noisy periods and solicit their tolerance well before the commencement of demolition works.*
- *Workers operating equipment that generate noise should be equipped with noise protection gear including ear muffs and plugs. Workers operating equipment generating noise levels greater than 80 dBA continuously for 8 hours or more should use earmuffs whereas those experiencing prolonged noise levels of 70 – 80 dBA should wear earplugs.*
- *Limit pick up trucks and other small equipment to an idling time of five minutes, observe a common-sense approach to vehicle use, and encourage workers to shut off vehicle engines whenever possible.*
- *All demolition equipment should be regularly inspected and service*

11 OCCUPATIONAL HEALTH AND SAFETY

The Contractor and supervisors will be required to implement all reasonable precautions to protect the health and safety of workers. Preventive and protective measures will be introduced according to the following order of priority:

- Eliminating the hazard by removing the activity from the work process. Examples include substitution with less hazardous chemicals, using different construction processes, etc;
- Controlling the hazard at its source through use of engineering controls. Examples include local exhaust ventilation, isolation rooms, machine guarding, acoustic insulating, etc;
- Minimizing the hazard through design of safe work systems and administrative or institutional control measures. Examples include job rotation, training safe work procedures, lock-out and tag-out, workplace monitoring, limiting exposure or work duration, etc.
- Providing appropriate personal protective equipment (PPE) in conjunction with training, use, and maintenance of the PPE.

11.1 Possible Occupational Hazards

The possible Occupational Hazards during construction of the project can be categorized into physical, chemical, biological and radiological hazards.

11.2 Physical hazards

Physical hazards represent potential for accident or injury or illness due to repetitive exposure to mechanical action or work activity. Single exposure to physical hazards may result in a wide range of injuries, from minor and medical aid only, to disabling, catastrophic, and/or fatal. Multiple exposures over prolonged periods can result in disabling injuries of comparable significance and consequence.

11.3 Rotating and Moving Equipment

Injury or death can occur from being trapped, entangled, or struck by machinery parts due to unexpected starting of equipment or unobvious movement during operations. Recommended protective measures will include:

- Use of machines that are designed to eliminate trap hazards and ensuring that extremities are kept out of harm's way under normal operating conditions. Examples of proper design considerations include two-hand operated machines to prevent amputations or the availability of emergency stops dedicated to the machine and placed in strategic locations. Where a machine or equipment has an exposed moving part or exposed pinch point that may endanger the safety of any worker, the machine or equipment should be equipped with, and protected by, a guard or other device that prevents access to the moving part or pinch point. Guards should be designed and installed in conformance with appropriate machine safety standards
- Turning off, disconnecting, isolating, and de-energizing (Locked Out and Tagged Out) machinery with exposed or guarded moving parts, or in which energy can be stored (e.g. compressed air, electrical components) during servicing or maintenance, in conformance with a standard such as CSA Z460 Lockout or equivalent ISO or ANSI standard
- Designing and installing equipment, where feasible, to enable routine service, such as lubrication, without removal of the guarding devices or mechanisms.

11.4 Noise

Noise limits for different working environments are provided in Table 5.

- No employee should be exposed to a noise level greater than 85 dB for duration of more than 8 hours per day without hearing protection. In addition, no unprotected ear should be exposed to a peak sound pressure level (instantaneous) of more than 140 dB.
- The use of hearing protection will be enforced actively when the equivalent sound level over 8 hours reaches 85 dB, the peak sound levels reach 140 dB, or the average maximum sound level reaches 110dB. Hearing protective devices provided should be capable of reducing sound levels at the ear to at least 85 dB.
- Although hearing protection is preferred for any period of noise exposure in excess of 85 dB, an equivalent level of protection can be obtained, but less easily managed, by limiting the duration of noise exposure. For every 3 dB increase in sound levels, the 'allowed' exposure period or duration should be reduced by 50 percent.
- Prior to the issuance of hearing protective devices as the final control mechanism, use of acoustic insulating materials, isolation of the noise source, and other engineering controls will be investigated and implemented, where feasible.
- Periodic medical hearing checks will be performed on workers exposed to high noise levels.

Table 11-1: Noise Limits for Various Working Environments

Location/Activity	Equivalent Level L _{aeq} , 8h	Maximum L _{amax} , fast
Heavy industry (no demand for oral communication)	85dB	110dB
Light Industry (decreasing demand for oral communication)	50-65dB	110dB
Open offices, control rooms, service counters	45-50dB	-
Individual Offices (no disturbing noise)	40-45dB	-
Classrooms, Lecture halls	35-40dB	-

11.5 Vibration

Exposure to hand-arm vibration from equipment such as hand and power tools, or whole-body vibrations from surfaces on which the worker stands or sits, will be controlled through choice of equipment, installation of vibration dampening pads or devices, and limiting the duration of exposure. Exposure levels should be checked on the basis of daily exposure time and data provided by equipment manufacturers.

11.6 Electrical

Exposed or faulty electrical devices, such as circuit breakers, panels, cables, cords and hand tools, can pose a serious risk to workers. Overhead wires can be struck by metal devices, such as poles or ladders, and by vehicles with metal booms. Vehicles or grounded metal objects brought into close proximity with overhead wires can result in arcing between the wires and the object, without actual contact. Recommended actions include:

- Marking all energized electrical devices and lines with warning signs
- Locking out (de-charging and leaving open with a controlled locking device) and tagging-out (warning sign placed on the lock) devices during service or maintenance
- Checking all electrical cords, cables, and hand power tools for frayed or exposed cords and following manufacturer recommendations for maximum permitted operating voltage of the portable hand tools
- Double insulating / grounding all electrical equipment used in environments that are, or may become, wet; using equipment with ground fault interrupter (GFI) protected circuits
- Protecting power cords and extension cords against damage from traffic by shielding or suspending above traffic areas
- Appropriate labeling of service rooms housing high voltage equipment ('electrical hazard') and where entry is controlled or prohibited (see also Section 3 on Planning, Siting, and Design);
- Establishing "No Approach" zones around or under high voltage power lines in conformance with Table 6.
- Rubber tired construction or other vehicles that come into direct contact with, or arcing between, high voltage wires may need to be taken out of service for periods of 48 hours and have the tires replaced to prevent catastrophic tire and wheel assembly failure, potentially causing serious injury or death;
- Conducting detailed identification and marking of all buried electrical wiring prior to any excavation work

Table 11-2: No Approach Zones for High Voltage Power Lines

Nominal Phase to Phase voltage rating	Minimum distance
750 or more volts, but no more than 150,000 volts	3 meters
More than 150, 000 volts but no more than 250,000 volts	4.5 meters
More than 250,000 volts	6 meters

11.7 Eye Hazards

Solid particles from a wide variety of construction operations, and / or a liquid chemical spray may strike a worker in the eye causing an eye injury or permanent blindness. Recommended measures will include:

- Use of machine guards or splash shields and/or face and eye protection devices, such as safety glasses with side shields, goggles, and/or a full face shield. Specific Safe Operating Procedures (SOPs) may be required for use of sanding and grinding tools and/or when working around liquid chemicals. Frequent checks of these types of equipment prior to use to ensure mechanical integrity is also good practice. Machine and equipment guarding should conform to standards published by organizations such as CSA, ANSI and ISO.
- Moving areas where the discharge of solid fragments, liquid, or gaseous emissions can reasonably be predicted (e.g. discharge of sparks from a metal cutting station, pressure relief valve discharge) away from places expected to be occupied or transited by workers or visitors. Where machine or work fragments could present a hazard to transient workers or passers-by, extra area guarding or proximity restricting systems should be implemented, or PPE required for transients and visitors.

- Provisions will be made for persons who have to wear prescription glasses either through the use over glasses or prescription hardened glasses.

11.8 Welding / Hot Work

Welding creates an extremely bright and intense light that may seriously injure a worker's eyesight. In extreme cases, blindness may result. Additionally, welding may produce noxious fumes to which prolonged exposure can cause serious chronic diseases.

Recommended measures include:

- Provision of proper eye protection such as welder goggles and/or a full-face eye shield for all personnel involved in, or assisting, welding operations. Additional methods may include the use of welding barrier screens around the specific work station (a solid piece of light metal, canvas, or plywood designed to block welding light from others). Devices to extract and remove noxious fumes at the source may also be required.
- Special hot work and fire prevention precautions and Standard Operating Procedures (SOPs) should be implemented if welding or hot cutting is undertaken outside established welding work stations, including 'Hot Work Permits, stand-by fire extinguishers, stand-by fire watch, and maintaining the fire watch for up to one hour after welding or hot cutting has terminated. Special procedures are required for hotwork on tanks or vessels that have contained flammable materials.

11.9 Industrial Vehicle Driving and Site Traffic

Poorly trained or inexperienced industrial vehicle drivers have increased risk of accident with other vehicles, pedestrians, and equipment. Industrial vehicles and delivery vehicles, as well as private vehicles on-site, also represent potential collision scenarios.

Industrial vehicle driving and site traffic safety practices will include:

- Training and licensing industrial vehicle operators in the safe operation of specialized vehicles such as forklifts, including safe loading/unloading, load limits
- Ensuring drivers undergo medical surveillance
- Ensuring moving equipment with restricted rear visibility is outfitted with audible back-up alarms
- Establishing rights-of-way, site speed limits, vehicle inspection requirements, operating rules and procedures (e.g. prohibiting operation of forklifts with forks in down position), and control of traffic patterns or direction
- Restricting the circulation of delivery and private vehicles to defined routes and areas, giving preference to 'one-way' circulation, where appropriate.

11.10 Working Environment Temperature

Exposure to hot or cold working conditions in indoor or outdoor environments can result into temperature stress-related injury or death. Use of personal protective equipment (PPE) to protect against other occupational hazards can accentuate and aggravate heat-related illnesses. Extreme temperatures in permanent work environments should be avoided through implementation of engineering controls and ventilation. Where this is not possible, such as during short-term outdoor work, temperature-related stress management procedures should be implemented which will include:

- Monitoring weather forecasts for outdoor work to provide advance warning of extreme weather and scheduling work accordingly

- Adjustment of work and rest periods according to temperature stress management procedures provided by ACGIH67, depending on the temperature and workloads
- Providing temporary shelters to protect against the elements during working activities or for use as rest areas
- Use of protective clothing
- Providing easy access to adequate hydration such as drinking water or electrolyte drinks, and avoiding consumption of alcoholic beverages

11.11 Ergonomics, Repetitive Motion, Manual Handling

Injuries due to ergonomic factors, such as repetitive motion, overexertion, and manual handling, take prolonged and repeated exposures to develop, and typically require periods of weeks to months for recovery. These OHS problems should be minimized or eliminated to maintain a productive workplace.

Controls may include:

- Facility and workstation design with 5th to 95th percentile operational and maintenance workers in mind
- Use of mechanical assists to eliminate or reduce exertions required to lift materials, hold tools and work objects, and requiring multi-person lifts if weights exceed thresholds
- Selecting and designing tools that reduce force requirements and holding times, and improve postures
- Providing user adjustable work stations
- Incorporating rest and stretch breaks into work processes, and conducting job rotation
- Implementing quality control and maintenance programs that reduce unnecessary forces and exertions
- Taking into consideration additional special conditions such as left handed persons

11.12 Working at Heights

Fall prevention and protection measures should be implemented whenever a worker is exposed to the hazard of falling more than two meters; into operating machinery; into water or other liquid; into hazardous substances; or through an opening in a work surface. Fall prevention / protection measures may also be warranted on a case-specific basis when there are risks of falling from lesser heights. Fall prevention will include:

- Installation of guardrails with mid-rails and toe boards at the edge of any fall hazard area
- Proper use of ladders and scaffolds by trained employees
- Use of fall prevention devices, including safety belt and lanyard travel limiting devices to prevent access to fall hazard area, or fall protection devices such as full body harnesses used in conjunction with shock absorbing lanyards or self retracting inertial fall arrest devices attached to fixed anchor point or horizontal life-lines
- Appropriate training in use, serviceability, and integrity of the necessary PPE
- Inclusion of rescue and/or recovery plans, and equipment to respond to workers after an arrested fall.

11.13 Chemical hazards

Chemical hazards represent potential for illness or injury due to single acute exposure or chronic repetitive exposure to toxic, corrosive, sensitizing or oxidative substances. They also represent a risk of uncontrolled

reaction, including the risk of fire and explosion, if incompatible chemicals are inadvertently mixed.

Chemical hazards can most effectively be prevented through a hierarchical approach that includes:

- Replacement of the hazardous substance with a less hazardous substitute
- Implementation of engineering and administrative control measures to avoid or minimize the release of hazardous substances into the work environment keeping the level of exposure below internationally established or recognized limits
- Keeping the number of employees exposed, or likely to become exposed, to a minimum
- Communicating chemical hazards to workers through labeling and marking according to national and internationally recognized requirements and standards, including the International Chemical Safety Cards (ICSC), Materials Safety Data Sheets (MSDS), or equivalent. Any means of written communication should be in an easily understood language and be readily available to exposed workers and first-aid personnel
- Training workers in the use of the available information (such as MSDSs), safe work practices, and appropriate use of PPE

11.14 Air Quality

Poor air quality due to the release of contaminants into the work place can result in possible respiratory irritation, discomfort, or illness to workers. The contractor should take appropriate measures to maintain air quality in the work area.

These include:

- Maintaining levels of contaminant dusts, vapors and gases in the work environment at concentrations below those recommended by NEMA Air Quality Regulations (threshold limit value)—concentrations to which most workers can be exposed repeatedly (8 hours/day, 40 hrs/week, week-afterweek), without sustaining adverse health effects.
- Developing and implementing work practices to minimize release of contaminants into the work environment including:
 - ❖ Direct piping of liquid and gaseous materials
 - ❖ Minimized handling of dry powdered materials;
 - ❖ Enclosed operations
 - ❖ Local exhaust ventilation at emission / release points
 - ❖ Vacuum transfer of dry material rather than mechanical or pneumatic conveyance
 - ❖ Indoor secure storage, and sealed containers rather than loose storage
- Where ambient air contains several materials that have similar effects on the same body organs (additive effects), taking into account combined exposures
- Where work shifts extend beyond eight (8) hours, calculating adjusted workplace exposure criteria recommended by the NEMA Air Quality Regulations

11.15 Fire and Explosions

Fires and or explosions resulting from ignition of flammable materials or gases can lead to loss of property as well as possible injury or fatalities to project workers. Prevention and control strategies include:

- Storing flammables away from ignition sources and oxidizing materials. Further, flammables storage area should be:
 - ❖ Remote from entry and exit points into site storage structures
 - ❖ Away from facility ventilation intakes or vents
 - ❖ Have natural or passive floor and ceiling level ventilation and explosion venting
 - ❖ Use spark-proof fixtures
 - ❖ Be equipped with fire extinguishing devices and self closing doors, and constructed of materials made to withstand flame impingement for a moderate period of time
- Providing bonding and grounding of, and between, containers and additional mechanical floor level ventilation if materials are being, or could be, dispensed in the storage area
- Where the flammable material is mainly comprised of dust, providing electrical grounding, spark detection, and, if needed, quenching systems
- Defining and labeling fire hazards areas to warn of special rules (e.g. prohibition in use of smoking materials, cellular phones, or other potential spark generating equipment)
- Providing specific worker training in handling of flammable materials, and in fire prevention or suppression

11.16 Corrosive, oxidizing, and reactive chemicals

Corrosive, oxidizing, and reactive chemicals present similar hazards and require similar control measures as flammable materials. However, the added hazard of these chemicals is that inadvertent mixing or intermixing may cause serious adverse reactions. This can lead to the release of flammable or toxic materials and gases, and may lead directly to fires and explosions. These types of substances have the additional hazard of causing significant personal injury upon direct contact, regardless of any intermixing issues.

The following controls should be and will be observed in the work environment when handling such chemicals:

- Corrosive, oxidizing and reactive chemicals should be segregated from flammable materials and from other chemicals of incompatible class (acids vs. bases, oxidizers vs. reducers, water sensitive vs. water based, etc.), stored in ventilated areas and in containers with appropriate secondary containment to minimize intermixing during spills
- Workers who are required to handle corrosive, oxidizing, or reactive chemicals should be provided with specialized training and provided with, and wear, appropriate PPE (gloves, apron, splash suits, face shield or goggles, etc).
- Where corrosive, oxidizing, or reactive chemicals are used, handled, or stored, qualified first-aid should be ensured at all times. Appropriately equipped first-aid stations should be easily accessible throughout the place of work, and eye-wash stations and/or emergency showers should be provided close to all workstations where the recommended first-aid response is immediate flushing with water

11.17 Area Signage

- Hazardous areas (electrical rooms, compressor rooms, etc), installations, materials, safety measures, and emergency exits, etc. shall be marked appropriately.
- Signage shall be in accordance with international standards and be well known to, and easily

understood by workers, visitors and the general public as appropriate.

11.18 Labelling of Equipment

- All vessels that may contain substances that are hazardous as a result of chemical or toxicological properties, or temperature or pressure, should be labeled as to the contents and hazard, or appropriately color coded.
- Similarly, piping systems that contain hazardous substances should be labeled with the direction of flow and contents of the pipe, or color coded whenever the pipe passing through a wall or floor is interrupted by a valve or junction device.

11.19 Communicate Hazard Codes

- Copies of the hazard coding system should be posted outside the facility at emergency entrance doors and fire emergency connection systems where they are likely to come to the attention of emergency services personnel.
- Information regarding the types of hazardous materials stored, handled or used at the facility, including typical maximum inventories and storage locations, should be shared proactively with emergency services and security personnel to expedite emergency response when needed.
- Representatives of local emergency and security services should be invited to participate in periodic (annual) orientation tours and site inspections to ensure familiarity with potential hazards present.

11.20 Personal Protective Equipment (PPE)

Personal Protective Equipment (PPE) provides additional protection to workers exposed to workplace hazards in conjunction with other facility controls and safety systems. PPE is considered to be a last resort that is above and beyond the other facility controls and provides the worker with an extra level of personal protection.

Table 7 presents general examples of occupational hazards and types of PPE available for different purposes. Recommended measures for use of PPE in the workplace shall include:

- Active use of PPE if alternative technologies, work plans or procedures cannot eliminate, or sufficiently reduce, a hazard or exposure
- Identification and provision of appropriate PPE that offers adequate protection to the worker, co-workers, and occasional visitors, without incurring unnecessary inconvenience to the individual
- Proper maintenance of PPE, including cleaning when dirty and replacement when damaged or worn out. Proper use of PPE should be part of the recurrent training programs for Employees
- Selection of PPE should be based on the hazard and risk ranking described earlier in this section, and selected according to criteria on performance and testing established by recognized organizations.

Table 11-3: Summary of Recommended Personal Protective Equipment According to hazard

Objective	Work Place Harzards	Suggested PPE
Eye and Face Protection	Flying particles, mollen metal, liquid chemicals, gases or vapors, light radiation	Safety glasses with side-shields, protective sheds etc

Head protection	Falling objects, inadequate height clearance, and overhead power codes	Plastic helmets with top and side impact protection
Hearing protection	Noise, ultrasound	Hearing protectors (ear plugs or ear muffs)
Foot Protection	Falling or rolling objects, pointed objects, corrosive or hot liquids	Safety shoes and boots for protection against moving and falling objects, liquids and chemicals
Hand Protection	Hazardous materials, cuts or lacerations, vibrations, extreme temperatures	Gloves made of rubber or synthetic (Neoprene), leather, steel insulating materials etc
Respiratory Protection	Dust, fogs, fumes, mists, gases, smokes, vapors	Facemasks with appropriate filters for dust removal and air purification (chemicals, mists, vapors and gases). Single or multi-gas personal monitors, if available
	Oxygen deficiency	Portable or supplied air (fixed lines), on site rescue equipment
Body leg protection	Extreme temperatures, hazardous materials, biological agents and laceration	Insulating clothing body suits, aprons etc of appropriate materials

11.21 Communication and Training

11.21.1 OSH Training

- Provisions will be made to provide OHS orientation training to all new employees to ensure they are apprised of the basic site rules of work at / on the site and of personal protection and preventing injury to fellow employees.
- Training should consist of basic hazard awareness, site specific hazards, safe work practices, and emergency procedures for fire, evacuation, and natural disaster, as appropriate. Any site-specific hazard or color coding in use should be thoroughly reviewed as part of orientation training.

11.21.2 Visitor Orientation

- If visitors to the site can gain access to areas where hazardous conditions or substances may be present, then a visitor orientation and control program shall be established to ensure visitors do not enter hazard areas unescorted.

11.21.3 New Task Employee and Contractor Training

- The proponent should ensure that workers and contractors, prior to commencement of new assignments, have received adequate training and information enabling them to understand work hazards and to protect their health from hazardous ambient factors that may be present.

The training shall adequately cover:

- Knowledge of materials, equipment, and tools
- Known hazards in the operations and how they are controlled
- Potential risks to health
- Precautions to prevent exposure
- Hygiene requirements
- Wearing and use of protective equipment and clothing
- Appropriate response to operation extremes, incidents and accidents

11.21.4 Basic OSH Training

- A basic occupational training program and specialty courses shall be provided, as needed, to ensure that workers are oriented to the specific hazards of individual work assignments. Training should generally be provided to management, supervisors, workers, and occasional visitors to areas of risks and hazards.
- Workers with rescue and first-aid duties should receive dedicated training so as not to inadvertently aggravate exposures and health hazards to themselves or their coworkers. Training would include the risks of becoming infected with blood-borne pathogens through contact with bodily fluids and tissue.
- Through appropriate contract specifications and monitoring, the employer should ensure that service providers, as well as contracted and subcontracted labor, are trained adequately before assignments begin.

11.22 Monitoring

Occupational health and safety monitoring programs should verify the effectiveness of prevention and control strategies. The selected indicators should be representative of the most significant occupational, health, and safety hazards, and the implementation of prevention and control strategies. The occupational health and safety monitoring program shall include:

- Safety inspection, testing and calibration: This should include regular inspection and testing of all safety features and hazard control measures focusing on engineering and personal protective features, work procedures, places of work, installations, equipment, and tools used. The inspection should verify that issued PPE continues to provide adequate protection and is being worn as required. All instruments installed or used for monitoring and recording of working environment parameters should be regularly tested and calibrated, and the respective records maintained.
- Surveillance of the working environment: The contractor should document compliance using an appropriate combination of portable and stationary sampling and monitoring instruments. Monitoring and analyses should be conducted according to internationally recognized methods and standards. Monitoring methodology, locations, frequencies, and parameters should be established individually for each project following a review of the hazards. Generally, monitoring should be performed during commissioning of facilities or equipment and at the end of the defect and liability period, and otherwise repeated according to the monitoring plan.
- Surveillance of workers health: When extraordinary protective measures are required (for example, against biological agents Groups 3 and 4, and/or hazardous compounds), workers should be provided appropriate and relevant health surveillance prior to first exposure, and at regular intervals thereafter. The surveillance should, if deemed necessary, be continued after termination of the employment.
- Training: Training activities for employees and visitors should be adequately monitored and documented (curriculum, duration, and participants). Emergency exercises, including fire drills, should be documented adequately. Service providers and contractors should be contractually required to submit to the employer adequate training documentation before start of their assignment.

11.22.1 Accidents and Diseases monitoring

The contractor should establish procedures and systems for reporting and recording:

- Occupational accidents and diseases
- Dangerous occurrences and incidents

These systems should enable workers to report immediately to their immediate supervisor any situation

they believe presents a serious danger to life or health. The systems and the employer should further enable and encourage workers to report to management all:

- Occupational injuries and near misses
- Suspected cases of occupational disease
- Dangerous occurrences and incidents

All reported occupational accidents, occupational diseases, dangerous occurrences, and incidents together with near misses should be investigated with the assistance of a person knowledgeable/competent in occupational safety. The investigation should:

- Establish what happened
- Determine the cause of what happened
- Identify measures necessary to prevent a recurrence

Occupational accidents and diseases should, at a minimum, be classified into fatal and non-fatal injuries. The two main categories are divided into three sub-categories according to time of death or duration of the incapacity to work. The total work hours during the specified reporting period should be reported to the appropriate regulatory agency.

12 PROPOSED ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

12.1 Overview of the Environmental Management Plan (EMP)

This Environmental and social management plan presents the key management principles and then defines a scope of the plan implementation. Broad indications of the responsibilities have also been discussed along with the possible implementation constraints anticipated while detailed actions are tabulated in a matrix for ease of reference and review. It should also be noted that the matrix is not complete in itself and continuous reviews would be necessary throughout the project implementation period.

The comprehensive Environmental and Social Management Plan is summarized in the Tables below. The plan outlines the impacts, how the negative impacts will be mitigated, and institutions responsible for ensuring that mitigation activities are implemented.

Table 12-1: Environmental and Social Management Plan during construction

Environmental Issues	Anticipated impact	Positive/Negative	Management and Mitigation/ enhancement measures	Responsibility	Monitoring time frame	Mitigation Costs (Kshs)
CONSTRUCTION PHASE						
Vegetation loss due to clearance of site	Impact on ecology and vegetation cover	Negative	The extent of clearing within the project area should be clearly marked	Contractor/ Supervising Engineers /Proponent	Construction phase	
			The clearance of the site for construction purposes should be kept to a minimum			
			Instruct all construction workers to restrict clearing to the marked areas and not to work outside defined work areas.			
			Rehabilitate all disturbed areas by planting vegetation cover and landscaping			
Soil condition	Disturbance, soil erosion and siltation in rivers	Negative	Earthworks should be carried out during the dry season to prevent the erosive soils from being washed away by rain.	Contractor/ Supervising Engineers	Construction phase	
			Control of earthworks so that land not required for construction works is not disturbed			
			Excavated materials should be kept/stockpiled at appropriate sites for possible reuse			
	Protect areas susceptible to erosion by installing necessary temporary and permanent drainage works.					
Open trenches hazardous to the public	Negative	Negative	Backfilling temporary trenches as soon as their need are no longer required	Contractor/ Supervising Engineers	Construction phase	
			Warning signs at both deep and shallow trenches especially at the shopping centre construction site that may require deep excavations			
Environmental contamination	Soil, water and groundwater contamination	Negative	Construct oil and water interceptors to capture discharge of oils, fuels and other polluting liquids at the workshop	Contractor/ Supervising Engineers		
			Ensure proper handling of lubricants, fuels and solvents while maintaining the equipment			
			Surface runoff to be controlled by provision of retention areas			
			A safety and emergency response plan to be developed for all operations with emphasis on the protection of the environment			
Solid waste	Solid waste generation could pollute water bodies, harbour diseases and disease vectors, and an aesthetic burden.	Negative	Bins should be strategically placed within the construction site. They should also be covered to prevent access by vermin and minimize odours.	Contractor/ Supervising Engineers	Construction phase	
			The bins at both the campsite and construction site should be emptied regularly to prevent overflowing			
			Use of cleaner technologies / generation to minimize on generation of solid wastes			
			A waste management plan to be developed to handle temporary storage, transport and disposal of all kinds of waste			
			Where possible Solid waste should be recycled, reused and utilized in an environmentally acceptable manner			
Pollution	Gaseous	Negative	Maintaining machines at manufacturers specifications	Contractor/	Construction	

Environmental Issues	Anticipated impact	Positive/Negative	Management and Mitigation/ enhancement measures	Responsibility	Monitoring time frame	Mitigation Costs (Kshs)
	emissions which pollutes air causing respiratory problems		<p>If considered necessary, apply dust suppressants such as water spray on active construction sites</p> <p>Cover or wet construction materials such as sand to prevent dust nuisance. Also minimize cleared areas to those that are needed for construction</p>	Supervising Engineer/ NEMA Monitors	phase	
	Noise pollution and vibrations which are nuisance and may cause health complications	Negative	<p>Use equipment that have low noise emissions as stated by the manufacturers</p> <p>Use equipment that is properly fitted with noise reduction devices such as mufflers</p> <p>Operate noise generating equipment during regular working hours so as to reduce the potential of producing noise during night hours</p> <p>Construction workers operating equipment that generates noise greater than 80 dB should be equipped with noise protection devices</p>	Contractor/ Supervising Engineer/ NEMA Monitors	Construction phase	
Occupational Health and Safety (OH&S)	Impacts on health of workers	Negative	<p>Training of all workers in Safety Health and Environment (SHE) All employees must be trained on safety at work, how to work safely, how to use the PPEs correctly emergency evacuation procedures, fire fighting, etc.</p> <p>Ensure workers health and safety through awareness campaign and provision of protective personal equipment (PPE) e.g: Safety shoes or gumboots, High visibility vests, Safety Helmets, Hearing protection, Eye protection, Gloves, Working clothing.</p> <p>The contractor should consider periodic or part time nurse to attend to emergencies and to mount awareness campaigns amongst the workers.</p> <p>The contractor should regularly consult those providing health services to determine any changes in disease patterns that may be associated with the area.</p> <p>Safe work procedures and measures must be provided for all hazardous works like: Work at height, Hot work processes, Work in confined areas, High voltage operations.</p>	Contractor/ Supervising Engineer/NEMA Monitors	Continuous	
	Fire Safety		<p>Provide appropriate fire fighting appliances at all areas considered necessary such as active construction areas, site office and store</p> <p>Train employees on fire safety and emergency evacuation procedures.</p> <p>Provide safe storage, handling and use of flammable substances.</p>			
	Welfare Provisions		<p>Provide wholesome drinking water to the workers</p> <p>Provide sanitary facilities</p> <p>Provide First Aid facilities under the care of trained First Aid staff.</p>			

Environmental Issues	Anticipated impact	Positive/Negative	Management and Mitigation/ enhancement measures	Responsibility	Monitoring time frame	Mitigation Costs (Kshs)
	Road Signs		Appropriate safety notices and road signs at the access must be provided for the safety of employees, visitors and general public.		Infrastructure development	
	Site Security		Appropriate hoarding and security measures must be provided around the work area to keep unauthorized persons from accessing the area.		Continuous	
	Safety Supervision		A competent person will be appointed to supervise all the safety measures at the work place.	Contractor/ Supervising Engineer	Continuous	
	Registration of the Construction Site		The contractor will have to register the construction site with the local DOHSS office.			
	Control of Environmental Dust and Noise		Appropriate measures shall be taken to control the emission of dust and excessive noise into the atmosphere			
Disturbances	Traffic	Negative	Need to develop traffic management plan to provide for safe and efficient movement of traffic into and out of the site during construction.	Contractor/ Supervising Engineers		
			Erect appropriate warning signs on approaches to the site access			
Gender parity	Bias against the female gender		Monitoring the percentage of women employed on site and ensuring their continued stay in employment			
	Skewed gender balance		Ensure at a minimum 30 percent women are employed at any given time			
HIV / AIDS and STIs	Potential to contract disease by both workers and the public		The HIV/AIDS prevention campaigns should be conducted at the site. The campaign shall include HIV education, information posters in more frequented areas within the site, The contractor will co-ordinate with the Provincial and District HIV/AIDS control councils, health officers and the NGOs undertaking education and sensitization programmes; The contractor will provide condoms at appropriate places in the work camps. The campaigns will be continuously done by the relevant Government organization even during operation phase of the road;			

Table 12-2: Environment Management Plan during operation

Environmental Issues	Anticipated Impact	Positive/ Negative	Management and Mitigation measure	Responsibility	Monitoring time frame	Mitigation Costs (Kshs)
Traffic disruption and inconveniences	Inconveniences occasioned by traffic generated by the development	Negative	Traffic management plan to provide for safe and efficient movement of traffic into and out of the courts Provide acceleration and deceleration lanes	Proponent	Construction / Operation	
Solid waste	Poor aesthetics Possibility of vermins		Use a registered waste handling contractor to manage solid waste at the site Cover waste at all times so as to deter scavenging birds	Proponent/residents	Operation	

13 ENVIRONMENTAL AUDIT AND MONITORING PLAN

Environmental auditing will be done annually and reports presented to NEMA for review. Monitoring plan will be undertaken to ensure mitigation measures are implemented, have the intended results and that remedial measures are undertaken if mitigation measures are inadequate or impacts have been under estimated within EIA report.

The Table below presents suggested potential indicators that will be used to monitor the implementation of the project. The indicators are selected according to the project context and major anticipated impacts.

Table 13-1: Monitoring Schedule

Activity	Timeframe
Decision on construction camp locations	Pre-construction
Plan layout (in conjunction with public health officer and contractor) of construction camp and facilities especially sanitation, waste management and recycling system	Pre-construction
Organize a meeting with the contractor on requirements for compliance/good environmental practice during construction	Pre-construction
Monitoring visits, to inspect all mitigation points, and to provide support/advisory to contractor and resident engineer	Construction

13.1 Net Impact after Mitigation

From analysis undertaken above, it is apparent that the bulk of adverse impacts is of short-term nature and will be eliminated once the construction is completed. During construction, the contractor will have to adhere to all recommendations listed in this report. To ensure this, the contract for civil works has been scrutinized to ensure it bears clauses binding the contractor to implement mitigation measures identified in this report.

It is important for the contractor contractor to complete the project within specified duration so as to reduce the period of nuisance and discomfort to the neighborhood. Completion of the civil works within the contractual period will also facilitate timely rehabilitation and stabilization of the disturbed soil areas so as to minimize soil loss through erosion.

During operation phase, the potential long-term nuisances and hazards will be effectively mitigated and greatly reduced through available measures. All the occupants of the rehabilitated law court will however be required to subscribe to a code of conduct designed to prevent occurrence of environmental and safety hazards associated with occupation of the modernized court.

It is the impression of this study that once the mitigation programme is put in place, the development will confer overall net positive socio-economic and environmental impacts to the project area and its surroundings.

13.2 Rehabilitation Implementing Agency

Going by the AEP developed above, responsibility for restoration of adverse impacts emanating from development will lie with the proponent. The bulk of mitigation measures have been incorporated in the project design and will therefore be executed as part of the project development and no extra funding for environmental restoration will be required. It will be the

responsibility of the proponent to ensure that construction has been undertaken as per the architecture's design report and as per recommendations of this environmental report in order to secure full implementation of requisite actions in environmental mitigation. The same will be sealed and regulated through the contract for construction and later on verified by the Kajiado County government and National Construction Authority. A completed and approved contractor's report should attest to this.

13.3 Impact Monitoring Procedures

Environmental monitoring refers to the systematic collection, analysis and interpretation of data on environmental parameters through periodic measurements. For purposes of this project, compliance monitoring is recommended to ensure that all mitigation actions proposed here have been effected. A summary of the monitoring programme is presented in Table 11 below, whereby the principal monitoring criteria for this project are as follows:

- i) **The Design Report:** This has been amended to include recommendations of this ESIA study;
- ii) **The contract for civil works:** As part of this study, the contract for civil works has been scrutinized to ensure that it contains clauses binding the contractor to implement the mitigation activities pertinent to civil works as identified in this report. Furthermore, the proponent has committed to ensuring that all clauses binding the contractor to implementing the mitigation activities are observed effectively until the project completion.
- iii) **The Contractors Report:** This will be the most critical monitoring tool. Before each payment can be made, the contractor will be required to submit a report to be scrutinized by the project proponent or his agent before payments can be made.
- iv) **On occupation:** The management of Kajiado law courts will be subject to the recommendations made in this report and ensure that all staff and tenants adhere to all of them.

Implementation of this monitoring schedule should ensure environmentally sound development and property management. Further, in line with EMCA 1999, this property should be subjected to annual environmental audits by independent agencies to ensure compliance with conditions of the ESIA Licence to be issued. The court will also be subjected to regulation and monitoring by other Government regulatory agencies charged with responsibility to administer the Local Authorities Act, Town Planning Act etc. All rates and taxes if any will be paid in line with reigning government regulations.

Table 13-2: Matrix for compliance monitoring

Environmental Impact	Means for mitigation	Responsibility	Verifiable indicators
Generation of solid waste	Recycling of concrete debris, use of waste soil in landscaping, disposal of other waste products in Kajiado County approved dumps site.	Architect and Contractor	Appropriate design report and contract with relevant clauses. Approved contractors report
Site disturbance	Rehabilitation including landscaping, levelling, tree and grass planting.	Architect and Contractor	Ditto
Generation of noise and dust	Short-term nuisance to be mitigated through use of protective gear by all workers.	Architect and Contractor	Ditto

Disturbance at material source areas	Materials to be sourced from legitimate suppliers	Architect and Contractor	Ditto
Increased occupational hazards	Workers to wear protective clothing. Use of qualified supervisory staff. Cap 514 to apply.	Architect and Contractor	Ditto
Pressure on water resources	Contractor to store water, use of roof catchment water and storm surface run-off water collection whenever possible.	Architect and Contractor	Ditto
Increased hazard of communicable diseases	Toilet facilities to be provided to workers and health records before workers are recruited.	Architect and Contractor	Ditto
Impact on traffic flow	Regulation of traffic movement to minimize disturbance and delivery of construction materials done at night and none working days in the week when possible.	Architect and Contractor	Ditto
Generation of garbage	Staff to make arrangements for safe disposal of own garbage. Tenancy agreements to have clauses specifying this requirement.	Head of station or assigned staff member.	Code of conduct agreement developed and signed, Tenancy agreements with appropriate clauses
Increased hazard of fire occurrence	Provision of fire extinguisher in appropriate locations, followed by observation of safety code by all tenants. Smoking only in designated areas, exit from the premise in case of fire to remain clear at all the times. Fire assembly location to be clearly marked and be known by all staff and tenants.	Head of station or assigned staff member.	Signed tenancy agreement with relevant clauses

14 CONCLUSION AND RECOMMENDATIONS

The subject of this Environmental and social Report is the proposed construction of Kajiado law court to a ground floor plus three other floors on top on a parcel of land donated to the Judiciary by the County government of Kajiado. The proposed development to this standard is expected to cost a total of Kenya shillings Three Hundred Sixty Nine Million Seven Hundred and Fourty Nine Thousand Seven Hundred and Six (369,749,706.00).

The Report has been prepared in compliance with the Environmental Management and Coordination Act, 1999 and in line with Environmental Regulations (Guidelines for Impact Assessment and Audits) as borne by the Legal Notice No. 101 published in the Kenya Gazette Supplement No. 56 (Legislative Supplement No. 31) of June 2003. The report examines the project in terms of the proposed development, possible adverse impacts at both construction and operation phases and provides an Environmental Action Plan comprised of both an Impact Mitigation and Monitoring Programme.

Baseline data on the proposed construction of the new Kajiado law court was generated through desktop studies, site visits and interviews with the JPIP project management, the engineers and architect. To identify, predict, analyze and evaluate the various impacts that may emanate from the project, diverse study methods and tools including use of checklists, matrices, expert opinion and observations were employed.

A number of impacts both direct and indirect were identified. Positive implications of the project emanate from its economic contribution to society in Kajiado County in terms of creation of business and employment opportunities which is in line with the current government policy on economic recovery and wealth creation (GoK, 2003). The construction of law court will also make contribution towards provision of decent work environment to staff, court users and stakeholders. Environmentally, the project will improve the overall aesthetic beauty and appeal of the neighbourhood's development.

Some negative impacts mainly to be encountered in the construction phase include generation of solid wastes, noise, vibrations and dust emissions. At the operational phase, main adverse impacts include overload of infrastructure mainly the sewage and storm drainage networks; creation of an increased fire hazard and generation of office refuse in form of garbage.

An analysis of all adverse impacts indicates that most are of a short-term nature and will cease once the civil works end. Further, all impacts emanating from the civil works have readily available means for mitigation, which have been identified and disclosed in this report. Such mitigation measures have already been incorporated in the project design as described above and will be implemented by JPIP management as part of the project development. The contract for construction has been verified to ascertain that it includes relevant clauses specifying requirements to guarantee safety, health and environmental quality during construction and commissioning of the project. At the operation phase, all impacts will be adequately mitigated through adoption of a specific code of conduct for all staff, court users and stakeholders and installation of facilities for fire suppression.

The JPIP management is looking forward to a more modern, spacious and standard Kajiado law court that makes it environmentally friendly, economically viable and socially acceptable as

per the laws of the land. Towards this, all appropriate rates will be paid to the Kajiado County government and the property will be managed in line with reigning government policy and legislation including being subjected to annual environmental audits in line with the Environmental Management and Coordination Act of 1999. This will guarantee maintenance of high standards of environmental practice.

The recommendations contained in the architectural plan design report, is to have construction works screened and protected using barriers to safe guards passers by etc. The barriers will also limit noise coming from the contraction work from interfering with neighbours activities and operations as well as limiting injuries as a result of falling building materials. Such arrangements will save JPIP from compensating claims to those injured etc.

In view of this study, the proposed construction of new Kajiado law court is environmentally sound. Further, the project will generate minimal adverse impacts, whose means of effective mitigation have been disclosed in this report and have already been incorporated in the project design. Overall, the project will confer a net positive impact on the local environment. Our recommendation is that, this project does not require to be subjected to further Environmental and Social impact Assessment. On the basis of this report, an Environmental License should be issued to the JPIP management to continue with the proposed construction of Kajiado law court.

15 REFERENCES

- (i) Environment Management and Co-ordination Act, 1999 amended 2015.
- (ii) FAO (Food and Agriculture Organization of the United Nations), 1995: Environmental Impact Assessment of Irrigation and Drainage Project. FAO Irrigation and Drainage Paper No. 53. FAO Hqs, Rome Italy.
- (iii) Local Government Act Cap 265.
- (iv) Town Planning Act Cap 134.
- (v) Public Health Act Cap 242
- (vi) Kajiado County Integrated Development Plan
- (vii) Kenya Soil Survey 1978; Soils of the Kwale-Mombasa - Lunga Lunga area Ministry of Agriculture - National Agricultural Laboratories
- (viii) GoK, 1988: Rainfall Frequency Atlas of Kenya.
- (ix) GoK, 2003: Economic Recovery Strategy for Wealth and Employment Creation.2003-2007
- (x) Kenya Meteorological Department Technical Memorandum No. 24, 1977. - Monthly Distribution of Water Balance components in Kenya.
- (xi) Legal Notice No. 101 of June 2003. In: Kenya Gazette Supplement No. 56 of 13th June 2003.
- (xii) World Bank (The), 1999: Operation Manual **OP 4.01**: Operational Policies. World Bank's Operation Manual Annex A. The WB HQs, Washington DC.

STAKEHOLDER PARTICIPATION

Number	Name	Key Qualifications	Details of work Experience
1.	Tom Omenda	Team Leader and environmentalist	
2.	Alex O.Obara	Environmentalist	<ul style="list-style-type: none"> • Over 15 years postgraduate experience in Conservation biology, Environment Forestry and Biodiversity • A qualified environmentalist/Conservationist • A Quality Assurance and Environmental Auditor with extensive experience in Environmental Impact Assessment, data collection and analysis in different projects for World Bank, UNEP, WWF, NORAD, DANIDA and SIDA. • Occupational Health and Safety, Environmental, Management, Quality and Consumer Safety.
3.	Emilly Obonyo-Kamau	Sociologist	
4.	Kamau Ng'ang'a	Field Technician	

Annex 1: Profiles of the E-Que Associate Ltd Environmental Impact Assessment Team for JPIP cluster "A"

No.	Name	Gender	Age (Yrs)	Occupation	ID Number	Cell Phone Number
1	Stephen Ngugi	M	-	Executive Officer Kajiado Law Court	-	0724709709
2	Fred Swala	M	48	County Land Use Planner	-	0722482115
3	Godfrey Wafula	M	-	NEMA County Director – Kajiado	-	0734423574
4	Timothy Mutiso	M	44	Public Health Officer Kajiado	11317559	0733857254
5	Simon Katane	M	54	Clergy	21816000	0729998417
6	Daniel T.Naikuni	M	42	Constituency Manager	11680013	0721953281
7	Magreen Maya	F	43	Administration	12651884	0723803590/722802837
8	Emmah Makwele	F	24	Clerical Officer	28569337	-
9	Joseph Ndungu	M	35	Driver	22181330	0724649312
10	Rosemary Amayi	F	42	Office Administrator	11199496	0722310321
11	Samuel T.Kimsui	M	49	Businessman	7339816	0720605440
12	Mercy Mutuku	F	24	Shopkeeper	28657432	0712192261
13	Pauline Mwachu	F	23	Hotel Attendant	30635856	0702541308
14	Elijah Ole Meitamei	M	35	Pastor	22234688	-
15	Andrew Ole Epale	M	21	Messenger	33273630	0717720530
16	Maurice Owuor	M	29	Businessman	25156095	0723984258
17	Caroline Wangare	F	26	Businesswoman	29545029	0714826158
18	Silvia Silantoi	F	22	Unemployed Graduate	30450856	0715193858
19	Irine Wesonga	F	23	Student	28902610	0718272830
20	Fred Ole Leseni	M	22	Subsistent Farmer	-	0739498727
21	Simon Mwangi	M	32	Boda Boda Operator	-	07022556812
22	Joan Magiri	F	54	Civil Servant Public Works	7713001	0720266157
23	Komoi Ole Sakat	M	27	Civil Servant Education	28059300	0712371952
24	Stephene Ole Temut	M	23	Student	-	0701799367
25	Peter Ole Polong	M	30	Businessman	22306025	0725602344
26	Frank Amolo	M	24	Unemployed Graduate	29633363	0708187999
27	Erick Kirimi	M	23	Student JKUAT	30005846	0720837083
28	Elijah Mati	M	33	Electrician	-	-
29	Jackson Kioko	M	26	Jua Kali Artisan	21975953	-
30	Benson Mwangi	M	56	Businessman	30838000	-

Annex 2: List of Kajiado residents consulted during the Environmental and Social Impact assessment survey for proposed construction of Kajiado Law Court.

Email t.omenda@e-cueassociates.co.ke / tomenda@yahoo.com

ENVIRONMENTAL IMPACT ASSESSMENT FOR THE PROPOSED LAW COURTS AT KAJIADO

Brief on the project

The proposed new court site is situated 2 km from the current High Court of Kenya and Magistrate's Court of Kajado, adjacent to the Nairobi-Namanga highway on land that was donated to the Judiciary of Kenya by the Country government of Kajado. The Works will comprise the erection and completion of: (a) New Law Courts Building in four storeys comprising of the following:- (i) Ground Floor : 1926 m²; (ii) First Floor : 1736 m²; (iii) Second Floor : 1720 m²; (iv) Third Floor : 1517 m²; (v) Fourth Floor : 450 m² Total : 7349 m² (b) Ancillary Outbuildings:- (i) Generator Switch and Transformer Room : 78 m² (ii) Gate House

Name Andrew Epale Gender M Age 21
Occupation Message Normal residence Isinya
ID 33273030 Date 20/7/16

1. Are you aware of this upcoming project? YES _____ NO
2. Do you foresee the project having an impact on you or the area in any way? _____ (Yes/No)

If yes, please explain

This cases will not pile up making Justice being accessed and expedited with immediatly.

3. What environmental and social issues do you think may arise during construction and /or during operations of the court

None of environmental effects

4. How do you think the issues raised in (3) above can be addressed?

N/A

5. Do you support the project? Yes

If No Please explain why not

N/A

6. What further comments do you have on this project?

Should be build very fast to
Cub the land problems emerging from
this country.

THANK YOU

0717720530

No.	Question	Response	Suggestions/Recommendations
1	When did this court become operational?		1968
2	How do you source water for use at this court?		Buy
3	How do you manage sewer		Pit latrine
4	Since being operational, what has been the annual average accused population?		2083 #
5	Since joining this court, have you witnessed or heard any case of serious crime as a result of overcrowding at the cells, etc?		NO
6	What are some of your social and environmental concerns (short & long term) regarding the proposed construction work?		- Harvest rain water - manage noise
7	What would you like to see being observed during the construction phase?		- Manage dust - manage noise

Name of officer: **STEPHEN NGUGI EXECUTIVE OFFICER**
 Position
 Date: **28/7/16**

LEAD EXPERT NEMA LICENCE

FORM 7



nema

mazingira yetu | uhai wetu | wajibu wetu

NATIONAL ENVIRONMENT MANAGEMENT AUTHORITY (NEMA)
THE ENVIRONMENTAL MANAGEMENT AND CO-ORDINATION ACT
ENVIRONMENTAL IMPACT ASSESSMENT/AUDIT (EIA/EA) PRACTICING LICENSE

License No: NEMA/EIA/ERPL/4314

Application Reference No: NEMA/EIA/

M/S **Tom Omenda**
(individual or firm) of address

P.O. BOX 14249-00800, Nairobi

is licensed to practice

capacity of a (Lead Expert/Associate Expert/Firm of Experts) **Lead Expert**

registration number **0011**

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

Issued Date: **1/3/2017**

Expiry Date: **12/31/2017**