

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT
STUDY REPORT

FOR THE PROPOSED AFFORDABLE HOUSING PROJECT
(300 WOODLEY VILLAGE) ON PLOT NO. NAIROBI BLOCK
43/274 IN WOODLEY ESTATE ALONG MUGO KIBIRU
DRIVE AND JOSEPH KANGETHE ROAD
IN WOODLEY AREA, KIBRA SUB-COUNTY WITHIN
NAIROBI CITY COUNTY

NEMA/TOR/5/2/820

G.P.S COORDINATES:

LATITUDE: -1.302205°S

LONGITUDE:6.785656°E

Prepared in Accordance With:

- Environmental Management and Co-ordination Act, 1999
- Environmental (Impact Assessment and Audit) Regulations, 2003
- Legal notice 31 of 2019

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DECEMBER 2024

DOCUMENT CERTIFICATION

This Environmental Impact Assessment study report has been prepared by **Green Builders & Planning Consultants Limited** (NEMA Reg No. **9571**) in accordance with the Environmental Management and Coordination Act 1999 and the Environmental (Impact Assessment and Audit) regulations 2003 and legal notice 31 of 2019 which requires every proponent undertaking a project specified in legal notice 31 as high risk to undertake Environmental Impact Assessment(EIA) study report for submission to the National Environmental Management Authority (NEMA) for licensing. We the undersigned, certify that the particulars in this report are correct and righteous to the best of our knowledge.

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FACT SHEET

Assignment Name	Environmental Impact Assessment Study Report		
Type of Facility	Proposed affordable housing project (300 WOODLEY VILLAGE)		
County	Nairobi		
Location	Plot No. Nairobi Block 43/274 measuring 3.916 hectares situated behind Prestige mall along Mugo Kibiru Drive and Joseph Kangethe Road in Woodley area, Kibra Sub-County within Nairobi County.		
GPS Coordinates	LATTITUDE: -1.302205°S LONGITUDE:6.785656°E		
Proponent	AFRICA REIT LIMITED &NAIROBI CITY COUNTY		
Address of the Proponent	P.O BOX 15397-00509 NAIROBI		
Summary Project description	Construction of affordable housing project (multi-dwelling residential cum commercial development) comprising of mixed income housing divided into Market blocks and Budget blocks with a total of 1925 units)		
Project Cost	The estimated is ten billion, two hundred and eighty eight million, two hundred and eighty four thousand, five hundred and eighty nine Kenya shillings only (KShs. 10,288,284,589.00)		
EIA firm of experts	Green Builders & Planning Consultants Limited 0704 707 633	NEMA Firm Reg No:	9571

ACRONYMS AND ABBREVIATIONS

EIA	-	Environmental Impact Assessment
EA	-	Environmental Audit
EHS	-	Environmental Health and Safety
EMCA	-	Environmental Management and Coordination Act
EMP	-	Environmental Management Plan
NCCG	-	Nairobi City County Government
PAP	-	Project Affected Persons
RAP	-	Resettlement action Plan
HA	-	Hectares
KM	-	Kilometres
KPLC	-	Kenya Power and Lighting Company
MOH	-	Ministry of Health
NEAP	-	National Environmental Action Plan
NEMA	-	National Environment Management Authority
NPEP	-	National Poverty Eradication Plan
OHS	-	Occupational Health and Safety
PPE	-	Personal Protective Equipment
PRSP	-	Poverty Eradication Strategies Paper
SQM	-	Square Metres
SWM	-	Solid Waste Management
TOR	-	Terms of Reference
VAT	-	Value Added Tax

DEFINITION OF ANALYTICAL TERMS

Affordable Housing: refers to housing units that are affordable by that section of society with the median household income or below.

Environmentally Sound Design: Is the design and implementation of activities and projects such that the environmental harm associated with a particular development objective is kept to a practicable minimum.

Positive Impact: A change which improves the quality of the environment (for example by increasing species diversity; or improving the reproductive capacity of an ecosystem; or removing nuisances; or improving amenities).

Neutral Impact: A change which does not affect the quality of the environment.

Negative Impact: A change which reduces the quality of the environment (for example, lessening species diversity or diminishing the reproductive capacity of an ecosystem, or property or by causing nuisance.

Significant impact: An impact which, by its character, magnitude, duration or intensity alters a sensitive aspect of the environment.

Profound impact: An impact which obliterates sensitive characteristics.

Do-Nothing Impact: The environment as it would be in the future should no development of any kind be carried out.

Indeterminable Impact: When the full consequences of a change in the environment cannot be described.

Irreversible Impact: When the character, distinctiveness, diversity or reproductive capacity of an environment is permanently lost.

Residual Impact: The degree of environmental change that will occur after the proposed mitigation measures have taken effect.

Synergistic Impact: Where the resultant impact is of greater significance than the sum of its constituents.

Worst Case Impact: The impacts arising from a development in the case where mitigation measures substantially fail.

Cumulative impacts: Are identified as impacts that result from incremental changes caused by other past, present or reasonably foreseeable actions.

Indirect impacts: Are defined as impacts on the environment which are not a direct result of the project, possibly produced some distance away from the project or as a result of a complex pathway.

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EXECUTIVE SUMMARY

Nairobi is the capital and largest city of Kenya. The city and its surrounding area constitute the Nairobi City County, earmarked as the 47th County in Kenya. Nairobi was founded in 1899 by colonial authorities in British East Africa, as a rail depot on the Uganda - Kenya Railway. The town quickly grew to replace Mombasa as the capital of Kenya in 1907. After independence in 1963, Nairobi became the capital of the Republic of Kenya. In its young age, the growth of Nairobi was propelled by its central position between Mombasa and Kampala, and being preferred as an ideal residential zone due to its network of rivers and favorable weather. The strategic location still plays a significant role currently, rendering Nairobi City County an attractive destination for trade, tourism, education, residence and other social activities. Its attractive physical, social and economic features provide promising opportunities for socio-economic development for all.

Globalization, urbanization, migration and technological advancements have continued to drive cities forward right from their infant stages, the cyclic processes, growth, through to their renewal and regeneration. More and more people are moving and positioning themselves in cities for business, work, venturing forth and recreation. The demand for residential developments in Kenyan urban areas has remained under tremendous pressure. Both the government and private sector have had a role to play with the government servicing the land and leaving it to private entrepreneurs to develop. However, the provision of residential housing has not kept pace with the said phenomenon. It is laudable that housing is now a priority for Kenyan government and has increasingly been considered a human right as opposed to a commodity only accessible to the wealthy.

Nairobi City County's affordable housing program is part of a broader initiative by the national government to address the housing deficit in Kenya. The program aims to provide affordable homes to low- and middle-income households, particularly targeting the rapidly growing urban population in Nairobi. Key aspects of the program include the construction of modern, cost-effective housing units across different neighborhoods, including both high-rise and low-rise developments. The government is collaborating with private developers, financial institutions, and other stakeholders to ensure that housing is both affordable and accessible.

For a long time, the world over, policy makers directed all the efforts in economic development without due regard to the resource base on which the economic development depend on. As a result, there has been unprecedented environmental degradation due to lack of environmental conservation

resulting to unsustainable development. More recently, investors and developers, spurred on by regulators world over, have recognized the need for change in order to safeguard the environment.

Reference to this, environmental concerns have now been integrated in the planning and implementation processes of any proposed projects in Kenya. The key objective is to mitigate conflicts with the environment at the vicinity during implementation and operation phases. In addition, it is now mandatory for Environmental Impact Assessment (EIA) to be undertaken on projects of such magnitude and nature; to enhance Sustainable Environmental Management as well as controlling and revitalizing the much-degraded environment. The environmental management is regulated by the National Environmental Management Environment (NEMA) in Kenya.

Pursuant to the prevailing legal requirements as envisaged in the Environmental Management and Coordination Act (EMCA), CAP 387 and to ensure sustainable environmental management, the proponent undertook this ESIA on the proposed project's site; and incorporated substantial environmental aspects as advised by NEMA. This ESIA report thus provides relevant information and environmental considerations on the project proponent's intention to seek approval from NEMA for the development of the proposed project. Environmental Experts who are registered by the Authority conducted the assessment

Africa Reit Limited herein referred to as “the project proponent” in partnership with the Nairobi City County Government (NCCG) is proposing to undertake construction of affordable housing project (300 Woodley Village) comprising of mixed income housing divided into Market blocks and Budget blocks with a total of 1925 units on Plot No. Nairobi Block 43/274 measuring 3.916 hectares.

The proposed construction site had been occupied by low-rise residential units which has been demolished to pave way for the proposed high-rise affordable housing units. The proposed transformation of Woodley Estate is expected to set a precedent for future urban renewal and redevelopment projects across Nairobi, signaling a new era of modern housing development in the city. The NCCG has put in place measures to compensate the affected families including issuance of allotment letters.

The proposed affordable housing development comprises of one thousand, nine hundred and twenty five units(1925) as follows;

- i. **Construction of Market units(Type A) with a total of one thousand and sixty nine(1069) units as follows;**
 - ✓ **Three hundred and eighty four (384) one bedroom units**
 - ✓ **Four hundred and sixty six (466) two bedroom units**
 - ✓ **Two hundred and twelve (212) three bedroom units and**
 - ✓ **Seven(7) four bedroom units**

- ii. **Budget units(Type B) with a total of five hundred and ninety one(591) units**
 - ✓ One hundred and twenty eight(128) studio units
 - ✓ One hundred and sixty(160) one bedroom units
 - ✓ One hundred and seventy six(176) two bedroom units and
 - ✓ One hundred and twenty seven(127) three bedroom units

- iii. **Budget units(Type C) with a total of two hundred and sixty five(265) units as follows;**
 - ✓ Thirty eight(38) one bedroom units
 - ✓ Seventy three(73), two bedroom units and
 - ✓ One hundred and fifty four(154) three bedroom units

Construction of a commercial centre and social amenities

The main project components include the following:

- a. Demolition of existing structures
- b. Clearing and preparation of the proposed project site.
- c. Actual construction activities
- d. Development of driveways, walkways and parking areas
- e. Development of utilities services i.e. drainage systems, waste water and electricity supply
- f. Site landscaping especially tree planting and landscaped gardens

Socio-Economic (Positive) Impacts of the Project

The proposed development has positive impacts to both the proponent and society in general. The benefits will be experienced during construction and occupation phases. They include the following:

- (a) Provision of housing to the growing urban population; The program aims to provide affordable homes to low- and middle-income households
- (b) The optimal use of land i.e. increased utility of the parcel of land, which is currently underutilized.
- (c) Boost local investment; to both government and the proponent.
- (d) Creation of market for goods and services. Many secondary businesses are also likely to spring up during the construction phase especially those providing foods and beverages to the construction workers.
- (e) Provision of employment during both construction and occupational phases.

Issues of concern associated with project implementation

Against the background of the above positive impacts, there are a few environmental and social issues of concern anticipated from the implementation of the subject project. These shall be experienced during implementation/construction phase, operation/occupation phase and decommissioning phase. They include eviction of the long-term tenants, social conflicts, soil degradation; air quality; noise; oil wastes; water resources; solid and liquid waste management; drainage, terrestrial ecology, visual and landscape; traffic; public comfort; occupation, health and safety (OHS); and energy.

The impacts have been elaborated as follows:

- (a) Eviction of the long-term tenants
- (b) Increased social conflict resulting from the compensation funds
- (c) Clearance of existing vegetation
- (d) Impact to soil (including soil erosion) especially when laying the foundation
- (e) Increased noise and vibration mostly during construction phase.
- (f) Water shortage

- (g) Sewer management
- (h) Impact (constraints/pressure) to the existing infrastructure i.e. water, power, roads among others.
- (i) Increased waste generation (both solid and liquid) during construction and operational/occupation.
- (j) Increased storm water/ run-off resulting from the roof catchments and as a result of decreased recharge areas, after pavement of most areas.
- (k) Air pollution as a result of dust particles emanating from cement, excavation and construction activities. Exhausts from the involved machinery will lead to increased levels of noxious gases.
- (l) The health and safety of workers and immediate neighbours may be compromised in case of occurrence of incidences, pollution and disturbance

Proposed potential mitigation measures

To minimize the occurrence and magnitude of the negative impacts, mitigation measures have been proposed against each of the anticipated impacts. Other measures have been integrated in the project designs with a view to ensuring compliance with applicable environmental laws and guidelines. The measures include the following:

i. During Construction Phase

- (a) Adherence to the Resettlement Action Plan agreed upon
- (b) Minimizing air pollution (suppressing dust) and erosion by the agents of soil erosion through soil compaction and utilization of water sprays (on loose soils on all unpaved access paths/roads, cleared surfaces), utilization of covered trucks, and netting of construction site.
- (c) Erection of warning / informative signs at the site during the implementation phase, and traffic control along the connecting road.
- (d) Minimizing strain on water supply (surface and groundwater sources) by, employing water conservation measures such as water reuse, rainwater harvesting, use of run-off, and reduction or avoidance on misuse of water.
- (e) Reducing noise pollution through:

- i) installation of portable barriers to shield compressors and other small stationary equipment (where necessary);
 - ii) sensitizing workers on the need to switch off engines whenever possible;
 - iii) Ensuring machinery are well maintained through regular tuning and maintenance to minimize or avoid noise emanating from friction of rubbing metal parts;
 - iv) Installation of silencers whenever possible;
 - v) Ensuring work is carried out between specified time i.e. 7a.m. to 6p.m.
- (f) Minimizing emission of noxious fumes through:
- i) proper and regular tuning and maintenance of construction machinery/equipment;
 - ii) reduction/control of vehicle/machinery idling.
- (g) Construction machinery and vehicles maintenance should be conducted in appropriate and designated service bays to reduce chances of contaminating the environment by resulting oils and greases. Any of such oils should be collected and disposed appropriately.
- (h) Workers should be provided with full personal protective gear (PPE) to safeguard their health and safety; and, they should be sensitized on health, safety and environmental conservation aspects.
- (i) The site should be fenced off during construction to keep off animals and the general public, so as to safeguard their health and safety.
- (j) Provision of sound waste management systems and procedures. During implementation phase, the contractor should put in place effective and efficient waste management systems in compliance with the legal framework of Kenya. This includes providing acceptable sanitary conveniences to the workers during the construction.
- (k) Developer will work with the immediate neighbours to ensure air, noise and land pollution levels are either avoided or kept to the minimal, and the overall health and safety of the immediate environment is safeguarded.

ii. During Operation Phase

- (a) Minimizing strain/pressure on the water supply infrastructure by promoting water efficiency through rainwater harvesting, minimizing water consumption/ misuse and using recycled water.

- (b) Managing surface drainage by developing and implementing a storm water management design that closely emulates the existing natural “pre-development” hydrological systems, as well as applies the principal of managing (the quantity and quality of) storm water at the source. With respect, emphasis should be on:
- i. Storm water drainage, on-site infiltration, and ground water recharge by making use of methods, which closely emulate natural system by incorporating re-vegetation of the site and porous paving in the design.
 - ii. Maximizing recycling and reuse of water. This includes designing a storm water management system which, excludes discharge into the designed sewerage system so as not to put extra burden on this system; but harvests, stores and reuses the rainwater falling within the site. This would greatly enhance efficient use of portable water within the site, as well as contribute to the project’s compliance with the Country’s provision on climate change adaptation and mitigation measures.

Lastly, where drain channels are considered in the design, they should be well-designed and installed to harmonize management of the resulting storm water within the site. During operation phase, they should be regularly maintained and covered with gratings to avoid accidents and dirt entry.

- (c) Comprehensive landscaping (greening) on completion of the proposed development to prevent soil erosion and upgrade the site to its appropriate environmental standard.
- (d) There is provision of public sewerage infrastructure within the proposed construction site. In compliance with the applicable legal framework of Kenya, the sewage generated from the completed development shall be managed by connecting to the NCWSC trunk sewer line. This system shall be regularly maintained and closely monitored and evaluated to ensure its efficiency.

iii. During both construction and operation phases

- (a) Careful sitting, planning and implementation processes- to ensure that it is sympathetic to its surroundings and is in line with County Government’s Physical Planning and Construction standards.
- (b) To safeguard against environmental and human health and safety risks, effective emergency response plans should be adapted during both construction and operation phases. There should

be a specific area for hazardous material storage, machinery maintenance activities and refuelling; and, these should be clearly indicated and adhered to.

- (c) Adapt the proposed Environmental Management and Monitoring Plans involving all relevant stakeholders during implementation phase and inhabitants, during operation phase.

Project Cost Estimate

The proponent has undertaken a preliminary estimate of the total project cost using experienced consultants. The estimated is ten billion, two hundred and eighty eight million, two hundred and eighty four thousand, five hundred and eighty nine Kenya shillings only (KShs. 10,288,284,589.00)

Conclusion and Recommendations

The analysis of the EIA study indicates that the proposed project has significant benefit to the local and national housing sector. The analysis reveals that the benefits far outweigh the associated costs and negative impacts. The benefits include availability of quality modern residential units, creation of employment opportunities, increased utility of the land, creation of employment opportunities especially during project implementation phase, increase in government revenue and improvement of local standards of living. Nevertheless, the project will come with some negative impacts such as increased pressure on existing infrastructure, pollution (to Air, Water, soil) mostly during construction phase, increased waste (solid and liquid) generation and effect on ecology (flora) and fauna.

In relation to the proposed mitigation measures that will be incorporated during implementation and occupation phases; the project's input to the Kenya's housing sector; and cognizance of the fact that the project proponent is environmentally conscious, the subject project is beneficial and important for a developing country (like Kenya). It is our recommendation that the proponent be granted an EIA license to implement the project. Major concerns should nevertheless be geared towards minimizing the occurrence of impacts that would degrade the general environment. This will however be overcome through close following and implementation of the outlined Environmental Management and Monitoring Plans (ESMPs); which have been strategically packaged with key environmental sustainability elements, tailored toward enhancing the adoption of *Integrated Ecosystem Management (IEM)*. This will form the (now) widely accepted keystone of the environmental action agenda.

CHAPTER ONE: INTRODUCTION

1.1 Background and Rationale of Environmental Impact Assessment

Currently the rates of urbanization and population growth worldwide are increasing fast and with it come the need for improvement in service provision especially in our urban areas. Kenya's rates of urbanization are escalating and being a developing country; most of its urban population is forced to live in slums. Increased population due to rural-urban migration in search of job opportunities and or higher education in major towns of Kenya has increased demand for buildings, especially residential houses.

The principle measure of sustainable development is that all activities which are carried out to achieve development must take into account the needs of environmental conservation. The sustainability of the ecosystem requires the balance between human settlement development and the natural ecosystem, which is a symbiotic relationship. This can be achieved through careful planning and the establishment of appropriate management systems. In modern times, the need to plan activities has become an essential component of the development process. Consequently, a number of planning mechanisms have been put in place to ensure that minimum damage is caused to the environment. Environmental planning is also integrated with other planning processes such as physical planning, economic planning, and development planning. Environmental Impact Assessment (EIA) is considered part of environmental planning. EIAs are undertaken for proposed activities that are likely to have a significant adverse impact on the environment and are subject to a decision of a competent national authority. In Kenya, the competent authority is the National Environment Management Authority (NEMA).

As part of the EIA process, it is necessary to devise alternatives to avoid undesirable impacts. Besides the alternative, identification of impacts may also lead to the development of mitigation measures i.e. means of reducing the impacts. As a tool of environmental planning, E.I.A is therefore precautionary in nature. E.I.A is neither anti-development nor does it stop actions which impact the environment. It only requires that those impacts be considered. Most development activities impact the environment hence a "no impact" interpretation of environmental impact assessment could lead to no development. But a "considerable impact" interpretation of E.I.A will lead to better development. If environmental impacts are ignored, the project may not be sustainable in the long-run, in which case the money invested in it will have been wasted.

Pursuant to the prevailing legal requirements as envisaged in the EMCA 1999 and to ensure sustainable environmental management, the proponent contracted the services of Registered NEMA consultants to carry out an environmental impact assessment study for the proposed development. This EIA study report thus provides relevant information and environmental considerations on the project proponent's intention to seek approval from NEMA.

Africa Reit Limited herein referred to as “the project proponent” in partnership with the Nairobi City County Government (NCCG) is proposing to undertake construction of affordable housing project (300 Woodley Village). The proposed project neighbourhood comprises of other single dwelling and multi dwelling units owned by NCCG likely to be affected by different phases of the urban redevelopment programmes, residential apartments including; Eureka Apartments, Diamond court apartments among others. Other notable land use practices include; Educational facilities such as Moi Girls School Nairobi, Joseph Kangethe Primary and Junior Secondary School and Moringa school, social amenities and hospitality institutions such as Prestige Mall, Double Tree by Hilton, Wuduria Hotel among others and administration units including the Woodley Chiefs office.

The proposed project is in harmony with the land use class of the area. The project will lead to economic empowerment not only to the project proponent but also to a host of other people who will both directly and indirectly benefit from jobs and business opportunities resulting from the presence of the project within the neighbourhood. Revenue generation to the central government through land rates and taxes as a result of the implementation of this project will lead to the much-needed economic development.

In terms of environmental degradation, the project is likely to lead to negative impacts, which shall be taken care of in the design and the proposed mitigation measures as suggested in Chapter 9 of this project study report.

1.2 Objectives of the EIA

Environmental Impact Assessment (EIA) is a process having the ultimate objective of providing decision makers with an indication of the likely environmental consequences of a proposed activity. The main objectives of this EIA therefore include the following:

- (a) To determine environmental compatibility of the project

- (b) To identify and evaluate the significant environmental impacts of the project
- (c) To evaluate and select the best project alternative from the options available
- (d) To incorporate environmental management plans and monitoring mechanisms
- (e) To assess the environmental costs and benefits of the project to the society

These objectives are based on ensuring that the environmental concerns are integrated in the proposed project activities in order to contribute to the overall sustainable development. Other objectives include;

- To identify potential environmental impacts of proposed project; both positive and negative
- To assess the significance of these impacts to the environment and other stakeholders
- To assess the relative importance of the impacts of alternative plans to the proposed project.
- To propose mitigation measures for the significant negative impacts of the proposed project on the environment and all involved stakeholders.
- To propose measures that will enhance the positive impacts of the proposed project to the environment and all involved stake holders
- To generate baseline data for monitoring and evaluation of how well the mitigation measures are being implemented during the proposed project cycle;
- To present information on the impact of alternatives;
- To present results of the EIA in such a way that they can guide informed decision

1.3 Terms of Reference (TOR)

This Environmental Impact Assessment considered the following aspects and others that proved of significance during the study.

- (a) To hold appropriate meetings with the project proponent to establish the procedures, define requirements, responsibilities and a time frame.
- (b) To produce an EIA study report that contains among other issues potential negative and positive impacts and recommendations of appropriate mitigation measures to minimize or prevent adverse impacts
- (c) To carry out a systematic environmental assessment study at the proposed project site and the surrounding area.

- (d) To provide a description of the proposed activities throughout the entire implementation process of the project with a special focus on potential impacts to the surrounding environment and facilities.
- (e) To develop an Environmental Management Plan for the proposed project.

1.4 Scope of EIA Study

The study was conducted to evaluate the potential and foreseeable impacts of the proposed development. The physical scope is limited to the proposed site and the neighbouring areas/environment as they may be affected by or may affect the proposed project. Any potential impacts (localized or delocalized), are also evaluated as guided by EMCA 1999 and the Environmental (*Impact Assessment and Audit*) Regulations 2003. This study report includes an assessment of impacts of the proposed sites and its environs with reference to the following;

- (a) Description of the proposed project
- (b) Baseline information (Biophysical and Socio-Economic environment, land use and zoning approval, etc.).
- (c) Assessment of the potential environmental impacts on the project area.
- (d) A review of the policy, legal and administrative framework.
- (e) Development of the mitigation measures and future monitoring plans.
- (f) Proposition of alternatives.
- (g) Occupational Health and Safety -OHS

1.5 Methodology

Following a preliminary visit of the proposed site, the following was undertaken: -

- (a) Screening of the project, a process that identified the project as being high risk as per Legal Notice 31 of 2019.
- (b) A scoping exercise that identified the key issues to be addressed.
- (c) Documentary review on the nature of the proposed activities, policy and legal framework, environmental setting of the area and other available relevant data/information.

- (d) Public participation and consultation-detailed discussions with the project affected persons, stakeholders, proponent and architects.
 - (e) Physical investigation of the site and the surrounding areas using a pre-prepared checklist identifying possible environmental and human safety issues that are likely to be affected,
 - (f) Reviewing the proposed project designs and implementation plan/schedules with a view to suggesting suitable alternatives,
 - (g) Developing an environmental management plan outline with responsibilities, schedules, monitorable indicators and time frames among other aspects,
- A comprehensive report including issues as listed in the Environmental (Impact Assessment) Regulations 2003.

1.6 Need for the Project

According to the Center for Affordable Housing, Kenya has an accumulated housing deficit of 2.0 million housing units, growing by 200,000 units annually. This is mainly due to the difference between the demand of 250,000 housing units and an estimated supply of 50,000 units every year. Notably, the Ministry of Housing indicates that 83.0% of the existing housing supply is for the high income and upper-middle-income segments, with only 15.0% for the lower-middle and 2.0% for the low-income population. In summary, while 74.4% of Kenya's working population requires affordable housing, only 17.0% of the housing supply goes into serving this low to lower-middle income segment. This supply issue has remained a challenge attributed to factors such as high construction costs, inadequate supply of development land, and, inadequate infrastructure.

Increase in population and urbanization within and around Nairobi City County has led to rapid increase in demand for residential houses which has led to people moving out of city centre and staying in the satellite towns within the vicinity of the city or staying in shanties. Nairobi City County's affordable housing program is part of a broader initiative by the national government to address the housing deficit in Kenya. The redevelopment program shall provide affordable homes to low- and middle-income households, particularly targeting the rapidly growing urban population in Nairobi. 300 Woodley Village, aims to transform the living conditions of Woodley residents by replacing the forty two (42) existing units with 1,925 new homes, enhancing the living standards, significantly expand housing availability in the city while marking the beginning of a broader initiative to revitalize Nairobi's ageing estates.

1.7 National Housing Policy and Housing Needs in Kenya

In August 2003, the government of Kenya through a Sessional Paper spelt out a Housing Policy whose overall goal was to facilitate the provision of adequate shelter and healthy living environment at an affordable cost to all socio-economic groups in Kenya in order to foster sustainable human settlements. The aim is to minimize the number of citizens living in shelters that are below the habitable living conditions.

Among other things, the policy aims at facilitating increased investment by the formal and informal private sector, in the provision of housing units for low and middle-income dwellers. The estimated current urban needs are 150,000 units per year, which can be achieved if the existing resources are fully utilized by the private sector with the enabling hand of the government. It is estimated that the current production of new housing in urban areas is only 20,000-30,000 units annually, giving a shortfall of over 120,000 units per annum. The shortfall in housing has been met through the proliferation of squatter and informal settlements and overcrowding.

To alleviate the huge shortfall of urban housing mentioned above and to curb the mushrooming of informal settlements/slums, various interventions and strategies have to be adopted. In the Policy Paper, the government correctly accepts the fact that it cannot meet the housing shortfall on its own and that the best policy is to encourage the private sector (like the proponent) to chip in while the government provides an enabling environment and terms for development. The government will provide an enabling environment by doing the following:

- Facilitating the supply of serviced land at affordable prices in suitable locations
- Expanding and improving infrastructure facilities and services
- Using research findings as well as innovative but cheap conventional building materials and technologies to improve production of housing units.
- Harmonizing the Banking Act, the Building Society Act, the Insurance Act and the various Acts that have so far proved to be a hindrance to the sourcing of housing finance.
- Generally easing the path of funds from the private investor/government to the development project.
- Issuing workable guidelines on Estate Management and maintenance.

The promotion of this development is therefore well within the government current and long-term policies of ensuring decent housing for all by 2030 (Vision 2030).

1.8 Methodology

Following a preliminary visit of the proposed site, the following was undertaken: -

- a) Screening of the project, a process that identified the project as being among high-risk projects as per Legal Notice 31 of 2019
- b) A scoping exercise that identified the key issues to be addressed in the assessment.
- c) Documentary review on the nature of the proposed activities, policy and legal framework, environmental setting of the area and other available relevant data/information.
- d) Public participation and consultation-detailed discussions with the immediate neighbours, proponent and architects.
- e) Physical investigation of the site and the surrounding areas using a pre-prepared check-list identifying possible environmental and human safety issues that are likely to be affected,
- f) Reviewing the proposed project designs and implementation plan/schedules with a view to suggesting suitable alternatives,
- g) Developing an environmental management plan outline with responsibilities, schedules, monitorable indicators and time frames among other aspects,
- h) A comprehensive report including issues as listed in the Environmental (Impact Assessment) Regulations 2003.

CHAPTER TWO: PROJECT DESCRIPTION

2.1 Project Proponent

The project proponent is Africa Reit Limited of P.O BOX 15397-00509, Nairobi- Kenya and the Nairobi City County Government of P.O Box 30075-00100 Nairobi

2.2 The location of the project and Site description

The proposed affordable housing project is situated on Plot No. Nairobi Block 43/274 measuring 3.916 hectares. The proposed site is part of the 100 acre land in woodley owned by the Nairobi City County Government. It is situated behind the Prestige mall along Mugo Kiburu Drive and Joseph Kangethe Road in Woodley area, Kibra Sub-County within Nairobi County. The site was previously occupied by a section of NCCG Woodley housing Estate (currently categorized under the Nairobi old estates scheduled for redevelopment), recreational areas including a playground and support amenities and utilities which shall be demolished to pave way for the proposed development. The project site lies within geographical coordinates; longitude: -1.302205°S and Latitude: 36.785656°E. The immediate neighbourhood comprises of a section of the woodley estate comprising of residential units and other notable mixed-use developments.

The proposed construction site falls within Kibra Sub- County which is known for its lush vegetation due to its urban nature, it does have a mix of indigenous and introduced plant species. The surrounding areas offer more diverse vegetation types, particularly in Nairobi National Park and along watercourses.

The proposed project site neighbourhood character comprises of;

a) Educational, religious and Health institutions: Woodley area has various educational institutions to serve the growing population. These includes; Moi Girls School Nairobi, Joseph Kangethe Primary and Junior Secondary School, Moringa school etc. The religious institutions include the SDA church Ngong Road and Nairobi City County Woodley Clinic

b) Shopping centre, hospitality establishments and recreational areas: The proposed project site sits right behind the Prestige Mall which is situated along Ngong Road. Hotel/restaurant establishments including Double Tree by Hilton, Wuduria Hotel are also situated within the area. It is worth noting that the proposed project activities will not interfere with the above establishments.

c) Residential Developments; the area has been growing over the years with pockets of undeveloped land slowly fading away to pave way for development of multi-dwelling residential units such as apartments I.e. Eureka Apartments, Diamond court apartments among others

d) Office/Commercial Developments; the site neighbourhood has office developments such as Kibra sub-County offices, Jadala Place, Faulu head Offices etc.

The proposed site is served by various infrastructure such as the Ngong Road, Ring Road Kilimani Road.

e) Infrastructure; the proposed site neighbourhood has various infrastructure such as the Ngong road, Ring Road Kilimani. For the ease of accessibility, the Ngong road highway is situated a few meters from the site while Wilson airport is approximately 6.4 kilometers from the site.

f) Social amenities and institutions: the area has various social amenities to serve the growing population. These includes; Prestige Mall, Joseph Kangethe Primary and Junior Secondary School, Moi girls' secondary school, Moringa school, Woodley Clinic among others.



Proposed site location map(Source: Google Earth 2024)



Image 1,2 and 3 showing a section of the proposed project site



Image 4,5&6 showing the immediate neighbourhood (Green area with mature trees and developed single dwelling units bordering the proposed site)



Image 7,8 & 9 showing the institutions within the area including woodley clinic, Moi Girls' School and Joseph Kangethe Primary school



Images10,11&12 showing the site access road, sewer line and a section of the NCCG Kibra sub-county offices

2.3 Site ownership, size, zoning and land use

2.3.1 Site Ownership and Size

The proposed affordable housing project is situated on Plot No. Nairobi Block 43/274 measuring 3.916 hectares. The proposed site is part of the 100 acre land in woodley owned by the Nairobi City County Government. It is situated behind the Prestige mall along Mugo Kiburu Drive and Joseph Kangethe Road in Woodley area, Kibra Sub-County within Nairobi County. The site was previously occupied by a section of NCCG Woodley housing Estate (currently categorized under the Nairobi old estates scheduled for redevelopment), recreational areas including a playground and support amenities and utilities which shall be demolished to pave way for the proposed development. The project site lies within geographical coordinates; longitude: -1.302205°S and Latitude: 36.785656°E. The immediate neighbourhood comprises of a section of the woodley estate comprising of residential units and other notable mixed-use developments.

The land belongs to the Nairobi City County government. The copies of land ownership documents are annexed.

2.4 Nature and Design Components of the Project

2.4.1 Project description

The project proponent is proposing to put up an affordable housing residential multi dwelling residential cum commercial development on plot no Nairobi Block 43/274 in Woodley area along Mugo Kiburu drive and Joseph Kangethe road. The proposed affordable housing development comprises of one thousand, nine hundred and twenty five units(1925) as follows;

- i. Construction of Market units(Type A) with a total of one thousand and sixty nine(1069) units as follows;**
 - ✓ **Three hundred and eighty four (384) one bedroom units**
 - ✓ **Four hundred and sixty six (466) two bedroom units**
 - ✓ **Two hundred and twelve (212) three bedroom units and**
 - ✓ **Seven(7) four bedroom units**
- ii. Budget units(Type B) with a total of five hundred and ninety one(591) units**
 - ✓ **One hundred and twenty eight(128) studio units**

- ✓ One hundred and sixty(160) one bedroom units
 - ✓ One hundred and seventy six(176) two bedroom units and
 - ✓ One hundred and twenty seven(127) three bedroom units
- iii. **Budget units(Type C) with a total of two hundred and sixty five(265) units as follows;**
- ✓ Thirty eight(38) one bedroom units
 - ✓ Seventy three(73), two bedroom units and
 - ✓ One hundred and fifty four(154) three bedroom units
- iv) Construction of a commercial centre and social amenities

The main project components include the following:

- g. Demolition of existing structures
- h. Clearing and preparation of the proposed project site.
- i. Actual construction activities
- j. Development of driveways, walkways and parking areas
- k. Development of utilities services i.e. drainage systems, waste water and electricity supply
- l. Site landscaping especially tree planting and landscaped gardens

2.4.2 Clearing and Preparation of the Project Site

- a) The existing ground situation will be altered through demolition of existing structures on site and clearing of existing vegetation and other barriers to pave way for implementation of the proposed development projects on the site. The proponent plans to plant trees and flower gardens to create a green cool environment

2.4.3 Proposed project development

The proposed project will include construction of multi- dwelling residential cum commercial development that is divided into market blocks and budget blocks comprising of one thousand, nine hundred and twenty five (1925) residential units. The proposed development will provide accommodation for the increasing population within the Nairobi County.

2.4.4 Community Facilities

The proposed development will have a commercial block for setting up of different businesses to serve the tenants, neighbours and visitors.

2.4.5 Local Access Roads, Parking and Walkways

The proposed development has an adequate access road which is Joseph Kangethe Road. The proposed project hives provision of 2.5 m wide walkways and adequate Car parking spaces within the facility.

2.4.6 Trunk Infrastructure and Utilities

Water Supply: The proposed development will be served water by NCWSC. This will be supplemented by provision of adequate water storage tanks, harvesting of rain water, recycling of waste water and drilling an onsite borehole(s).

Foul Water Drainage: The proposed development will generate substantive amount of waste water per day. The waste water generated will be discharged into the NCWSC sewer line within the locality.

Storm Water Drainage: The proposed development will generate enormous surface water. It is therefore recommended that adequate and well drainage channels be provided to accommodate the increased discharge. The flow of the storm water has been well captured in the plans and the proponent plans to develop adequate water storage tank for storage of harvested water.

Solid Waste Disposal: The proposed project will generate enormous solid waste. It is recommended that NEMA & County licensed private waste handlers be contracted to collect the waste. It is further recommended to have one common point within the premises to store the waste before final collection.

Electricity Supply: The proposed development will be connected to the Kenya Power and Lighting Company power supply line. The KPLC electricity supply lines are already available within the neighbourhood of the proposed project site. There will be a backup generator in case of Power blackout.

2.4.7 Landscaping and Tree Planting

The project will involve clearing of few vegetation and excavation of soil material. The site development involves cut and fill arrangement, whereby excavated material is used for back-filling. Any excess material will be disposed off-site.

The project site will be landscaped according to scheme plan. This will entail establishment of flower gardens, planting of trees, grass and related ground cover to compensate for any cleared vegetation and to improve general aesthetics of the estate.

2.5 Construction Activities and Inputs

The construction activities shall begin once the proponent obtains all relevant approvals such as

NEMA license. Site clearing by demolishing current structures and clearing of shrubs and unwanted vegetation, setting out and excavations for laying of various housing units and ancillary facilities will then proceed. Materials from the excavations of the ground and foundation work will be reused for earth works and landscaping.

The proposed development will be constructed based on applicable building standards of Kenya. Other building standards will be incorporated. They include Building Code and the British Building Standards *BS 8110, BS 5950, BS4449, BS4461 etc.* The development shall also incorporate environmental guidelines, health and safety measures. All the construction inputs shall be obtained from licensed dealers. The following will be required for successful implementation of construction activities. Construction tools and equipment including machinery mainly transportation vehicles will be used for the transportation of materials and in the execution of the proposed works.

2.5.1 Inputs during Construction

- a. **Construction raw materials** i.e. sand, cement, stones, crushed rock (gravel/ ballast), ceramic tiles and other ceramic fittings, steel and wooden fixtures and fittings, glass, steel metals, timber, roofing materials, painting materials among others. All these should be obtained from licensed dealers and especially those that have complied with the environmental management guidelines and policies.
- b. **Construction machines** including machinery such as trucks, concrete mixers, and tools and other relevant construction equipment. These will be used for the transportation of materials, clearing of the site and construction debris. Most of the machinery will use electrical and petroleum products to provide energy.
- c. **A construction labour force** of both skilled and Semi-skilled workers. These will require services such as energy, water supply and sanitation facilities.
- d. Water for construction purposes.
- e. Power from the mains grid or provided by generators.

2.5.2 Construction activities include the following

- Procurement of construction materials from approved dealers.
- Transportation of construction materials and debris using heavy and light machinery
- Appropriate Storage of the construction materials.
- Site clearing, excavation and filling and laying of foundation

- Construction works i.e. masonry works/building works including, finishes, fixtures and fittings.
- Disposal of debris/ materials. All debris and excavated materials will be dumped on sites approved by the county government.
- Electrical, civil, and water engineering and sanitary works. These will be done by qualified and registered expertise.
- Landscaping works and earth works mostly on completion of the proposed development.
- Completion of the development and occupation.

2.5.3 Project implementation sequencing/Phasing

i. Pre-construction stage

- a) Plan preparation and seeking of the appropriate approvals from the relevant authorities which has been done
- b) Appraisal of baseline condition to determine supply and demand for required infrastructural utility services.
- c) EIA study Report preparation including the necessary approvals.

ii. Construction stage

- a) ***Establishment of related works and all support infrastructure that are significant for the construction work:*** This would involve the transportation of machinery and deployment of the workers to the construction site. The machinery would be used for ground breaking and transportation of materials from the sources to the site. The major machineries that will be used include mixers, welding machines and transmission machines. The contractor will also mobilize human workforce at casual, permanent, skilled and unskilled levels.
- b) ***Acquisition and transportation of building materials:*** The contractor shall source for materials for construction from the various available suppliers. Supply of materials will be a continuous activity throughout the project life since different materials will be needed at different phases of the construction. The materials that shall be used in the construction include among others building stones, sand, ballast, cement, timber, reinforced concrete frame, steel, bars, G.I pipes, PVC pipes, pavement blocks, concrete slabs, murrum, hardcore, insulated electrical cables and timber among others.
- c) ***Excavation and land filling works:*** Excavation will be carried after demolishing of current structures and clearing of the site to prepare the site for construction of

foundations to lay the residential houses and all other proposed facilities and utilities. This will involve the use of heavy earth-moving machinery such as tractors, tippers and bulldozers

- d) **Masonry, Concrete Work and Related Activities:** The construction of the perimeter walls, building walls, foundations, floors, pavements, drainage systems among other components of the project will involve a lot of masonry work and related activities. General masonry and related activities will include stone shaping, concrete mixing, plastering, slab construction, construction of foundations, and erection of building walls and curing of fresh concrete surfaces. These activities are known to be labour intensive and will be supplemented by machinery such as concrete mix
- e) **Structural Steel Works:** The buildings will be reinforced with structural steel for stability. Structural steel works will involve steel cutting, welding and erection.
- f) **Roofing and Sheet Metal Works:** Roofing activities will include slab roofing
- g) **Transportation of the construction wastes from the site:** Construction waste that cannot be used for either back filling or landscaping work at the site will be deposited in approved dumpsites by a contracted licensed waste handler.
- h) **Electrical Work:** Electrical work during construction of the premises will include installation of electrical gadgets and appliances including electrical cables, lighting apparatus, sockets etc. in addition, there will be other activities involving the use of electricity such as welding and metal cutting.
- i) **Power distribution:** The position for location of power transformer to serve the proposed estate will be determined by experts from KPLC. The project will increase power demand in the area and it is proposed that the proponent should consider other power sources like solar to reduce on the power demand. The proposals include solar power especially for water heating purposes and to supplement power supply when experiencing power outage problems.
- j) **Plumbing:** Installation of pipe work for water supply and distribution will be carried out within the proposed residential houses and associated facilities. In addition, pipe work will be done to connect sewage from the premises to the main waste water disposal lines, and for drainage of storm water. Plumbing activities will include metal and plastic cutting, the use of adhesives, metal grinding and wall drilling among others.
- k) **Fire protection:** Self-contained fire detection and alarm system complete with manual call points, optical smoke detectors, heat detectors and electronic sounders will be proposed especially in the kitchen areas. Hose reel fire protection system will be provided to cover the buildings. The system will comprise of a water storage tank,

distribution of pipe work and fire hose reels and portable fire extinguishers will be provided at convenient spots. Additional provision will be made for special hazards and high-risk areas.

- m) **Landscaping and tree planting:** To improve the environmental and aesthetic value or visual quality of the site once construction ceases, the proponent will carry out landscaping and tree planting. This will include establishment of flower gardens and lush grass lawns and will involve replenishment of the top soil. It is noteworthy that the proponent will use plant species that are available locally preferably indigenous ones for landscaping. The proponent has already established a tree nursery in preparation of the trees to be used for landscaping and tree planting.

2.5.4 Occupation/Operational stage

This stage shall involve running and managing the facility as per the laid down rules and procedures.

- a) **Residential and commercial activities:** Once construction is complete, the houses will be ready for occupied by respective owners/tenants.
- b) **Solid waste and waste water management:** The proponent will provide facilities for handling solid waste generated within the facility. These will include dust bins/skips for temporarily holding waste within the premises before final disposal by the contracted licensed waste handler at the designated dumping site. Sewage generated from the residential buildings will be discharged into the main NCWSC sewer line, while the storm water drainage system will also consist of a network of Inverted Block Drains, manholes and road gullies which will discharge to the proposed artificial water reservoir.
- c) **Compound Cleaning:** The management will be responsible for regular washing and cleaning of the paved and non-paved areas. Cleaning operations will involve the use of substantial amounts of water, disinfectants and detergents, blooms, rakes, wheelbarrows among others.
- d) **General Repairs and Maintenance:** The residential and other facilities buildings will be repaired and maintained regularly during the operational phase of the project. Such activities will include repair of building walls and floors, repairs and maintenance of electrical gadgets and equipment, repairs of leaking water pipes, painting, maintenance of the gardens and grass lawns and replacement of worn-out materials among others.

2.6 Decommissioning Phase

Decommissioning of operations is here taken to mean that the buildings cease to operate and the premises are closed down or reverted to another use. Under such circumstance, the project

proponent will be expected to adhere to the legislation applicable to such undertaking in the laws of Kenya but in general the decommissioning shall be staggered through a number of steps and measures to rehabilitate the site to its near original status before the commencement of the proposed project. This will involve looking for alternative uses for the site that is compatible to the surrounding and to the former use. An environmental impact assessment shall be commissioned to advice on the environmental aspects with respect to the identified new use if found necessary. If no other use(s) are found for the site, rehabilitation measures to revert it to its former use a state shall be implemented that include: -

- i. Building stones, paving slabs, and other installations of economic use can be sold-off in the market through a bidding or auction sale.
- ii. Dug up areas should be backfilled with uncontaminated earth.
- iii. All solid wastes including debris shall be disposed in a designated dumpsite.
- iv. The site shall be re-vegetated with vegetation capable of protecting the soil from erosion

The owners will then, deregister its operations and legal requirements such as the certificates of operations will be surrendered to the relevant issuing bodies.

2.7 Project Outputs

2.7.1 Management of the Waste Generated

Different types of waste will be generated during the construction, operation and decommissioning phases of the project. The waste will be inert, hazardous and non-hazardous. The operations phase of the terminal will result in quite a significant volume of waste, mostly from project workers and the day-to-day operations of the facility. Maintenance and repair activities conducted during the operational lifetime of the project may generate limited volume of waste. Demolition of structures during decommissioning will result in large volumes of debris and other wastes.

2.7.2 Waste Management Strategy

Prior to the commencement of the proposed project, the Proponent will prepare a Waste Management Plan that will: State the methods for properly managing waste i.e. sorting, handling, storing, transporting and disposing wastes; Identify and describe possible locations of landfills or designated disposal sites; Propose a minimization/collection/storage/treatment/re-use/disposal route for each waste; Identify potential third party re-users; Contract a NEMA licensed waste collector; and Propose location of waste storage and duties of site personnel.

The project proponent shall comply with the sustainable waste management Act 2022 through implementation of a Waste Management Plan during the all phases of the proposed project.

2.7.3 Waste Management Standards

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

2.7.4 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 and through land-filling. Inert and non-hazardous wastes that cannot be reused or recycled may be incinerated in a facility designed and operated in accordance with the Management Regulations 2006.

2.7.5 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:

- ✓ Eliminate or reduce the waste;
- ✓ Re-use as a material or fuel;
- ✓ Process and re-use as a material or as a fuel;
- ✓ Incinerate or re-use or landfill the ash;
- ✓ Landfill;
- ✓ Landscape - Landfill with appropriate vegetation planted; and
- ✓ Discharge to a receiving water course (applicable only to waste water)

2.7.6 Transfer of Waste to Third Parties

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

2.7.7 Waste Management

The principle objective of waste management program is to minimize the pollution of the environment as well as to utilize the waste as a resource. This goal should be achieved in a way that is environmentally and financially sustainable.

Waste water includes all water flows from the construction sites, work sites and subsidiary operations such as vehicle and equipment washing. Waste water from temporary site offices should be treated in a biodigester. Waste water from the works will generally be from curing of concrete works. This waste water is not hazardous but should be monitored to ensure it does not cause adverse effects.

The technologies for the management of the solid wastes will incorporate the collection of the waste from the source, transportation of the waste to the place of storage and final disposal through a contracted waste handler. The following waste management techniques shall be used in the different stages of the project.

- a) ***During construction:*** The main wastes from the construction site will consist of material residues of the construction materials. These include pieces of concrete, heaps of sand and aggregate, bits and pieces of various pipe types, cans of paint, polythene sheets, paper packaging materials, pieces of timber, and off cuts of metals among others. They shall be managed as follows:
- Express condition shall be put in the contract that before the contractor is issued with a completion certificate; he will clear the site of all debris and restore it to a state acceptable by the supervising architect and environmental consultant.
 - Materials from excavation of the ground and foundation works shall be reused for earth works and landscaping.
- b) ***During operation:*** During operation phase, residents will contract a licensed waste handler who will collect their household waste at agreed intervals and dump them at licensed waste dumping sites.

SOLIDS	METALS
Broken building blocks	Welding Rods
Cement (Dust)	Isolated Steel Piles Wasted Lengths
Paper and Cards	Copper (Electrical Wires etc.)
Plastic bottles, cans, drums & packaging bags (both polythene and biodegradable)	Reinforcement steel

AGGREGATES	SLUDGES
Vehicle parts	Grease
Glass	Oil
Rags and Oil Adsorbents	Paint
Light bulbs and tubes	LIQUIDS
Paint cans and brushes	Wash down water and drum water
Stone and Rocks	Oily water
Tyres	DOMESTIC
Waste Timber	Food
Cleared undergrowth, shrubs etc	
Concrete Shuttering	
Demolition wastes	

2.7.8 Atmospheric Emissions Operations

Atmospheric emissions will be generated by diesel-powered generators and company vehicles during construction and operation phases. It is anticipated that the most significant components of such emissions will be combustion gases, specifically:

- ✓ Nitrogen Oxides (NO_x);
- ✓ Carbon monoxide (CO);
- ✓ Sulphur Dioxide (SO₂);
- ✓ Particulate matter (PM);
- ✓ Suspended Particulate matter (SPM);
- ✓ Volatile Organic Compounds; and
- ✓ Secondary pollutants

Emission of pollutants by vehicles contributes to global warming ultimately climate change. The emissions will vary from time to time depending on the traffic volume and traffic composition.

Relative air emission is expected during construction when dust from construction activities and smoke from construction machinery will be emitted. It is recommended that watering the site especially during dry periods be enforced to keep dust at minimal levels. The employees at the

site especially during construction activities shall be provided with dust masks to protect them from dust and fumes associated with construction activities.

2.8 Energy

Construction machinery will require fuels (diesel) during construction phase. Electrical power will come in handy; in driving the selected construction machinery. Energy will also be needed during occupation phase (upon completion of the project). The general area and the proposed site in specific are supplied with electricity from the national grid. In addition to the above, the need for energy conservation will be emphasized during construction and occupation phases. During occupation phase, the use of energy conserving appliances (i.e., energy saving bulbs) and renewable energy sources such as solar energy will be encouraged.

2.9 Communication

The area is well covered by communication facilities such a Telkom, Airtel and Safaricom among others. All these will facilitate communication during the project cycle.

CHAPTER THREE: BASELINE INFORMATION OF THE STUDY AREA

3.1 Introduction

This chapter has information on the location, bio- physical, socio and economic aspects of the project area. These are elaborately discussed in order to identify areas likely to be affected as a result of project activities. This study therefore considered the physical location, climatic data, geology, drainage, infrastructure, demography and socio-economic information.

3.2 Nairobi city county

Nairobi is the capital and largest city of Kenya. The city and its surrounding area constitute the Nairobi City County, earmarked as the 47th County in Kenya. Nairobi was founded in 1899 by colonial authorities in British East Africa, as a rail depot on the Uganda - Kenya Railway. The town quickly grew to replace Mombasa as the capital of Kenya in 1907. After independence in 1963, Nairobi became the capital of the Republic of Kenya. In its young age, the growth of Nairobi was propelled by its central position between Mombasa and Kampala, and being preferred as an ideal residential zone due to its network of rivers and favourable weather.

The strategic location still plays a significant role currently, rendering Nairobi City County an attractive destination for trade, tourism, education, residence and other social activities. Its attractive physical, social and economic features provide promising opportunities for socio-economic development for all.

As the capital city, Nairobi is the main administrative centre for Kenya, hosting; both the National government executive and the national assembly and the senate, The County Government including the County Assembly, Diplomatic missions; International and multinational institutions; and other local, regional and intercontinental dignitaries in different areas of operation.

Nairobi is a transport and communication hub and hosts Jomo Kenyatta International Airport (JKIA) which is the biggest Airport in East and Central Africa, and is the focal point for major aviation activity in the region. Its importance as an aviation centre makes it the pacesetter for other airports in the region. Majority of road transport nationally also commence and conclude their trips in the city. Recent major developments in ICT have also positioned Nairobi as a major communication centre, characterized by strong and fast internet connectivity, fast spread of fibre optic cabling and high adoption of upcoming technologies.

Nairobi National Park in the vicinity of the city gives an opportunity to view wildlife in their natural ambience, and is a destination for both local and international tourism. Tourism in the

county is accentuated by the thriving hospitality industry, with a high concentration of the best and highly rated hotels.

As a financial and commercial hub, Nairobi hosts the highest concentration of financial institutions including Commercial banks, micro-finance institutions and Forex Bureaus. These endowments make the city a major commercial hub on the African continent. It's the home of major industries accounting for about 80 per cent of the total industries in the country and they offer a wide range of employment opportunities for the people within and outside the county.

3.3 Position and Size

Nairobi County is one of the 47 Counties in the Republic of Kenya. It borders Kiambu County to the North and West, Kajiado to the South and Machakos to the East. Among the three neighbouring counties, Kiambu County shares the longest boundary with Nairobi County. The County has a total area of 696.1 Km² and is located between longitudes 36°45' East and latitudes 1° 18' South. It lies at an altitude of 1,798 metres above sea level. Nairobi is situated at in South-Central Kenya, 140 Kilometres (87 miles) south of the Equator. It is adjacent to the eastern edge of the Rift Valley, and to the west of the city, are The Ngong Hills. Mount Kenya is situated north of Nairobi, and Mount Kilimanjaro is towards the south-east.

The proposed affordable housing project activities will be carried out on Plot No. Nairobi Block 43/274 situated behind Prestige Mall along Mugo Kibiru drive and Joseph Kangethe Road in Woodley area, Kibra Sub-County within Nairobi County

3.4 Physiographic and Natural Conditions

3.4.1 Physical and Topographic Features

The terrain in the eastern side of the County is gently rolling but divided by steep valleys towards the city boundaries. To the north, there is the Karura Forest which is characterized by steep sided valleys. The Karen-Langata area is characterized by plains surrounded by Nairobi National Park on the east and Ngong Forest on the south. Geologically, Nairobi City County is close to the Eastern border of the East African Rift Valley and is on a large depression filled with volcanic rocks and sediments Cainozoic times, which lie on basement complex rocks. The volcanic rocks (phonolites) have gentle slopes flowing eastwards from the rift Valley (Kahara,2002). The volcano clastic rocks of Pliocene age have a bearing on the area's hydrology and the groundwater.

Major aquifers in the area are usually beneath the confining and deeply seated Upper Athi series. The Upper Athi series comprises of a heterogeneous combination of lake-bed, reworked

sediments, air-fall tuffs, ashes and occasional intercalated lava flows (UNDP, 2007). The main rivers in the County are Nairobi River, Ngong River and Kabuthi River. They transverse through the Nairobi County and joins the larger River Athi on the eastern edge. These rivers are highly polluted by effluence from open sewers and industrial waste. Nairobi dam, which is along the Ngong River, and Jamhuri Dam are the main water reservoirs in the County. The main types of soils are black cotton and red soils that form patches in different parts of the County. There are three forests in the County, namely Ngong Forest to the south, Karura Forest to the north and the Nairobi Arboretum. The three forests have a total coverage of 23.19 Km².

3.4.2 Climatic Conditions

Nairobi is situated close to the equator hence the differences between the seasons are minimal and the timing of sunrise and sunset varies little throughout the year. Under the Köppen climate classification, Nairobi has a subtropical highland climate (Cwb). At 1,795 metres (5,889 ft) above sea level, evenings may be cool, especially in the June/July season, when the temperature can drop to 9 °C (48 °F). The sunniest and warmest part of the year is from December to March, when temperatures average in the mid-twenties Celsius during the day. The mean maximum temperature for this period is 24 °C (75 °F).

Actual temperature ranges from a low of 10 degrees to a high of 29 degrees Centigrade.

Due to the ITCZ (Inter- Tropical Convergence Zone) that forms throughout the area around the equinoxes, where the prevalent winds of the Northeast and Southeast converge, Nairobi has a bimodal rainfall pattern with the long rains season falling between March to June while the short rains season falls between October and December. The mean annual rainfall is 900 mm ranging from 500mm to 1500mm. During the long rains, the storm water mostly disappears as run off due to the poorly drained cotton soil and the paved land resulting in flooding.

3.4.3 Ecological Conditions

The County is predominantly a terrestrial habitat that supports a diverse web of biodiversity and ecosystems. It is home to about 100 species of mammals, 527 bird species and a variety of plant species. The existence of Nairobi National Park has been of prestigious value as the only park within a city. The Park is covered by a highland of forest hardwoods. Variety of birds and animals find their home in the park including the Big Five.

To the North west of the city, adjacent to the Rift Valley is an area of undulating grassland with a covering of rich well- drained “red- coffee soils”. To the North- East of the city, the high and ever sloping land is dissected by South- East flowing streams which have formed a series of steep sided parallel ridges and valleys. South and East of Nairobi are grassland plains of poorly

drained “black cotton clays”. Due to high population growth and urbanisation rates, environmental degradation has been experienced in Nairobi, causing stress on the natural resources. The main surface water sources are Ngong and Nairobi Rivers, clean when they enter the city but highly polluted as they leave. All rivers in Nairobi have been excavated in search of sand for construction.

3.4.4 Population Size, Composition and Distribution

Nairobi County’s population was 4,397,073 people as per the 2019 Kenya Population and Housing Census 2019 with 2,192,452 (49.9%) being male, 2,204,376 (50.1%) being female and 245 (0.006%) being intersex. The county had 1,506,888 households and an average household size of 2.9.

3.5 Land use:

Urban land use refers to spatial distribution of social and economic activities. Accordingly, an up-to-date land use inventory is frequently required to facilitate urban planning and growth patterns as well as monitoring of urban expansion. A study by the Department of Resource Surveys and Remote Sensing (DRSRS 1994) identified eight major land-use classes in major urban centres in Kenya. These include Residential use Industrial, commercial and service centres, Infrastructure land use, Recreational areas, urban agriculture as well as Water bodies and riverine areas.

CHAPTER FOUR: POLICY, LEGAL AND LEGISLATIVE FRAMEWORK

4.1 Introduction

Environmental Impact Assessment is an instrument for environmental management and development control. It is now accepted that development projects must be economically viable, socially acceptable and environmentally sound. It is a condition of the Kenya Government for developers to conduct Environmental Impact Assessment (EIA) on the development Projects. According to Sections 58 and 138 of the Environmental Management and Coordination Act (EMCA) No. 8 of 1999 (Revised under legal notice 31 of 2019) and Section 3 of the Environmental (Impact Assessment and Audit) Regulations, 2003 construction of urban residential development with more than one hundred units require an Environmental Impact Assessment study project report prepared and submitted to the National Environment Management Authority (NEMA) for review and eventual licensing before the development commences. This was necessary as many forms of developmental activities cause damage to the environment and hence the greatest challenge today is to maintain sustainable development without interfering with the environment.

4.2 Legal and legislative Framework

Environmental policies cut across all sectors and government departments. As such policy formulation should be consultative steered by interdisciplinary committees.

4.2.1 The Constitution of Kenya, 2010

The Constitution of Kenya (2010) takes supremacy over all aspects of life and activity in the Republic. With regard to environment, article 42 of the CoK (2010) states as thus:

Every person has a right to a clean and health environment which includes the right:

- (a) to have the environment protected for the benefit of present and future generations through legislative and other measures particularly those contemplated in article 69 and
- (b) to have the obligations relating to the environment fulfilled under article 70 of CoK (2010)

Thus, the implementation of the proposed development project is guided by this provision of the CoK (2010). Implementers will be expected to undertake their work with the understanding that persons are entitled to clean and health environment which must not be taken for granted.

The provisions of article 69 and article 70 of the CoK (2010) are enumerated hereunder

Article 69

Article 69, subsection (1): The State shall— (a) ensure sustainable exploitation, utilization, management and conservation of the environment and natural resources, and ensure the equitable sharing of the accruing benefits; (b) work to achieve and maintain a tree cover of at least ten per cent of the land area of Kenya; (c) protect and enhance intellectual property in, and indigenous knowledge of, biodiversity and the genetic resources of the communities; (d) encourage public participation in the management, protection and conservation of the environment; (e) protect genetic resources and biological diversity; (f) establish systems of environmental impact assessment, environmental audit and monitoring of the environment; (g) eliminate processes and activities that are likely to endanger the environment; and (h) utilize the environment and natural resources for the benefit of the people of Kenya

By this article, public participation is encouraged and non-compliance is a violation of the constitution. Trees are protected by this section and the policy to be applied is thus:

All mature indigenous trees should be not be cut. But when the best route for project implementation must affect the tree, then the project implementers must considers trimming the branches as the best option before considering cutting it. To cut mature trees especially indigenous trees should be the last option.

Subsection (2) “Every person has a duty to cooperate with State organs and other persons to protect and conserve the environment and ensure ecologically sustainable development and use of natural resources”. This obligation will be laid upon every stakeholder in the implementation process in order to maintain harmony in the development process. Key stakeholders targeted by this include the proponent, contractor and the host community. The following state organs may seek to inspect contractor’ premises and should be allowed access; (i) NEMA (ii) DOSH (iii) Public health (iv) The county ministry in charge of LIHUD.

Article 70

This section provides for enforcement of environmental rights thus: (1) If a person alleges that a right to a clean and healthy environment recognized and protected under Article 42 has been, is being or is likely to be, denied, violated, infringed or threatened, the person may apply to a court for redress in addition to any other legal remedies that are available in respect to the same matter. (2) On application under clause (1), the court may make any order, or give any directions, it considers appropriate:

(a) to prevent, stop or discontinue any act or omission that is harmful to the environment; (b) to compel any public officer to take measures to prevent or discontinue any act or omission that is

harmful to the environment; or (c) to provide compensation for any victim of a violation of the right to a clean and healthy environment. (3) For the purposes of this Article, an applicant does not have to demonstrate that any person has incurred loss or suffered injury. This means that the project players must be cognizant of the fact that the public has been empowered by this article and can “interrupt” work progress through the court process and therefore implementers should respect the environmental regulations especially to ensure the community right to a clean and health environment is honored.

The provisions for a clean and healthy environment notwithstanding, the ARTICLE 41 (1) on labour relations states thus: Every person has the right to fair labour practices WHICH include the right to fair remuneration and the right to reasonable working conditions. The contractor will be bound by this requirement to ensure that his workers remuneration is within the minimum wage provisions and that the working conditions (which include the equipment and sanitation) are reasonable. Each worker should be provided with Personal Protective Equipment during working hours. The contractor will develop a safety management policy and enforce it.

All Kenyan policies, regulations, and legislations relevant to sustainable development are anchored in the CoK (2010) and some are discussed below.

The proposed project activities will ensure that the ecological processes and the environment are not severely damaged through proper implementation of the proposed mitigation measures put in place to ensure that the project construction and operation activities do not adversely affect the surrounding environment.

4.2.3 Sessional Paper Number 10 of 2012 (Vision 2030)

This is the National Blueprint for economic advancement of Kenya. It is also called as the Vision 2030 and it is the long-term development strategy for Kenya towards achieving a “globally competitive and prosperous country [economy] with a high quality of life by 2030. The key objective of the Vision 2030 is to transform Kenya into a new industrializing middle income country by the year 2030 AD. It envisions a high quality of life for the majority of Kenya citizens in a clean and health environment as contemplated in the Sustainable Development Goals [SDGs]. Vision 2030 is anchored on 3 pillars:

Three pillars of Kenya’ Vision 2030

Pillar	Description
Economic	To achieve a sustained annual economic growth rate of 10% to 2030
Social	To create a just, cohesive and equitable social development

Political

To build an issue, people centered democratic system that is result oriented and accountable to the public

Adopted from Vision 2030

Vision 2030 anticipates a Kenyan nation characterized by a clean, secure and sustainable environment by 2030 and sets the goals towards that:

- (i) to increase forest cover from less than 3% at present to 4% and
- (ii) to lessen by half all environment-related diseases.

It recommends specific strategies to promote environmental conservation in order to provide better support to the economic pillar flagship projects and for the purposes of achieving the SDGs. The implementation of the proposed project should not create room for breeding of mosquitoes which spread malaria plasmodium; neither should it lead to contamination of water [which increases incidence of water borne diseases]. The implementers must be careful on maintaining air quality [avoid air pollution] and enforce sound policies on waste management.

The proposed development project will promote the economic growth of the locality and help propel Kenya to a middle-income country as envisioned in the Vision 2030 development plan by developing the housing sector, one of the key target sectors in the plan.

4.3 National Policies

4.3.1 The National Environment Policy, 2013

The National Environment Policy aims to provide a holistic framework to guide environmental and natural resource management in Kenya. It also ensures that the link between the environment and poverty reduction is integrated into all government processes and institutions in order to facilitate and realize sustainable development at all levels in the context of a green economy, enhancing social inclusion, improving human welfare, creating employment opportunities and maintaining a healthy functioning of the ecosystem.

This policy presents the framework to deal with the ever-growing environmental issues and management challenges in Kenya like harmonizing of sectoral policy instruments with the Environmental Management and Coordination Act and the Constitution, implementing the Land Policy, valuing of environmental and natural resources, rehabilitating and restoring environmentally degraded areas, loss of biodiversity, concessions and incentives, urbanization and waste management, pollution, energy, climate change and disaster management, conservation of shared natural resources, invasive and alien species, public participation,

environmental education and awareness, data and information, poverty, weak enforcement, and fragmentation.

4.3.2 National Policy on Water Resources Management and Development (Sessional Paper No.1 of 1999)

- ❖ The four specific objectives guiding in the management of water resources in Kenya include; Preserve, conserve and protect available water resources and allocate it in a sustainable, rational and economic way;
- ❖ Supply water of good quality in sufficient quantities to meet the various water needs, including poverty alleviation, while ensuring the safe disposal of wastewater and environmental protection;
- ❖ Establish an efficient and effective institutional framework to achieve a systematic development and management of the water sector; and
- ❖ Develop a sound and sustainable financing system for effective water resources management, water supply and sanitation development.

4.3.3 Policy on Environment and Development

This is presented as the Sessional paper No. 6 of 1999 on Environment and Development. The overall goal is to integrate environmental concerns into the national planning and management process and provide guidelines for environmentally sustainable development. It portrays portable water and water for sanitation as being central to satisfying basic human needs. Water resources have an extremely high value, and effective mechanisms for managing and conserving water could result into economic benefits as well as sustainable use of this vital resource. Its key objectives are protecting water catchments; ensuring that all development policies, programmes and projects take environmental considerations into account; and enhancing, reviewing regularly, harmonizing, implementing and enforcing laws for the management, sustainable utilization and conservation of natural resources.

The policy recommends the need for enhanced re-use/recycling of residues including water and wastewater as well as increased public awareness raising and appreciation of clean environment. It also enhances participation of stakeholders in the management of natural resources within their respective localities.

The project proponent is encouraged to practise waste water recycling and re-use of the waste materials.

4.3.4 The Land Policy (Sessional Paper No. 3 of 2009)

The overall objective of the National Land Policy is to secure land rights and provide for sustainable growth, investment and the reduction of poverty in line with the Government's overall development objectives. Specifically, it seeks to develop a framework of policies and laws designed to ensure the maintenance of a system of land administration and management that will provide all citizens with the opportunity to access and beneficially occupy and use land; economically, socially, equitably, and environmentally sustainable allocation and use of land; effective and economical operation of the land market; efficient use of land and land-based resources; and efficient and transparent land dispute resolution mechanisms. The previously existing land laws have been repealed and the law consolidated into three statutes, namely the Land Act 2012, the Land Registration Act 2012 and the National Land Commission Act 2012.

4.3.5 The Kenya Health Policy (2012 – 2030)

The policy is based on the Constitution of Kenya 2010, Vision 2030 and global health commitments. Its broad aim is to ensure equity, people-centeredness and participation, efficiency, multi-sectoral approach and social accountability in delivery of healthcare services.

4.3.6 The National Environmental Sanitation and Hygiene Policy, (2007)

The Environmental Sanitation and Hygiene (ESH) Policy is intended to improve peoples' health and quality of life. It aims at clarifying the various roles in order to enhance the existing legal and constitutional framework and to encourage the private sector, civil society and community participation in the planning, implementation and ownership of ESH services; protect the environment from pollution and its negative effects on human health; and reduce poverty.

4.3.7 The Climate Change Act 2016

The objective of the Climate Change Act 2016 is to provide a regulatory framework for an enhanced response to climate change, and to provide mechanisms and measures to improve resilience to climate change and promote low carbon development. The Climate Change Act adopts a mainstreaming approach, provides a legal basis for climate change activities through the National Climate Change Action Plan, and establishes the National Climate Change Council and the Climate Fund.

With this enactment, Kenya joins the league of nations that have taken concrete steps to domesticate the Paris Accord on Climate Change.

The main objective of the Climate Change Act is to be applied in the development, management, implementation and regulation of mechanisms to enhance climate change resilience and low-carbon development for the sustainable development of Kenya.

4.3.8 The Energy Act 2019

The Energy Act 2019 has a very broad scope, covering all forms of energy, from fossil fuels to renewables. The Energy Act mandates the government to promote the development and use of renewable energy, including biodiesel, bioethanol, biomass, solar, wind and hydropower. The Energy Act provides a useful supporting framework for the transition to a green economy with likely gains in environmental protection and climate change.

4.4 National Regulatory Frameworks

4.4.1 The Environmental Management and Co-ordination Act CAP 387

Environmental legislation in Kenya is provided in over 77 statutes. In order to provide a structured approach to environmental management in Kenya, the EMCA Act was enacted on January 14th 2000 as a framework law and contains provisions for the ESM of the proposed and ongoing Projects respectively in Kenya. With the coming into force of the EMCA, the environmental provisions within the sectoral laws were not superseded; instead, the environmental provisions within those laws were reinforced to better manage Kenya's ailing environment.

Section 58.(1) Of the Act states "Notwithstanding any approval, permit or license granted under this Act or any other law in force in Kenya, any person, being a proponent of a project, shall, before financing, commencing, proceeding with, carrying out, executing or conducting or causing to be financed, commenced, proceeded with, carried out, executed or conducted by another person any undertaking specified in the Second Schedule to this Act, submit a project report to the Authority, in the prescribed form, giving the prescribed information and which shall be accompanied by the prescribed fee". Environmental Management and Coordination Act CAP 387 provide a legal and institutional framework for the management of the environmental related matters. This EIA study has been conducted and the final report compiled pursuant to section 58 (1) of the EMCA Act and its respective stipulations.

4.4.2 EMCA Related Regulations

4.4.2.1 Environmental (Impact Assessment and Audit) Regulations, 2003

The Environmental Impact Assessment and Audit Regulations, 2003 are subsidiary regulations of EMCA, 1999 and stipulate the steps to be followed in undertaking an EIA study. The

Regulations highlight the stages to be followed, information to be made available, role of every stakeholder and rules to be observed during the EIA process.

This EIA study has been conducted as per the provisions and guidelines of the Environmental Impact Assessment and Audit Regulations, 2003; has been planned, designed, compiled and implemented based on the very regulations. It shall also be maintained and guided by the same regulations and an environmental audit study will be done periodically to monitor compliance with the set environmental standards.

4.4.2.2 EMCA (Water Quality) Regulations, 2006

The above regulation was promulgated on September 4th 2006 and became effective on July 1st 2007. This regulation provides for the sustainable management of water used for various purposes in Kenya. Its provisions are;

4(1) Every person shall refrain from any act which directly or indirectly causes, or may cause immediate or subsequent water pollution, and it shall be immaterial whether or not the water resource was polluted before the enactment of the Act.

(2) No person shall throw or cause to flow into or near a water resource any liquid, solid or gaseous substance or deposit any such substance in or near it, as to cause pollution.

Part IV Section 24 states that “No person shall discharge or apply any poison, toxic, noxious or obstructing matter, radioactive wastes, or other pollutants or permit any person to dump any such matter into water meant for fisheries, wildlife, recreational purposes or any other uses”. According to these regulations, “Every person shall refrain from any action which directly or indirectly causes, or may cause immediate or subsequent water pollution, and it shall be immaterial whether or not the water resource was polluted before the enactment of the Act”.

The proponent shall follow the necessary precautionary measures not to pollute underground water or surface water. The proponent will be required to immediately notify the authority any occurrence of pollution incidence at the site. Use of oils/sprays on site will be carefully done to control spills on the surface. Servicing of machines/trucks will be carried out at designated service bay.

4.4.2.3 EMCA (Waste management) Regulations, 2006

The Waste Management Regulations were promulgated on September 4th 2006 and became effective on July 1st 2007. This regulation is comprehensive and covers the management of various kinds of waste in Kenya. Various clauses relevant to the project are:

Section 4 (18): No owner or operator of a trade or industrial undertaking shall discharge or dispose of any waste in any state into the environment, unless the waste has been treated in a treatment facility and in a manner prescribed by the Authority in consultation with the relevant lead agency. Minimal waste is expected from the undertaking.

Section 4(2) and 6 explain that the waste generator must collect, segregate (hazardous waste from non-hazardous) and dispose waste in such a facility that shall be provided by the relevant local authority.

Section 5 provides for methods of cleaner production (so as to minimize waste generation) which includes the improvement of production processes through conserving raw materials and energy.

In section 14 (1) every trade or industrial undertaking is obliged to install anti- pollution equipment for the treatment of waste emanating from such trade or industrial undertaking.

The proponent shall ensure that the garbage collector contracted has a valid license from the National Environment Management Authority (NEMA). So as to comply with this, the contractor shall take precaution not to dump wastes in areas not registered and designated as dumpsites, and all waste disposed of as per the Waste management regulations.

4.4.2.4 EMCA (Noise and Excessive Vibration Pollution Control) Regulations, 2009

In May 2009, the Minister for Environment and Mineral Resources promulgated the above regulations for management of noise and excessive vibration. The general prohibition states that no person shall make or cause to be made any loud, unreasonable, unnecessary or unusual noise which annoys, disturbs, injures or endangers the comfort, repose, health or safety of others and the environment. The regulations further provide factors that will be considered in determining whether or not noise and vibration is loud, unreasonable, unnecessary or unusual.

For fixed installations, excessive vibration under these regulations is defined as any vibration emanating from the source and exceeds 0.5cm/s. Rules 5 and 6 of the regulations define noise levels for various types of activities that generate noise. The first schedule to the regulations defines permissible noise levels measured 30m from the boundary fence of a project. A noise license will be required during the construction phase of the project and a noise survey conducted once operation is recommended for presentation to the authority.

The proponent shall implement these measures, ensure that all noise equipment, tools, vehicles, are in good working condition to reduce noise. The project contractor will be required to avoid carrying out noise emitting activities and

work within the stipulated time periods. in addition, regular noise monitoring will be conducted and acquisition of noise permit in extreme cases

4.4.2.5 EMCA (Air Quality) Regulations, 2013

The objective of these Regulations is to provide for prevention, control and abatement of air pollution to ensure clean and healthy ambient air. The general prohibitions state that no person shall cause the emission of air pollutants listed under First Schedule (Priority air pollutants) to exceed the ambient air quality levels as required stipulated under the provisions of the Seventh Schedule (Emission limits for controlled and non-controlled facilities) and Second Schedule (Ambient air quality tolerance limits).

The proponent shall implement the mitigation measures provided in the ESMP to prevent air pollution during construction and operation phases.

The proponent will also conduct regular air quality monitoring.

4.5 Other Environment, health and safety, physical planning related laws

4.5.1 Water Act, 2002

Water in Kenya is owned by the Government, subject to any right of the user, legally acquired. However; this Act regulates conservation and management of all water resources within the republic, and related purposes.

In section 3 of part II, it states that every water resource is vested in the State, subject to any rights of user granted by or under this Act or any other written law. The Act also provides for establishment of a Water Resource Management Authority, whose aim is to manage and coordinate conservation and utilization of water resources at national scale. The Act will thus play a central role in guiding the exploitation and conservation of the limiting and scarce water resource throughout the project life.

4.5 2 The Penal Code CAP 63

Chapter XVII on “Nuisances and offences against health and convenience” contained in the penal code strictly prohibits the release of foul air into the environment which affects the health of the persons. It states “Any person who voluntarily vitiates the atmosphere in any place so as to make it noxious to the health of persons in general dwelling or carrying on business in the neighbourhood or passing along a public way is guilty of a misdemeanour”.

Waste disposal and other project related activities shall be carried out in such a manner as to conform to the provisions of the code.

4.5.3 Occupational Health and Safety Act No.15 of 2007 and the 2007 Subsidiary legislation (Cap 514)

This Act of Parliament was enacted to provide for the health, safety and welfare of persons employed in workplaces and for matters incidental thereto and connected therewith.

Its relevant clauses and stipulations relevant to the proposed project are;

- i. Part II of the Act provides the General Duties that Occupiers must comply with in respect to health and safety in the workplace. Such duties include undertaking S&H risk assessments, S&H audits, notification of accidents, injuries and dangerous occurrences, etc.
- ii. Part III of the Act provides the administrative framework for supervision of the Act.
- iii. Part IV deals with the enforcement provisions that the DOSHS has been provided with under the Act. It discusses the instances when Improvement and Prohibition Notices can be issued as well as the powers of OSH officers.
- iv. Part V of the Act requires all workplaces to be registered with the DOSHS. The Occupier has to apply for registration of their project with the DOSHS on completion of installation of the crusher and before the operational phase of the project.
- v. Part XI of the Act contains Special Provisions on the management of health, safety and welfare. These include work permit systems, PPE requirements and medical surveillance. All sections of this part of the Act will be applicable to this project during the operational phase.
- vi. Part XIII of the Act stipulates the fines and penalties associated with non-compliance of the Act. It includes those fines and penalties that are not included in other sections of the Act and will be important for an Occupier to read and understand the penalties for non-compliance with S&H provisions.
- vii. Part XIV of the Act is the last section of the Act and contains miscellaneous provisions which are not covered elsewhere. Most of the sub-sections under this part of the Act will be applicable to mining projects and it is in the interest of an Occupier to read, understand and ensure compliance with it.

Some of the important subsidiary legislations which operationalized the Act and are applicable to the proposed project are described below.

i) ***(Safety and Health Committee) Rules 2004***

These rules came into effect on April 28th, 2004 and require that an Occupier formalize a Safety and Health (S&H) Committee if there are a minimum of 20 persons employed in the work place. The size of the S&H Committee depends on the number of workers employed at the place of work. For a Proponent and Contractor, the Occupational Safety and Health Act and the S&H Committee Rules 2004 are important as they require compliance with the following measures:

- i. Posting of an Abstract of the Factories and Other Places of Work Act in key sections of each area of the workplace;
- ii. Provision of first aid boxes in accordance with Legal Notice No. 160: First Aid Rules of 1977;
- iii. Ensuring that there are an appropriate number of certified first aiders trained by a DOSHS approved institution and that the certification of these first aiders is current;
- iv. Provision of a General Register for recording amongst other things all incidents, accidents and occupational injuries;
- v. Appointment of a S&H Committee made up of an equal number of members from management and workers based on the total number of employees in the company;
- vi. Training of the S&H Committee in accordance with these rules;
- vii. Appointment of a S&H management representative by the Proponent;

The Safety & Health Committee must meet at least quarterly, take minutes, circulate key action items on bulletin boards and may be required to send a copy of the minutes to the DOSHS local office. Proper record keeping including maintenance of all current certificates related to inspection of critical equipment such as the tractor, transport vehicles and the generator, etc. Such inspections need to be undertaken by a competent person certified by the Director of the DOSHS.

ii) ***(Noise Prevention and Control) Rules***

These rules have set minimum and maximum exposure limits beyond which workers and members of the public should not be exposed to noise without adequate means of protection. The rules also have limits for exposure out of workplaces. The rules have several recommendations on a comprehensive noise control program for workplaces that includes a requirement for medical examination of workers who are exposed to noise. The rules have also

set the minimum noise levels that should emanate from a facility to public/neighbouring areas by day or by night. The proponent will provide functional earmuffs for those operating the noise emitting machines and those working in noisy environments; and keep on renewing their noise and vibration permit from NEMA. All in all, the project proponent will be required to adhere to all the stipulations of the OSHA Act, 2007 requirements and regulations.

iii) **Medical Examination Rules, 2005**

These rules provide for Occupiers to mandatorily undertake pre-employment, periodic and termination medical evaluations of workers whose occupations are stipulated in the Second Schedule of the Act and the First Schedule of the Regulation. The workers are to undergo medical evaluations by a Designated Health Practitioner (DHP) duly registered by the DOSHS. Exposure to airborne crystalline silica present negative impacts to human health, the workers exposed to the dust will be required to undergo medical examinations in accordance with the above Rules. The project proponent is required to ensure that on site workers are examined medically and appropriate gears availed to them while at site, like earmuffs, helmets, overalls and respiratory gears.

iv) **Fire Risk Reduction Rules, 2007**

These rules were promulgated by the Minister for Labour on April 16th 2007 and apply to all workplaces. The rules apply to this sector project in several ways as enumerated below;

Rule 16 requires a Proponent to ensure that electrical equipment is installed in accordance with the respective hazardous area classification system. It is also a requirement that all electrical equipment is inspected after six months by a competent person and the Proponent is required to keep records of such inspections.

Rules 29 – 31 refer to the installation and maintenance of fire-fighting systems in workplaces. Fire extinguishers are to be mounted at least 60cm above ground while a fire hose reel must be located within a radius of 30m. Fires can arise from electrical fault at the site.

Worker's safety will be given priority during both construction and operation phases of the project. The proponent shall adhere to the provisions of OSHA, 2007 and the subsidiary rules and regulations under it.

4.5.3 The Work Injury Benefits Act (WIBA), 2007

The WIBA Act provides for compensation to employees for work related injuries and diseases contracted in the course of their employment and for connected purposes;

Section 7(a) of the Act, on the obligations of the employer, requires an employer to obtain and maintain an insurance policy with an insurer approved by the State in respect of any liability that the employer may incur under this Act to any of his employees.

Section 10(1) States that an employee who is involved in an accident resulting in the employee's disablement or death is subject to the provisions of this Act, and entitled to the benefits provided for under this Act. It also states expressly that an employer is liable to pay compensation in accordance with the provisions of this Act to an employee injured while at work.

On First Aid covered in section 45(1), an employer is supposed to provide and maintain such appliances and services for the rendering of first aid to his employees in case of any accident as may be prescribed in any other written law in respect of the trade or business in which the employer is engaged.

The proponent shall acquire insurance cover for all the workers for the time they will be working at the project site which will enable them get compensation in case of accident occurrence.

4.5.4 The Public Health Act CAP 242

Part IX, section 115 of the Act states that no person/institution shall cause nuisance or condition liable to be injurious or dangerous to human health. Section 116 requires local authorities to take all lawful, necessary, reasonable and 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.

During the project works, construction and operation, the management will comply with the provisions of this Act in terms of constructing storm drains and sanitary facilities to the required standards and ensuring that the site is safe from nuisance or pollution of any nature.

4.5.5 The Land and Environment Court

The Land and Environment Court is established under the Environment and Land Court Act, 2011 (No. 19 of 2011). It is empowered by law, given the status of the High Court and has the jurisdiction to hear and determine disputes, actions and proceedings concerning acquisition of land as well as matters pertaining to the environment.

4.5.6 The County Government Act 2012

Section 163 allows counties to control or prohibit all businesses, factories and workshops 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 the conditions subject to which such businesses, factories and workshops shall be carried on. The same section allows counties to prohibit, control and regulate trade and trading activities within their jurisdiction.

4.5.7 The Physical Planning Act of 1996 CAP 286

The Act allows for prohibition or control over the use and development of land and building 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.

Section 36 states that if in connection with a development application, a 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 environment impact assessment (EIA) report. EMCA, CAP 387 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 proposed project construction and operation activities must obtain a license from the Nairobi City County.

4.5.8 Traffic Act Cap. 403

In Section 51, only proper fuel should be used in vehicles. Similarly, vehicles should be well maintained to prevent any fumes/exhaust that could pollute the environment. All vehicles transporting installation materials will be granted permits authorizing them to transport materials to the site plus all the equipment, lorries and heavy vehicle drivers will possess up to date driving licenses and certificates identifying them and the type of lorries/vehicles/equipment they are authorized to operate, plus deployment of traffic marshals to help control the traffic flow.

4.5.9 Building Code 2000

The building code under Septic and conservancy tanks, section 202 allows for installation of septic tanks/ conservancy tanks where a sewer system has not been provided that the proponent abides with the provisions under the set table.

The effluent waste water from the project site will be channelled to the NCWSC trunk sewer line

4.5.10 Lands Act, 2012 No. 6 of 2012

Part II Section 8 provides guidelines on management of public land by National Land Commission on behalf of both National and County Governments. This law in Section 8(b) stipulates that the Commission shall evaluate all parcels of public land based on land capability classification, land resources mapping consideration, overall potential for use, and resource evaluation data for land use planning. Section 8(d) stipulates that The Commission may require the land to be used for specified purposes subject to such conditions, covenants, encumbrances or reservations as are specified in the relevant order or other instrument.

In managing public land, the Commission is further required in Section 10(1) to prescribe guidelines for the management of public land by all public agencies, statutory bodies and state corporations in actual occupation or use. In these guidelines management priorities and operational principles for the management of public land resources for identified uses shall be stated. This in essence means that the Commission shall take appropriate action to maintain public land that has endangered or endemic species of flora and fauna, critical habitats or protected areas. As well the Commission shall identify ecologically sensitive areas that are within public lands and demarcate or take any other justified action on those areas and act to prevent environmental degradation and climate change.

Part VIII of the Act provides procedures for compulsory acquisition of interest in land. Section III (1) states that if land is acquired compulsorily under this Act just compensation shall be paid in full to all persons whose interest in the land have been determined. The Act also provides for settlement programmes. Any dispute arising out of any matter provided for under this Act may be referred to the Land and Environment Court for determination.

The land on which the project is to be developed fully belongs to the Nairobi City County Government. The project is being implemented through a joint venture and copy of the award letter for Africa Reit Limited is attached herewith

4.6 National Institutional Framework

4.6.1 National Environment and Management Authority

The responsibility of the National Environmental Management Authority (NEMA) is to exercise general supervision and co-ordination over all matters relating to the environment and to be the principle instrument of government in the implementation of all policies relating to the environment. In addition to NEMA, the Act provides for the establishment and enforcement of environmental quality standards to be set by a technical committee of NEMA known as the

Standards and Enforcement Review Committee.

CHAPTER FIVE: PUBLIC CONSULTATION AND PARTICIPATION

5.1 Purpose of Consultations with Community/Key Stakeholders/project affected persons

The main purpose of carrying out consultations with local community and key stakeholders was to obtain views and concerns from the project affected persons regarding the proposed project so as to incorporate their contribution into the proposed project to safeguard the environment and the interest of key stakeholders particularly the local community, project area leadership and agencies directly or indirectly affected by the project.

Stakeholder consultation was conducted to disclose the details of the proposed project, to inform the stakeholders of any potential negative impacts and elaborate on the positive aspects so that informed decisions are made by the stakeholders.

The public consultation exercise aimed at achieving the following specific objectives:

- i. Collection of additional baseline data/ information on the project area;
- ii. Conduct further stakeholder and community consultations and sensitization; and
- iii. Provide the project area community and stakeholders with an opportunity to directly interact with the project developer through the EIA Consultants and ask questions, raise issues and concerns pertaining the proposed project and contribute to the identification of project impacts, mitigation measures and project alternatives.
- iv. Facilitate consideration of project alternatives, mitigation measures and trade-offs;
- v. Ensure that important impacts are not overlooked and benefits are maximized;
- vi. Reduce conflict through early identification of contentious issues;
- vii. Provide an opportunity for the public to influence project activities in a positive manner
- viii. Improve transparency and accountability of decision-making; and increase public confidence in the Environmental Impact Assessment process and the proposed project's undertaking.

5.2 Approach to Consultations with Key Stakeholders

The ESIA employed three main methods of consultations to get the data presented in this report. These are:

- i. Meetings and discussions with Key Stakeholders;
- ii. Questionnaire administration and interviews; and
- iii. Convening of Public Consultation Meetings (PCMs) with the project affected persons.

Key informants included local administration and leadership including The Assistant County Commissioners, Sub-county administrator, Sub-county commander, ward administrators, representatives of religious leaders, educational institutions, representatives of the neighbouring residents associations, Private establishments/companies and general members of the community.

The ESIA Consultant was in liaison with the area administration during the entire public participation exercise. Three meetings have been conducted with the stakeholders highlighting the pertinent issues of concern.

a) Initiation meeting

Invitation letters were sent to and through the area chief on 7th November 2024 inviting the Key stakeholders to an initiation meeting held on 15th November 2024 at Joseph Kangethe Primary and Junior School. The invitation was also extended to the area Assistant County Commissioner, Sub-county administrator, Sub-county commander, ward administrators, representatives of religious leaders, educational institutions, women and People living with disabilities and representative of the neighbouring residents. The meeting took place on 15th November guided by two main objectives:

- ✓ Planning on the steps to conduct a thorough consultative meeting with the general public and the project affected persons
- ✓ Gather the opinion/ recommendations of the key stakeholders on the proposed project

From the deliberations of the meeting , the key stakeholders pledged their support for the proposed project. Minutes from this meeting are annexed herewith.





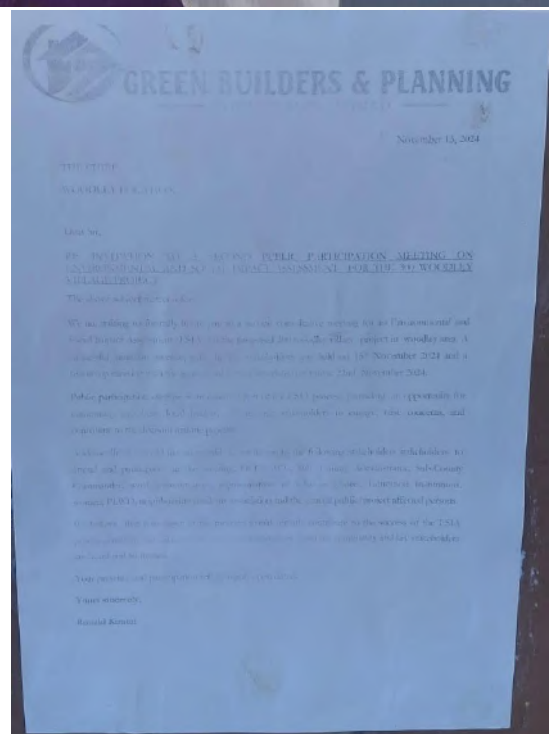
Meeting with key stakeholders(source: 15th November 2024)

b) Second consultative meeting

During the initiation meeting, members present agreed to conduct a follow up meeting on 22nd November 2024 incorporating all the stakeholders and the project affected persons. The Assistant County Commissioner Kibra and Woodley Chief assisted the ESIA consultants in planning for the meeting. Invitation letters and posters were prepared and put on strategic places inviting the public for the meeting.

The meeting was held at Joseph Kangethe Primary and Juniou School and attended by among others The Assistant County Commissioner, Assistant sub-county administrator, ward administrators, representatives of religious leaders, educational institutions,neighbouring residents, private establishments/companies, members of the general public and project affected persons.

The ESIA team gave a presentation on the proposed project and the role of ESIA process disclosing the anticipated positive and negative impacts of the proposed affordable housing project. The attendees were given an opportunity to share their input/ comments/ recommendations on the proposed project. In summary, the attendees supported the proposed project. minutes of the meeting have been attached herewith.



Posters at different locations inviting project affected persons to the meeting



Ongoing second consultative meeting(Source: 22nd November 2024)

a) Third Consultative Meeting

The third meeting with the project affected persons was held on 13th December 2024 at Joseph Kangethe Primary School social hall. Present in the meeting were the area leadership/administration including Woodley chief, representatives of the neighbouring residents associations I.e Woodley Residents Welfare Society(WRWS) and Woodley Residents and Tenants Association(WERAT)among others. From the discussions WRWS and WERAT raised their issues of concern annexed herewith. A fourth meeting has been scheduled on 18th January 2015 whereby the ESIA and the project proponent shall discuss the proposals shared by the associations.



Ongoing third consultative meeting(Source: 13th December 2024)

5.2.1 Direct Interviews

Direct interviews were used to get responses from the project proponent whose comments were sought through engaging the project unit in discussions about the proposed project and other related issues. It is worth noting that some respondents chose to give their views/concerns

through interviews rather than filling a questionnaire.

5.2.2 Questionnaire Administration within the project Neighbourhood

More than sixty (30) questionnaires were uniformly distributed during the meetings. The questionnaire informed/disclosed to the target stakeholders details of the proposed project and requested for views and concerns concerning the proposed project. The questionnaires were used to capture views in terms of the positive and negative impacts that the locals anticipate from the project and the mitigation measures.

5.3 Socio-economic Impacts

The stakeholders were keen to talk to the ESIA team on the proposed project and highlighted the following;

Employment: Most respondents pointed that the proposed project will create employment to people and especially the skilled and semi-skilled youths in Kibra Sub-County during all phases of the project. This will also directly contribute to the growth of economy of Nairobi County and the wider Kenya.

Availability of affordable houses: Nairobi City County's affordable housing program is part of a broader initiative by the national government to address the housing deficit in Kenya. This program aims to provide affordable homes to low- and middle-income households, particularly targeting the rapidly growing urban population in Nairobi. Majority of the respondents expressed hopes of owning a home in Nairobi through this program.

5.4 Environmental views

Waste Management: Waste disposal was highlighted by the local communities as one component from the project activities that will pollute the environment if not properly handled. The respondents proposed waste management methods such private contractor, provision of waste bins within the premises, waste recycling, City County government disposal services, expansion of the trunk sewer.

Air quality: Respondents were of the opinion that the proposed project will affect level of air quality in the area through dust generation during construction phase. A number of respondents proposed sprinkling of water to reduce dust during the construction phase, provision of a perimeter wall and provision of an alternative access route to the general public as well as installation of dust nets to minimize the effects of dust to the immediate neighbourhood. They also recommended planting of trees to control deterioration of air quality

Traffic: the respondents were of the opinion that the proposed project will lead to an increase in both vehicular traffic generation with the area during transportation of materials. These respondents proposed that the project proponent should ensure that materials are not transported during rush hours and further provide the members of woodley Estate with a safe alternative route

It was further noted that the anticipated increase in traffic will necessitate improvement of access roads in the area leading to convenient access to various facilities and services during all-weather seasons.

Summary environmental and social issues of concern and comments provided during public participation.

No.	Positive Impacts	Comments
1.	Increased employment opportunities	Most respondents pointed that the proposed project will create employment to people and especially the skilled and semi-skilled youths in Kibra Sub-County during all phases of the project. This will also directly contribute to the growth of economy of Nairobi County and the wider Kenya.
2.	Availability of affordable housing units	Nairobi City County's affordable housing program is part of a broader initiative by the national government to address the housing deficit in Kenya. This program aims to provide affordable homes to low- and middle-income households, particularly targeting the rapidly growing urban population in Nairobi. Majority of the respondents expressed hopes of owning a home in Nairobi through this program.
3.	Improvement and development of the project area	Majority of the respondents cited that the implementation of the affordable high-rise housing units shall lead to physical growth of the project area, improvement of the infrastructure and increased value of land within the project area. Further, majority of the respondents cited the fact that the 10 acre piece of land shall host 1925 units as compared to the initial occupancy of 42 residents
4.	Source of revenue for the national and County governments	The proposed project shall generate revenue for the county and national governments through payment of statutory fees and further through collection of monthly rental income.
5.	Improved living standards	The proposed affordable housing program is aligned with Kenya's Vision 2030, which aims to improve living standards and stimulate the real estate sector.
	Negative Impacts/ Issues of concern	Suggested measures/considerations
1.	Eviction and relocation of the 42 members affected by	Compensation of the project affected persons to aid in relocation and resettlement process. The project proponent has offered a compensation fee of KSH.900,000.00 to the project affected persons with sufficient

	the proposed development	<p>documentations. Some members accepted the offer while others declined. Nineteen (19) members with sufficient documentations have been issued with KSH. 900,000.00 cheque each. Three members are in the process of clearing their documentations with the county government for compensation.</p> <p>Additionally, the team shall be allocated a three bedroom unit each upon completion of the proposed project. The 19 members have been issued with allotment letters</p> <p>Further, court ruling was made in favour of the NCCG and Africa Reit Limited to demolish the houses</p>
2.	Loosing the existing playground(Green field) serving Joseph Kangethe Primary and Juniouir School and Woodley residents	<p>The project proponent (Nairobi City County)has allocated an alternative and safer playground to the school and the woodley residents.</p> <p>The project contractor has been instructed to ensure the grounds are in good condition before the schools reopen</p>
3.	Tree cutting	<p>Only the trees affected by the proposed project are cut</p> <p>The proponent shall undertake landscaping exercise and ensure planting of trees as well as increasing the green space within the project area.</p>
4.	Safety of Pupils during the construction phase/ Insecurity in the general area	<p>Fence the area affected by the proposed project</p> <p>Restrict entrance to site workers only</p> <p>Ensure the section near the school is well hoarded and install dist nets</p> <p>Provide an alternative and safe entrance for the pupils and general public</p> <p>Involve experts and the school management in decision making process</p> <p>Provision of employment to the locals</p> <p>Have manned entrances and patrol security</p>
5.	pressure on existing infrastructure including sewers and water supply	<p>Supplement NCWSCO supply with an onsite borehole</p> <p>Work in liaison with NCSCO for expansion of the existing sewer line</p>
6.	Public access road	<p>Provide an alternative access road</p> <p>Involve the area leadership in the process through adequate public participation</p>
7.	Public safety risks	<p>Fence the construction site through erection of hoarding structures.</p> <p>Restrict entrance to site workers only</p> <p>Periodic training of workers</p>

		<p>Provision of PPEs</p> <p>Periodic training of the workers on healthy and safety measures</p>
8	Traffic and road maintenance	<p>Traffic control marshalls for traffic management</p> <p>Ensure trucks adhere to axle limits</p> <p>Provision of an alternative access to the woodley residents and the school</p>
9.	Storm water management	<p>Construction of proper drainage channels</p> <p>Encourage rain water harvesting and storage</p> <p>Adequate maintenance of the drains to avoid clogging</p>
10.	Dust pollution	<p>The proponent shall water the soil on the roads leading from and to the construction site to minimize dust.</p> <p>Have speed limit clearly marked on the road for drivers to follow.</p> <p>Excavation process must minimize dust to acceptable limits.</p> <p>Air monitoring sampling shall be done on quarterly basis.</p> <p>Provision of dust nets</p>
11.	Noise pollution	<p>Provision of PPE's like earmuffs to workers to protect them from noise pollution that is very harmful to their health.</p> <p>Conduction of regular noise monitoring and evaluation tests to ascertain the levels of noise produced at the site.</p> <p>Awareness creation among workers on the risks of noise pollution on their health and importance of using PPE's like earmuffs.</p> <p>Conduction of regular medical check-ups for workers at the site to ensure that workers don't suffer in silence.</p>
12.	Water pollution	<p>Encourage treating of generated waste water</p> <p>Re-using of the treated waste water from the site to water lawns and flushing the toilets</p> <p>Awareness creation on the importance of conserving and managing water, using water sparingly and recycling or re-using water at the site.</p> <p>Monitor effluent quality regularly to ensure that the stipulated discharge rules and standards are not violated</p>
13.	Solid waste management	<p>Contract a NEMA licensed waste handler</p> <p>Strategic placement of bins within the site</p>

		Encouraging waste Reduction at source, reuse and recycling where applicable Encourage waste segregation at source
14.	Inadequate public participation	A proposal to conduct a fourth public participation exercise with the project affected persons scheduled on 18th January 2025
15.	Access to documents	Project affected persons/ interested stakeholders to be provided with requested information
16.	Procedure to acquire affordable housing units	Members encouraged to form a committee to do periodic follow up on the purchase process Check out Boma yangu website for further details on procedure to purchase affordable housing units

Conclusion

Majority of stakeholders/project affected persons consulted pledged their support for the proposed development project citing generation of employment opportunities, increased utility of the land, general growth of the area, opportunity to own affordable housing units, improved land value, improved security and improved infrastructure. They however highlighted concerns that called for adequate mitigation measures during project implementation, operation and decommissioning phases. Given the positive impacts of the proposed project, the commitment by the project proponent to compensate project affected persons and the willingness to address the project induced negative impacts, NEMA should therefore grant the proposed development an Environment and Social Impact Assessment license for its timely implementation as the impacts highlighted have been fully addressed in the Environmental Monitoring Plan provided in the Environment Impact Assessment report.

CHAPTER SIX: PROJECT ALTERNATIVES

6.1 Introduction

In deciding on the type of developments to be included in the proposed project, the project proponents considered various alternatives. Three options were considered as outlined below. Note that for some issues, little data is available on which to base the assessment, and that many of the judgements are subjective. Additionally, despite a number of detailed technological alternatives at project proponent's discretion, the technology adopted in this project is informed by sustainable design principles and socio-economic considerations. It's worth noting also that only those alternatives with the potential to materially affect the outcome of the environment have been discussed here.

6.1.1 Zero Option/ No Development

The zero option in respect to the proposed project implies that the status quo is maintained. This option is the most suitable alternative from an extreme environmental perspective as it ensures non-interference with the existing conditions. This option will however, involve several losses both to the landowner(NCCG) and the Kenyans in general. The Option is the least preferred from the socio-economic and partly environmental perspective due to the following factors:

- i. The economic status of the Kenyans and the local people would remain unchanged.
- ii. The desire to provide kenyans with affordable housing infrastructure would not be achieved.
- iii. The local skills would remain underutilized.
- iv. Reduced interaction both at county, national and international levels
- v. No employment opportunities will be created for Kenyans who will work in the project.
- vi. No housing provided to alleviate a critical shortage high standard commercial use
- vii. Development of infrastructural facilities (roads, electrical etc.) will not be undertaken. From the analysis above, it becomes apparent that the No Project alternative is no alternative to the local people, Kenyans, and the Government of Kenya.

6.1.2 Relocation Option

Relocation option to a different site is an option available for the project implementation. At present the landowner and developer do not have an alternative site. This means that the team shall identify another suitable site. Looking for the land to accommodate the scale and size of the project and completing official transactions means the developer will spend another two years on design and approvals since design and planning has to be according to site conditions. Project design and planning before the stage of implementation will cost the developer hundreds of thousands of Kenya shillings.

Whatever has been done and paid to date will be counted as a loss to the developer. Assuming the project will be given a positive response by the relevant authorities including NEMA, this project would have been delayed for about two (2) year's period before implementation. This is a delay that our economy can ill afford. This would also lead to a situation like No Project Alternative option. The other consequence of this is that it would be a discouragement for investors especially in the affordable housing sector that has been shunned by many public and private investors already aggravating our critical housing shortages. In consideration of the above concerns and assessment of the current proposed site, relocation of the project is not a viable option.

6.1.3 Alternative Land use

The proponent has no option to use the land for other purposes other than proposed multi-dwelling residential cum commercial development.

6.1.4 Proposed Alternative

Various alternative methods for development of the proposed project were considered, however in all instances the outstanding difference was either material or technology used but development of the residential development emerged as the most plausible option according to the project area setting and primacy.

CHAPTER SEVEN: IDENTIFICATION OF ENVIRONMENTAL AND SOCIAL IMPACTS

7.1 Basis of Identification of Impacts

In order to accurately identify the environmental impacts, the following environmental Issues were considered pertinent and important as per the Terms of Reference.

7.1.1 Physical Environment (Biophysical Impacts)

- a) Water quality aspects for both surface water sources like piped water, storm water, and other related aspects.
- b) Soil conditions, soil contamination and landscape alterations/degradation (based on aesthetic aspects) associated with the proposed project.
- c) Drainage patterns especially in relation to waste water effluents
- d) Air quality aspects especially atmospheric emissions and related discharges from machinery like diesel run equipment etc.
- e) Noise and vibrations where applicable

7.1.2 Natural Environment

- a. Flora and fauna from the adjacent ecosystem (i.e. effects to natural plants and animals where applicable).
- b. River pollution indicators, impacts on water flow patterns and quality aspects, user interference and contamination.
- c. Topography: effects on soil and landscape.

7.13 Social welfare, Economic and Cultural Environment

- i. Determination of implications to the human society distribution, demographic details, settlement patterns, changes to the cultural lifestyle and indigenous knowledge of the local society/public where applicable.
- ii. Notable changes in land use systems and the general land utilization types where applicable.
- iii. Aesthetic, landscape alterations and changes to infrastructural facilities, among others.
- iv. Effects associated with the construction and operation activities and related handling and disposal of wastes generated during the operations.
- v. Effects associated with income generation opportunities created by the project due to the upcoming operations.
- vi. Implications on the employees, visitors and public health, safety and related hazards/risks such as HIV/AIDS, consumption of contaminated intravenous infusions products due to disease

outbreaks, sanitary facilities, etc.

vii. Introduction of nuisances, such as pests, invasive species and related multiplication breeding sites

7.2 Description of the Existing and Anticipated Impacts

7.2.1 Existing impacts

There were several environmental and social impacts at the time of the study;

- i. Water scarcity/rationing; water supply by NCWSO has not been sufficient due to water rationing.
- ii. Concerns on the recurring sewer blockages and spillage in the area
- iii. Insecurity concerns within the area have been reported on several occasions

7.2.2 Anticipated impacts

The anticipated impacts of the proposed project on the environmental and social elements are both positive and negative. The magnitude of each impact is described in terms of being significant, minor or permanent, short-term or long term, specific (localized) or widespread, reversible or irreversible. The table below shows the assessment criteria for the significant impacts are.

Table 1. Assessment criteria for significant impacts

Key	Type of impact	Key	Type of impact
++	Major positive impact.	+	Minor positive impact
--	Major negative impact	-	Minor negative impact
0	Negligible/Zero impact	NC	No change
Sp	Specific/Localized impact	W	Widespread impacts
R	Reversible impacts	Ir	Irreversible impacts
Sh	Short term impacts	L	Long term impacts
T	Temporary impacts	P	Permanent impacts

On the basis of information gathered during the desktop and field study, the potential environmental and social impacts of the proposed project are tabulated below:

7.3 Positive Impacts

There are a number of positive benefits associated with the proposed development. The

Following is some of the positive benefits anticipated:

Table 2; Positive Impacts of the Proposed Development and Justification

No.	Positive Impacts	Justification
1	Provision of modern and affordable Housing to the residents	<p>Nairobi City County's affordable housing program is part of a broader initiative by the national government to address the housing deficit in Kenya. This program aims to provide affordable homes to low- and middle-income households, particularly targeting the rapidly growing urban population in Nairobi.</p> <p>The proposed project will provide affordable housing with emphasis on the safety and well-being of the occupants</p>
2	Generation of direct and indirect employment and income.	<p>The proposed project will create employment to people and especially the skilled and semi-skilled youths in Kibra Sub-County during all phases of the project. This will also directly contribute to the growth of economy of Nairobi County and the wider Kenya.</p> <p>Besides the direct employment by the proposed development, other forms of employment are likely to result from the spillover effects, through indirect services</p> <p>During the construction and operation phases.</p> <p>The employment opportunities will generate income and improve the living standards of the local population and its environs.</p>
3	Contribution To Government Revenue	<p>Through payment of relevant taxes, rates and fees to the national and county governments, the project will Contribute towards the national and local revenue earnings.</p> <p>The proponent will receive returns on his investments hence increases in wealth.</p>
4.	Improvement and development of the project area	<p>Implementation of the proposed affordable high-rise housing project shall lead to physical growth of the project area, improvement of the infrastructure and increased value of land within the project area.</p> <p>The land shall be utilized to grant the project proponent maximum returns</p>
5.	Improved Security.	<p>Security will be ensured around the proposed development</p> <p>Through distribution of suitable security lights and presence of 24 hour. This will lead to improvement in the general security in the surrounding area.</p>
6.	Social amenities such as	<p>The proposed project will boost growth of social amenities in the general area</p>

Schools, churches,	and this will stimulate more development.
Creation of market for local goods and services.	The proposed project will create demand for construction materials and local produce and this will greatly benefit small scale businesses within the project area.

7.4 Specific Negative Impacts during Pre-Construction, Construction and Operational Phases and Mitigation Measures

The issues that are seen as likely to negatively affect the environment and population therein Include the following:

7.4.1 Demolition of the existing structures

Pre-construction

The proposed project is meant to occupy a ten (10) acre piece of land previously occupied by low density NCCG housing units. The units were fully occupied by forty two (42) tenants who are affected by the proposed project proposal.

NCCG jointly with Africa Reit Limited adopted a compensation program as discussed on the RAP. The program included;

- i. Formation of committee/inclusion of residents association and area leadership in place to aid in negotiation process for the project affected members
- ii. Compensation of the affected tenants with KSH. 900,000.00 to facilitate the resettlement process awaiting the completion of the proposed development
- iii. Issuance of allotment letters to the project affected persons to be allocated 3 bedroom unit each upon completion of the project
- iv. Court ruling to help determine the fate of the tenants who declined the offer as well as granting a leeway for demolishing the existing units.
- v. Re-vegetation exercise upon completion of the construction phase to create green spaces within the facility.

7.4.2 Air quality

Construction Phase

Dust is likely to be generated due to excavation activities, during building construction and deliveries of raw materials. There will be impacts to air quality due to combustion of fossil fuels expected from transportation and construction machinery and dust from excavation activities. The proponent will ensure that plant and equipment which will be acquired for on site preparation of pre-cast materials and concrete mixing will utilize the latest technology to have minimum emission.

Operational Phase

During operational phase, there will be minimal cases of air pollution

Potential mitigation measures

- i. Provision of full protective gear for workers. Workers shall also be sensitized on hazards encountered in such work environment and shall undergo regular health check-ups.
- ii. Watering access roads and the site to suppress dust
- iii. Covering truck loads using tarpaulins
- iv. Personnel will be also provided with dust masks to avoid inhalation of the same.
- v. Ensure adequate hoarding and dust nets are in place.
- vi. Train the personnel on the need to control air pollution

7.4.3 Soil Erosion

Construction Phase

The activities involved in the site preparation and construction phase of the development may have a major negative and moderate impact on soil and geology of the project site. This is due to the removal of vegetation from the area which will leave considerable areas of soil exposed to the elements, which may result in soil erosion. Heavy machinery will be traversing the site due to the construction activities this may lead to soil compaction and erosion of the soil. Uncontrolled soil erosion can have adverse effects on the local water bodies.

Operational phase

The building roofs and pavements will lead to increased volume and velocity of storm water or run-off flowing across the area covered by the buildings. This will lead to increased amounts of storm water entering the drainage systems, resulting in overflow and damage to such systems in addition to increased erosion or water logging in the neighbouring areas.

Potential mitigation measures

Excavation should be done under controlled conditions which will include minimizing vegetation removal, avoiding creating large open expanses of bare soil, creating wind breaks, using of single or few designated tracks to bring vehicles into the area and dampening the area using water.

Landscaping should be done on the land during the operation phase and de-commissioning phase to ensure that the same is returned to its near-original state. The contractor should also provide adequate soil conservation structures to ensure that areas prone to soil erosion are protected from run-off.

7.4.4 Solid Waste

Construction Phase

A significant amount of solid waste will be generated in this phase through the clearing of vegetation and demolishing of existing structures. The other activities that will generate related solid wastes include stones, wood, broken glasses, containers, rods of metal, cement bags, sharp objects (nails) etc.

This will therefore have a major negative short-term impact on solid waste collection in the area. The proponent should take the initiative of removal of the solid waste which is expected to be generated during this phase of the development.

Operational phase

The project is expected to generate enormous amounts of solid waste during its operation phase. Solid waste will be generated from the residential and commercial activities within the facilities. The accumulation of solid waste can cause the proliferation of domestic pests such as rats (*Rattusnorvegicus* and *Rattusrattus*). These vermin are very destructive and can rapidly multiply especially where garbage collection is infrequent and therefore food is abundant. This phase may also encourage stray animals such as dogs which can be nuisance species because they may bring with them ecto-parasites such as fleas (*Ctenocephalidescanis*) and ticks (*Ixodes sp.*) which can create health problems for domestic pets.

The bulk of the solid waste generated during the operation of the project will consist of domestic waste such as paper, plastic, glass, metal, textile and organic wastes. Such wastes can be injurious to the environment through blockage of drainage systems, choking of water bodies and negative impacts on animal health. Some of these waste materials especially the plastic/polythene is not biodegradable may cause long term injurious effects to the environment. Even the biodegradable ones such as organic wastes may be injurious to the environment because as they decompose, they produce methane gas, a powerful greenhouse gas known to contribute to global warming.

Potential mitigation measures for solid waste

Express condition shall be put in the contract that before the contractor is issued with a completion certificate; he will clear the site of all debris and restore it to a state acceptable to the supervising architect and environmental consultant.

Materials from excavation of the ground and foundation works shall be reused for earth works and landscaping.

Bins/ receptacles shall be placed at strategic locations within the site as collection centers to facilitate separation and sorting of the various types of wastes.

The contractor and proponent shall work hand in hand with licensed private refuse handlers and the County government to facilitate sound waste management.

The wastes shall be properly segregated and separated to encourage recycling of some useful waste materials i.e. some demolished stone and concrete materials can be used as backfills.

Use of an integrated solid waste management system through a hierarchy option i.e. source reduction, recycling, composting and reuse shall be encouraged. This will facilitate proper handling of solid waste during operation stage.

7.4.5 Noise pollution

Construction phase

This phase of the development may likely have the most negative impact to the ambient noise and vibration in the development area. A number of measures may be undertaken by the developer to reduce the impact of noise on the existing and potential residents as well as the workers involved in the project. This is temporary, however, and the aim at this point is to make the increase in noise as small as possible until this phase is complete. The cumulative impact of the construction activities occurring simultaneously with the other proposed developments for the area may increase the noise and vibration levels in the area significantly.

Operation Phase

This phase is not likely to cause noise pollution as residential activities do not cause significant noise.

Proposed mitigation measures

Equipment to be used should be selected on the basis of the noise minimization during acquisition.

Equipment should also be properly maintained while in use during the construction phase. The equipment to be used should be located far away from the receivers (especially the school) and also so as to prevent interference, the proponent should ensure that construction is done between 8:00am - 5:00pm.

The proponent should also establish the noise levels during construction and install appropriate noise barriers and acoustic screens.

7.4.5 Increased Water Demand

Construction Phase

This phase of the development might place a strain on an already limited supply through the construction of buildings and other infrastructural works proposed for the development. This will create additional demand to the water supply within the project vicinity as most people source water from county which is unreliable. The impact on water availability will therefore be compatible and short-term.

Operational phase

The operation phase of the proposed development might place a strain on the water availability in the area. Even with the use of recycled water for irrigation, the current supply will have a cumulative major negative impact on already limited supply. This phase of the development will therefore have a major negative long-term impact on the water availability in the area.

Potential mitigation measures

- i. Drilling onsite borehole

- ii. Provision of notices and information signs within the project site to notify on means and needs to conserve water resource.
- iii. Installation of water conserving taps will be done.
- iv. Encourage water recycling during both construction and occupation phases of the project.
- v. Practice rain water harvesting to supplement the NCWSO supply.

7.4.6 Surface Drainage/storm water

Construction phase

Clearance of land and excavation works will lead to increased soil erosion at the project site and release of sediments into the drainage systems.

Operational phase

The building roofs and pavements will lead to increased volume and velocity of storm water or run-off flowing across the area covered by the buildings. This will lead to increased amounts of storm water entering the drainage systems, resulting in overflow and damage to such systems.

Potential mitigation measures

Leveling the project site to reduce run-off velocity and increase infiltration of rainwater into the soil.

Drainage channels shall be installed in all areas that generate or receive surface water. The channels will be covered with gratings or other suitably approved materials to prevent occurrence of accidents and dirt entry that may compromise flow of run-off.

The channels shall be designed with regard to peak volumes. Paving of the side-walks, parking and other open areas shall be done using pervious materials i.e. concrete blocks to encourage water percolation thus reducing run-off volume.

7.4.7 Oil Leaks and Spills

It is important to note that oil/grease spills are prevalent in construction sites and in most areas that make use of petroleum products. Such products contain detrimental elements to the environment. They contain such heavy metals as mercury, lead, and sulphur among others. Though this may not be common at the site, it is wise to control and observe the little that could occur especially during maintenance of the involved machinery.

Potential Mitigation Measures

All machinery must be keenly observed not to leak oils on the ground. This can be affected through regular maintenance of the machinery.

Maintenance must be carried out in a designated area (protected service bays) and where oils are completely restrained from reaching the ground. Such areas should be covered to avoid storm from carrying away oils into the soil or water systems. Waste water/ wash water from these areas should be

properly disposed.

All oil products and materials should be stored in site stores or in the contractor's yard. They should be handled appropriately to avoid spills and leaks.

Car wash areas and other places handling oil activities within the site must be well managed and the drains from these areas controlled. Oil interceptors must be installed along the drainage channels leading from such areas.

7.5 Socio-Cultural and Socio-Economic Impacts

7.5.1 Increase in Population

There is currently no evidence of overcrowding around the development area and therefore there will be increased variations on its demography. The population growth rates in the area are not expected to be consistent in the future however, as there has been a significant increase in the number of approved and proposed developments for the Woodley area. These proposed developments will serve to attract migrants to the area who will be seeking employment during construction phase. This will result to an increase in population.

In the operational phase, the area will experience immigrants who will become the new residents of the constructed houses and this will impact on the population of the area.

Proposed mitigation measures

Planned settlement, ensuring that adequate social and other infrastructure meet the needs of migrants.

7.5.2 Employment and Income

Majority of the residents highlighted job opportunities as a major positive impact. Any available jobs will provide an immediate positive impact on the employment and income situation at the level of the study area as well as at the county and national levels. This phase of the development will provide the most benefits in terms of sustained employment and increase in income. Initially, the site preparation phase will employ specific vehicles and equipment in order to clear vegetation, for landscaping and grading and levelling and the cutting of access roads for these vehicles and labourers to access the site. This means that many skilled workers will be necessary to operate front-end loaders, excavators, bulldozers and backhoes and other vehicles. In addition to these semi-skilled labourers will still be necessary for other tasks. This phase of the development will therefore have a short-term major positive impact on the employment and income at the local level. During operation phase, employment opportunities will be created e.g. at the laundry and maintenance personnel.

Proposed mitigation measures

The proponent should encourage recruitment of labour from the locals for unskilled and semi-skilled

labour. For skilled labour this will depend on how much is available locally and the shortfall shall be supplemented by artisans from outside.

The proponent will give equal opportunities to women where possible.

7.5.3 Increased Energy Demand

The construction and operation phases of the development will impact slightly on the electricity supplying the area as well as demand will increase.

Proposed mitigation measures

All electrical appliances should be switched off when not in use during construction and operation phases.

Use of energy conserving electric lamps for general lighting during operational phase.

Residents should utilize natural light when inside their houses to avoid using electricity for lighting during the day.

The contractor should ensure that all buildings have access to natural light during the day.

The proponent should consider installation of renewable energy sources such as solar panels.

7.5.4 Workplace Accidents

Workers at the site may be exposed to various workplace accidents especially during construction period. These include being hit by falling objects and falling off from elevated heights among others. During operation period, accidents may include exposure to exposed electrical parts.

Potential mitigation measures

Occurrences of accidents may be prevented by observing the following:

- i. Ensuring that the operational manuals are available and accessible for every equipment/machinery used at the site.
- ii. Proper maintenance of all machinery and equipment to prevent premature failure or possible accidents
- iii. Ensuring all electrical equipment and machinery are properly grounded
- iv. Only properly trained employees to operate equipment or machinery and proper instructions in their safe operation is provided.
- v. Workers to wear personal protective equipment (PPE)
- vi. Naked wires should always be sealed

7.5.5 Site Security

Security of the site and those working within is of utmost significance and those operating within the facility must be assured of their security at all times. Security lapses that may lead to injury of occupants of the building and loss of personal property should be taken care of.

Potential mitigation measures

The management shall strategically install lighting as well as security alarms and backup systems including surveillance of the area on a 24 hours basis.

Security guards shall guard the property in a 24-hour basis and document any suspicious movement within the facility and its environs.

7.5.6 Fire Hazards

The operations that lead to fire outbreaks include poor handling of electricity systems, faulty electrical equipment, carelessness etc. These should be avoided both during construction and operation phases of the project.

Potential mitigation measures

In this regard, the design of the project has provided and recommended implementation of fire-fighting measures and control facilities. These include the following:

- i. Installation of an automatic fire alarm system for the estate
- ii. Provision of fire-fighting equipment and hydrant points
- iii. Display fire evacuation procedures and emergency at the buildings
- iv. Regular maintenance of fire electrical and first aid equipment
- v. Provision of sufficient fire exit points and fire assembly points

7.5.7 Road Infrastructure

Traffic along the access road may increase during construction phase since vehicles will be accessing the site to deliver construction materials, to take away waste materials and experts coming for supervision purposes. The roads in their current states will be able to handle this increased traffic including for heavy-duty equipment traffic. This phase of the development may have a major negative impact of surface status deterioration on the present road network in the study area.

Operational Phase: During the operation phase of the project, there might be a major negative impact on the road network in the area as the volume of traffic associated with the development will increase significantly, therefore placing a strain on the existing road network. Within the immediate environs of the project site the following traffic measures and rules will be observed:

- i. Maximum speed limit within this area will be 20km/hr. for both operation and personal vehicles
- ii. Speed limits and all other road signs and traffic rules shall be strictly observed.
- iii. Vehicles will be used for the purposes to which they are intended only.

7.5.8 Occupational Health and Safety (OHS)

Construction phase

During the proposed project construction works, there may be increased risks to health and safety such as dust, air, and noise pollution. The workforce and general public involved would be more subjected to these possible environmental hazards and disturbances. Food for the construction workforce is usually provided by individuals most of who in most cases operate without public health licenses. This can compromise health of the workers especially if such foodstuff is not prepared following strict hygiene standards. Flammable substances including diesel and motor oil may be stored or used within the project site for heavy-duty equipment. These substances are precursors for fires and explosions, which may range from small incipient to larger fires of great intensity, which generates heat causing damage to property, injuries or loss of human life.

Operational phase

It is expected that most residents will use LPG for cooking which is also highly flammable, which may increase the vulnerability of the operation to a fire or an explosion.

Potential mitigation measures

During construction, the contractor will be required to prepare a waste management plan for the work-sites and equipment camp at the start of the project. The site is to be kept clean, neat and tidy at all times. The contractor shall implement measures to minimize waste and develop a waste management plan to include the following:

- i. All personnel shall be instructed to dispose off waste in designated waste bins.
- ii. At all places of work, the contractor shall provide litter collection facilities.
- iii. The final disposal of the site waste shall be done at the location that shall be approved by the engineer on site. This must be in full recognition of the existing legal requirements.
- iv. There shall be provision of sufficient bins to store the solid waste produced on a daily basis.
- v. Wherever possible, materials used or generated by construction shall be recycled. Provision shall also be made of responsible management of any hazardous waste generated during the construction works.
- vi. Workmen shall be provided with suitable protective gear (such as dust masks, ear muffs, helmets, overalls, industrial boots etc.) particularly during construction. There must be fully equipped First Aid kits on site and a safety officer who has First Aid training and knowledge of safety procedures. In addition, the contractor must have insurance for the workmen.
- vii. The contractor will be required to adhere to Occupational Safety and Health Act (OSHA) 2007, especially the building operations and works of engineering construction rules and its subsidiary and supplementary regulations on safety and public health in the construction activities.

7.5.9 Social Conflict with the Community

Projects of such magnitude usually attract public uproar (especially from the neighbouring residents and

community) if they are not made to own the project. Conflicts usually arise mostly from the foreseen negative impacts and increased interactions from the increase in population levels.

Potential Mitigation measures

Consultation with neighbours and neighbourhood associations on the mitigation measures prescribed for the negative impacts as a way of conflict resolution . The proponent will give women equal employment opportunities as men whenever possible. The proponent will give priority to the local community in allocation of jobs at both skilled and unskilled level

CHAPTER EIGHT: RESETTLEMENT ACTION PLAN (RAP) FOR THE PROPOSED AFFORDABLE HOUSING PROGRAMME IN WOODLEY AREA

8.1. Introduction

The Resettlement Action Plan (RAP) for the proposed Affordable Housing Programme in the Woodley area, Nairobi County, outlines the strategies, processes, and provisions for resettling the Project Affected Persons (PAPs). This RAP aims to minimize the social and economic impacts of the proposed project on the affected communities, ensuring that their livelihoods and well-being are restored or improved. The plan focuses on providing fair compensation, relocation assistance, and alternative housing solutions to PAPs.

The project will require the acquisition of equal housing units for the 42 PAPs who reside within the project footprint. These individuals and families will be provided with either physical relocation or compensation for loss of housing and other assets. The RAP also aims to ensure compliance with both local laws and international standards on resettlement.

8.2. Objectives of the Resettlement Action Plan

The main objectives of the RAP are as follows:

- i. To ensure that the project adheres to national and international resettlement and compensation standards, including the Kenyan Constitution (2010), the Land Act (2012), and the World Bank's Operational Policy (OP) 4.12 on Involuntary Resettlement.
- ii. To provide fair compensation for land, housing, and other assets lost due to the project, ensuring that affected persons do not suffer undue hardship.
- iii. To provide alternative housing and support for the affected persons (PAPs) in line with the project's objectives of improving housing access for low-income communities.
- iv. To provide a clear and structured approach to resettlement, addressing all potential impacts on the livelihoods, housing, and well-being of the PAPs.
- v. To engage PAPs meaningfully throughout the process, ensuring transparency and participatory decision-making.

8.3. Project Affected Persons (PAPs)

A total of forty-two (42) individuals or households are identified as being directly affected by the proposed affordable housing development. These households are located within the Woodley area, and each will need to be resettled or compensated for the loss of their current housing and other assets.

8.4 PAP Profile

The affected persons in the Woodley area are primarily low- to middle-income residents who have lived in the area for several years. The majority of the PAPs are families that were formerly employees of the Nairobi City County Government.

8.5 Consultation and Engagement with PAPs

Consultations with the PAPs were initiated early in the project planning phase to ensure that their concerns, needs, and preferences are integrated into the resettlement plan. This engagement process has been ongoing, with several meetings conducted to inform PAPs about the proposed project, the potential impacts, mitigation measures and the available compensation options.

The following steps were taken to engage with the affected persons:

- i. **Public Consultations:** Community meetings spearheaded by the Nairobi City County Government and the developer were held to introduce the project, explain the scope of resettlement, and discuss the entitlements.
- ii. **Focus Group Discussions (FGDs):** Group discussions spearheaded by the Nairobi City County Government elected leadership were organized to gather the views and concerns of affected individuals regarding resettlement.
- iii. **Household Visits:** Individual visits were conducted to provide personalized information, collect socio-economic data, and understand the specific needs of each affected household.
- iv. **Information Dissemination:** Written materials were distributed and information about compensation packages done by the Nairobi City County Government.

8.6 Resettlement Options and Compensation

The resettlement options provided to the PAPs are based on the prevailing conditions, court ruling, the available housing solutions, and the project's objectives. Out of the 42 PAPs, 22 individuals have been issued with the resettlement allotment letters for three-bedroomed housing units compensated monetarily for temporary relocation, while the remaining PAPs are still being engaged on the available compensation package or offered other suitable options.

8.7 Allotment of Housing Units

- a. **Eligibility:** The 22 PAPs who were issued with resettlement allotment letters are eligible for a three-bedroomed house unit within the newly developed affordable housing complex. These

units have been designed to meet the needs of middle-income households, providing adequate space and access to essential services like water, sanitation, and electricity.

- b. **Location and Design:** The housing units will be located within the Woodley area, ensuring that the PAPs are resettled within the same community or a similar socio-economic environment. The units will be well-constructed and affordable, with provisions for access to essential public services.
- c. **Entitlements:** The affected households have been given formal allotment letters, which guarantee them ownership of the new units once the development is complete.

8.8 Temporary Relocation Assistance

For those PAPs who are not yet able to relocate, a temporary relocation package has been put in place. This includes a monetary compensation of Ksh 900,000, which is intended to cover relocation costs and facilitate the establishment of temporary housing until the new units are ready.

The temporary relocation assistance is aimed at ensuring that the affected persons do not experience a loss of income or social dislocation during the transition period.

8.9 Alternative Agreed Compensation

For the remaining PAPs who will not be allocated housing units, appropriate agreed and equally compensation alternative will be provided to cover the loss of housing and other associated assets. The compensation will be determined based on the current market value of the property and the prevailing conditions.

8.10 Entitlement Matrix

The following table summarizes the entitlements for the PAPs:

Affected Group	Entitlement Type	Description/Amount
PAPs with Allotment Letters (22 households)	Housing Unit	3-bedroomed house unit in the new affordable housing complex
All PAPs (42 households)	Temporary Relocation Assistance	Ksh 900,000 for each household to facilitate temporary relocation
Remaining PAPs	Alternative Agreed Compensation	Compensation based on the current market value of lost property and prevailing conditions.

N/B: The supportive documents being the allotment letters and payment cheques are annexed in the report accordingly.

8.11 Implementation Strategy

The resettlement process will be managed in collaboration with the relevant authorities, including Nairobi City County Government, the Ministry of Lands and Physical Planning, and the project developers. The implementation strategy includes the following phases:

8.12 Pre-Resettlement Activities

- i. **Preparation of Allotment Letters:** All 22 households receiving new housing units will be issued with formal allotment letters.
- ii. **Payment of Temporary Relocation Assistance:** The Ksh 900,000.00 will be disbursed to the PAPs who require temporary relocation, ensuring they have the necessary resources to move to alternative housing.
- iii. **Public Awareness:** Continuous public awareness campaigns will be carried out to ensure that all PAPs are informed about the resettlement process and their entitlements.

8.13 Resettlement and Relocation

- a) **Construction of New Housing Units:** The construction of affordable housing units will be prioritized to ensure timely delivery of the new homes for the 22 affected households.
- b) **Monitoring of Temporary Relocation:** The affected persons receiving temporary relocation assistance will be monitored to ensure their living conditions meet basic standards.

8.14 Post-Resettlement Activities

- i. **Monitoring and Evaluation:** Regular monitoring and evaluation will be conducted to assess the success of the resettlement process and address any emerging challenges.
- ii. **Feedback Mechanism:** A grievance redress mechanism will be in place to address any complaints or issues raised by the affected persons during and after the relocation.

8.15 Implementation Schedule

The procedure in the implementation schedule starting from notification of the PAPs before their displacement through compensation and resettlement will be done in phases to synchronize with the

various phases of the project. The RAP Implementation schedule defines the duration and timing of the key milestones and tasks. The major component tasks for the schedule include:

- Initiation/Preparation of RAP
- Consultation and Disclosure of RAP
- Audit of the PAP register and compensation package due to each PAP
- Signing of agreements on compensation packages by PAPs
- Resolving emerging grievances
- Compensation and/or Supplementary assistance
- Notification of PAPs to relocate
- Commencement of affordable housing project operations
- Monitoring and evaluation, including baseline update

Table: Showing Details of Implementation Schedule

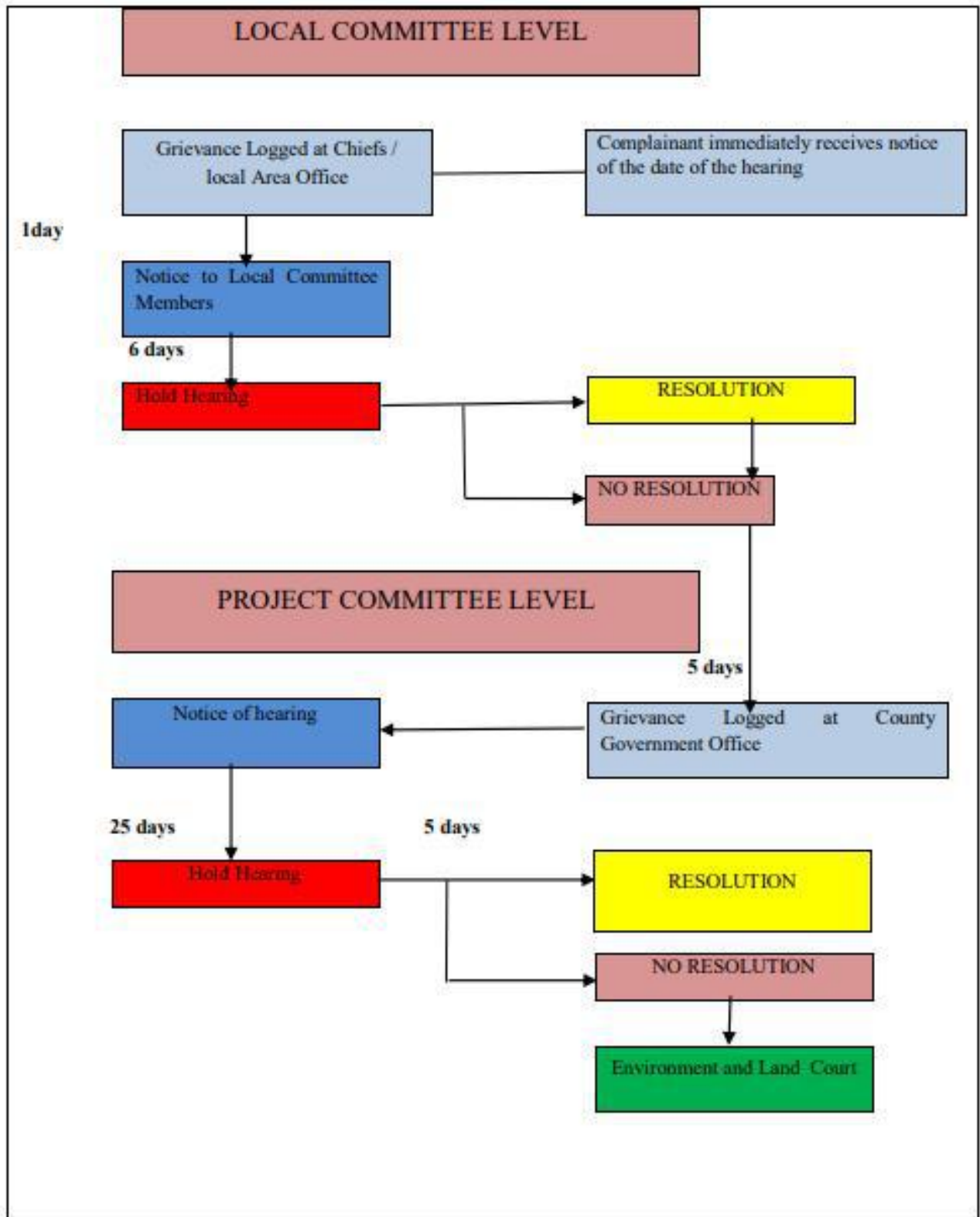
Activity	Months							
	1	2	3	4	5	6	7	8
Initiation/Preparation of RAP								
Disclosure of the RAP Report								
Audit of the RAP report to verify PAPs and compensation details								
Signing of compensation and relocation assistance agreements								
Resolution of conflicts and Grievances								
Payment of compensation to PAPs and facilitation of relocation								
Issuance of notices for relocation								
Commencement of affordable housing project works								
Monitoring of the resettlement activities								

NB: This Implementation schedule is for planning purposes and is subject to change depending on time, resources availability and developers' decisions

8.16. Grievance Redress Mechanism

A grievance redress mechanism (GRM) will be established to ensure that any issues arising during the resettlement process are addressed in a fair and timely manner. PAPs will be encouraged to report grievances through various channels, including a dedicated hotline, suggestion boxes, and community meetings. The GRM will be designed to resolve disputes amicably and ensure that PAPs' rights are respected throughout the process.

The figure below outlines the grievance/dispute management procedure;



Grievance / Dispute Management Procedure

8.17 Conclusion

The RAP for the proposed Affordable Housing Programme in Woodley Area ensures that the rights of the affected persons are protected, with appropriate compensation, resettlement, and relocation assistance provided. Through a transparent and participatory process, the project will contribute to the improvement of housing conditions in Nairobi County while ensuring the social and economic well-being of the affected individuals and families.

CHAPTER NINE: ENVIRONMENTAL MANAGEMENT PLAN (EMP)

9.1 introduction

Integrating environmental issues in business management, such as those related to development increases efficiency while enhancing the project proponent financial and environmental management. These issues, which are normally of financial concern, are: costs, product quality, investments, level of productivity and planning. Environmental planning and management as a concept seek to improve and protect environmental quality for both the project site and the neighbourhood through segregation of activities that are environmentally incompatible. Environmental planning and management integrate land use structure, social systems, regulatory law, environmental awareness and ethics.

Environmental management plan (EMP) for development projects such as the proposed multi-dwelling development aims at providing a logical framework within which identified negative environmental impacts can be mitigated and monitored. In addition, EMP assigns responsibilities for action to various actors, and provides time-frame within which mitigation measures can be done. EMP is a vital output for an environmental impact assessment as it provides a check-list for project monitoring and evaluation. A number of mitigation measures are already incorporated into the project design. The EMP outlined in Table 8-1 has addressed the identified potential negative impacts and mitigation measures for the proposed affordable housing project.

9.2 Environmental Monitoring and Evaluation

Environmental monitoring and evaluation are essential in the project lifespan as they are conducted to establish if the project implementation has complied with the set environmental management standards as articulated in the Environmental Management and Coordination Act (EMCA) No. 8 of 1999, and its attendant Environmental (Impact Assessment and Audit) Regulations, 2003.

In the context of the proposed project, design has made provisions for an elaborate operational monitoring framework for the following among others:

- (a) Disruption of natural environment and modification of micro-climate
- (b) Air and noise pollution
- (c) Proliferation of related businesses
- (d) Workers accidents and health infections during construction process

(e) Table 9.1: Environmental Management Plan

ENVIRONMENTAL IMPACT	MITIGATION MEASURES	RESPONSIBILITY	COST (KES) ESTIMATE	MONITORING MEASURES
IMPLEMENTATION PHASE				
Commissioning of the Construction Works	- Site hand-over and Ground breaking	Project team (Lead Consultant/Architect, contractor Proponent)	Part of/Covered in the Project Cost	Presence of the project Team
Securing the Construction Site	- Construction of Perimeter Wall - Site Hoarding	Contractor Proponent	1,000,000	Presence of Perimeter Fence
Security for Construction Material	- Construction of Site Stores - Construction materials to be delivered in small quantities to minimise storage problems	Contractor Proponent	1,000,000	Presence of Site store
Extraction and Use of Building Materials	- Availability and sustainability of the extraction sites as they are non-renewable in the short term - Landscape changes e.g. displacement of animals and vegetation, poor visual quality and opening of depressions on the surface - Ensure suppliers are licensed by NEMA	Contractor/Proponent /project team	Part of/Covered in the Project Cost	Material site rehabilitation
Collapse of Building during Construction	- Ensuring Building Strength and stability - Use of appropriate construction materials and reinforcements as per specifications - Ensuring building components are as per designs - Proper supervision - Ensure proper timelines are followed e.g. curing time	Contractor Proponent project team	Part of/Covered in the Project Cost	Presence of the project Team
Disturbance of Traffic flow during construction	- Proper signages at the construction site - Awareness creation on traffic compliance and management - Education to truck drivers - The proponent to come up with a traffic management plan - Assign traffic marshals to control traffic - Provide an alternative access road for the general public	Contractor/Project team and general public	2,000,000	- Presence of site Notice Board /Hoarding - Presence of Security - warning signs An alternative access road for the pupils and general public
Relocation of the project affected persons	- Availability of a comprehensive resettlement Action Plan - Monetary compensation of the PAPs - Allocation of 3 bedroom units to the PAPs upon completion of	Project proponent	100,000,0000	Absence of social conflict Peaceful coexistence

ENVIRONMENTAL IMPACT	MITIGATION MEASURES	RESPONSIBILITY	COST (KES) ESTIMATE	MONITORING MEASURES
	the proposed project			
CONSTRUCTION PHASE				
Soil Excavation leading to site disturbance	<ul style="list-style-type: none"> - Excavate only areas to be affected by buildings - Dumping of excess excavated materials to sites designated by NEMA and NCCG. - Restoration of excavated sites 	Contractor	10,000,000	Landscaping after completion of construction phase
Soil Erosion	<ul style="list-style-type: none"> - Create and Maintain soil traps and embankments. - Landscaping after completion of construction - Excavated soil to be used for back filling - Develop soil erosion management measure. 	Contractor/Proponent, Architect/Site engineer Landscape Architect	2,000,000	Lack/Absence of Soil Erosion
Noise Pollution and Vibration	<ul style="list-style-type: none"> - Switch off engines not in use - Construction work to be confined to between 7am to 5pm as per the relevant laws and regulation under EMCA 2015. - Ensure use of earmuffs by machine operators - Provide and enforce use of PPE e.g. ear muffs - Proper servicing of machinery and equipment (oiling and greasing) - Monitor noise levels as per NEMA guidelines 	Proponent and Contractor	2,000,000	Lack of complaints from the immediate neighbours
Air emissions	<ul style="list-style-type: none"> - Water sprinkling of driveways or the use of biodegradable hydrant e.g. Terraform polymer will reduce dust emission during construction - Ensure servicing of vehicles regularly - Cover loads of friable materials during transportation. - Control speed of construction vehicles and switch off machines when not in use. - Provide PPE to workers. 	Proponent and Contractor	1,000,000	<ul style="list-style-type: none"> - Lack of complaints - Workers wearing protective clothing and earmuffs
Risks of Accidents and Injuries to Workers	<ul style="list-style-type: none"> - Education and awareness to all construction workers - Ensure use of appropriate personal protective clothing - Provide First Aid Kits on site - Ensuring Building Strength and stability - Proper supervision 	Proponent Contractor	3,000,000	<ul style="list-style-type: none"> - Presence of well-equipped First Aid kit - Presence of Security Guards on site - Presence of a register on the site

ENVIRONMENTAL IMPACT	MITIGATION MEASURES	RESPONSIBILITY	COST (KES) ESTIMATE	MONITORING MEASURES
Health and Safety	<ul style="list-style-type: none"> - Provide First Aid Kits on site - Proper signages and warning to public of heavy vehicle turning - Ensuring Building Strength and stability - Provide clean water and food to the workers - The contractor to abide by all construction conditions especially clause B12 which stipulates health safety and workforce welfare - Personnel to stick to standard operation procedures - Personnel to wear complete protection gear - Provision of fire-fighting equipment - Put in place an emergency response plan. - Put in place guideline for operation of machinery and appliances and ensure workers are aware of the same. - Comply with Kenyan safety policy and safe working procedures, laws and regulations 	<p>Proponent</p> <p>Contractor</p>	4,000,000	<ul style="list-style-type: none"> - Presence of well-equipped First Aid kit - Presence of Security Guards on site - Presence of a register on the site
Solid Waste Generation	<ul style="list-style-type: none"> - Ensure waste materials are disposed of on County and NEMA approved sites - Use of the 3rs – Reduce, Re-use, Re-cycle - Solid waste to be put in designated areas for appropriate disposal (waste cubicle) - Waste segregation to at source - Engage a licensed, competent and effective waste handler 	<p>Proponent</p> <p>Contractor</p>	3,000,000	<ul style="list-style-type: none"> - Absence of Solid waste on the site
Energy Consumption	<ul style="list-style-type: none"> - Use electricity sparingly since high consumption of electricity negatively impacts on these natural resources and their sustainability - Use of Standby Generators - Use of renewable sources of energy i.e. solar panels 	<p>Proponent</p> <p>Contractor</p>	5,000,000	<ul style="list-style-type: none"> - Presence of KPLC power lines - Presence of generator
Excessive Water Use	<ul style="list-style-type: none"> - Excessive water use may negatively impact on the water source and its sustainability - Getting supplementary source of water - Installation of toilet flushes with low volume cisterns - Recycling of water - Drilling onsite borehole 	<p>Proponent</p> <p>Contractor</p> <p>WRA</p>	5,000,000	<ul style="list-style-type: none"> - Metering of water

ENVIRONMENTAL IMPACT	MITIGATION MEASURES	RESPONSIBILITY	COST (KES) ESTIMATE	MONITORING MEASURES
OCCUPATION PHASE				
Architectural incompatibility leading to distortion of neighbourhood aesthetic image	<ul style="list-style-type: none"> - Harmonize building scale with existing developments - Harmonize detail, material and finishes for roofs and walls with existing development 	Architect Proponent Contractor	Part of/Covered in the Project Cost	<ul style="list-style-type: none"> - Compatibility with the neighbourhood
Solid Waste Generation and Management	<ul style="list-style-type: none"> - Regular inspection and maintenance of the waste disposal systems during operation phase - Establish a collective waste disposal and management system - Provide waste disposal bins to each suite well protected from adverse weather and animals - Ensure waste materials are disposed off on County approved sites - Engage a NEMA licensed waste handler to transport the waste - Use of the 3rs – Reduce, Re-use, Re-cycle 	Proponent Contractor	1,500,000	<ul style="list-style-type: none"> - Presence of NEMA registered waste management companies - Presence of waste handling bins - Absence of wastes
Liquid Waste Generation and Management	<ul style="list-style-type: none"> - Regular inspection and maintenance of the waste disposal systems during the operation phase - Proper connection to the sewer system (NCWSCO) - Routine check-ups and monitoring of the channel linkage to the sewer line to avoid leakages and blockages. - Construction of separate storm water drainage channel 	Proponent Contractor	4,000,000	<ul style="list-style-type: none"> - Absence of liquid wastes
Increased loading on Infrastructure services <ul style="list-style-type: none"> - Increased vehicular and/or pedestrian traffic - Increased demand on water, sanitation services 	<ul style="list-style-type: none"> - Have paved road drainage system - Encourage rainwater harvesting - Provision of increased water storage capacity - Provide adequate storm water management system - Expansion of existing infrastructure - Supplement the existing water supply - Provision of walkways and driveways 	Contractor Proponent	2,000,000	<ul style="list-style-type: none"> - Absence of run-off - Presence of good roads - Pavements and drainage channels
Traffic	<ul style="list-style-type: none"> - Provide adequate parking facilities within the project site - Provide separate driveways and walkways - Provide alternative access routes 	Contractor Proponent	Routine operation procedure	<ul style="list-style-type: none"> - Presence of ample parking in the premises

ENVIRONMENTAL IMPACT	MITIGATION MEASURES	RESPONSIBILITY	COST (KES) ESTIMATE	MONITORING MEASURES
Increased social conflict	<ul style="list-style-type: none"> - Increased economic activities –employment generation and income earnings - Encourage good relation with the neighbours through neighbourhood associations 	Contractor Proponent		<ul style="list-style-type: none"> -Good relationship with neighbours -absence of conflicts
Storm water impacts	<ul style="list-style-type: none"> - Provide roof gutters to collect and direct roof water to storage tanks and direct the excess to the drains. - Construct drains to standard specifications - Develop a storm water drainage system and linkage to natural drains - Provision on storm water storage tanks 	Proponent Contractor	3,000,000	<ul style="list-style-type: none"> Absence of Flooding and dampness Supplementary to the existing waster supply
<p>Disruption of existing natural environment and modification of micro-climate:</p> <ul style="list-style-type: none"> - Increased development density - Increased glare/solar reflection - Reduced natural ground cover/surface run-off - Obstruction of ventilating winds 	<ul style="list-style-type: none"> - Development restricted to follow zoning policy/approved density – building line, plot coverage and plot ratio. - Careful layout and orientation of buildings to respect wind and sun direction. - Adequate provision of green and open space planted with grass, vegetation and tree cover. - Minimum use of reflective building material and finishes for roof, wall and pavement. - The balconies should have a green area 	Project team (Contractor Proponent, Architect or Lead Consultant, etc.)	5,000,000	<ul style="list-style-type: none"> Proper orientation Planted trees/Landscaping
Insecurity	<ul style="list-style-type: none"> - Secure the premise with a perimeter wall - Installation of CCTV cameras at strategic points where applicable - Have an entry point that is manned 24 hours - Construction of gate house for security purposes 	Contractor Proponent	3, 000,000	<ul style="list-style-type: none"> Presence of perimeter wall Presence of day and night security guards

ENVIRONMENTAL IMPACT	MITIGATION MEASURES	RESPONSIBILITY	COST (KES) ESTIMATE	MONITORING MEASURES
DECOMMISSIONING PHASE				
Building Safety	Assess the condition of buildings to ascertain usefulness	Engineer Proponent	6,000,000	Engineer and Tests on the building
Land and Building use	Ascertain the Planning development policy	County Physical Planner	500,000	Consultants present
Accidents/Injuries	Securing the Site by fencing off	Contractor Proponent	2,000,000	Presence of perimeter fence
Un-disconnected Services e.g. Power, Water, telephone, sewer etc.	Ensure disconnection of all services Remove all surface and underground cables and wiring	Contractor	3,000,000	Absence of cabling
Solid Waste Generation (demolition waste)	- Ensure waste materials are disposed of on County and NEMA approved sites - Ensure re-use of materials that can be re-used - Use of the 3rs – Reduce, Re-use, Re-cycle	Proponent/Contractor	1,000,000	Absence of Debris
Noise and Vibration	<ul style="list-style-type: none"> - Ensure use of serviced equipment - Switch off engines not in use - Demolition work to be confined to between 8am to 5pm - Ensure use of earmuffs by workers - Ensure the construction is done within the normal working hours as per the relevant laws and regulation under EMCA 2015. 	Proponent Contractor	1,000,000	Lack of complaints from the neighbours

CHAPTER TEN: ENVIRONMENTAL HEALTH AND SAFETY (EHS)

10.1 EHS Management and Administration

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

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

10.2 Policy, Administrative and Legislative Framework

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

10.3 Organisation and implementation of the EHS Management Plan

The contractor shall use the EHS plan at the proposed project site both during construction and operation. The engineer will use it during construction phase with the assistance of an EHS consultant.

10.4 The Guiding Principles to be adopted by the contractor

The company will be guided by the following principle: -

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

10.5 EHS management strategy to be adopted by the contractor

The following strategies will be adopted to achieve the above objectives

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

10.6 Safety Agenda for both the proponent and contractor

There will be a permanent EHS agenda during construction.

(a) Contractors

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

- Legal requirements.
- Statutory obligations.
- Obligation to lay-down a system for reporting accidents
- Responsibility to ensure that his/her employees are supplied with personal protective equipment
- Obligation to ensure that he obtains detail of jobs and areas where permit-to-work must be issued

(b) All residents' and workers' responsibility

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

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

(a) The contractor

The contractor will ensure that:

- Safe means of entry and exit at the proposed project site.
- Ensure adequate briefing of job at hand on the safe system before commencement of work.

- The EHS coordinator must be in attendance at all times throughout the duration of the project.
- The EHS consultant must maintain constant assessment of the risk involved
- A safety harness must be worn before entry into all confined spaces
- An EHS consultant must be posted at the entrance at the project site to monitor

(b) The Traffic / Drivers

Within the construction premises, the following traffic rules will be observed: -

- Observe speed limits and all other signs and obey traffic rules.
- Use the vehicle for the purpose to which it is intended only.

c) Fire hazard at the construction site,

Workers at the site shall ensure that: -

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

10.8 Welding at the construction site

It is the responsibility of the contractor during construction to: -

- Ensure that welding clamp is fixed such that no current passes through any moving parts of any machine.
- Ensure that all welding clamps are in good operating condition
- Ensure that welding clamps are free from any contact with explosive vapours.
- Ensure that any slag or molten metal arising from welding activities does not start up fires by:
 - ✓ Clearing combustible material to distance of at least 3 meters away from working area.
 - ✓ Appropriate fire extinguisher is to be kept available for immediate use at all times

10.9 Emergency procedure during construction and operation

An emergency situation means:

- Unforeseen happening resulting in serious or fatal injury
- Fire or explosion.

- Natural catastrophe.

In the event of such an emergency during construction, the workers shall:

- Alert other persons exposed to danger.
- Inform the EHS coordinator.
- Do a quick assessment on the nature of emergency.

Call for ambulance on standby.

CHAPTER ELEVEN : DECOMMISSIONING

11.1 Introduction

Decommissioning is an important phase in the project cycle and comes last to wind up the operational activities of a particular project. It refers to the final disposal of the project and associated materials at the expiry of the project lifespan. If such a stage is reached, the proponent needs to remove all materials resulting from the demolition/ decommissioning from the site. The following should be undertaken to restore the environment.

- Remove all underground facilities from the site
- The site should be well landscaped by flattening the mounds of soil and
- Planting indigenous trees and flowers
- All the equipment should be removed from the site
- Fence and signpost unsafe areas until natural stabilization occurs
- Backfill surface openings if practical

The table below shows the proposed decommissioning plan:

Table 11.1. EMP for Decommissioning

Expected Negative Impacts	Recommended Measures	Responsible Party	Time Frame	Cost (KShs)
1. Construction Machinery/Structure & Wastes				
Scraps material and other debris	<p>Use of an integrated solid waste management system i.e. through a hierarchy of options.</p> <p>Wastes generated as a result of facility decommissioning activities will be characterized in compliance with standard waste management procedures.</p> <p>The contractor will select disposal locations and the county based on the properties of the particular waste generated.</p>	Project Manager & Contractor	During decommissioning	3,000,000
	All buildings, machinery, equipment, structures and partitions that will not be used for other purposes should be removed and reused or rather sold/given to scrap material dealers.	Project Manager & Contractor	During decommissioning	
	Where recycling/reuse of the machinery, equipment, structures and other waste materials is not possible the materials should be taken to approved dumpsites.	Project Manager & Contractor	During decommissioning	
Rehabilitation of project site				
Vegetation disturbance Land deformation: soil erosion, drainage problems	<p>-Implement an appropriate re-vegetation program to restore the site to its original status.</p> <p>-During the vegetation period, appropriate surface water run-off controls will be taken to prevent surface erosion;</p> <p>-Monitoring and inspection of the area for indications of erosion will be conducted and appropriate measures taken to correct any occurrences;</p> <p>-Fencing and signs restricting access will be posted to minimise disturbance to newly-vegetated areas;</p>	Project Manager & Contractor	During decommissioning	4,000,000

Expected Negative Impacts	Recommended Measures	Responsible Party	Time Frame	Cost (KShs)
Social- Economic impacts				
-Loss of income -Loss of housing facilities	The safety of the workers should surpass all other objectives in the decommissioning project. -Adapt a project – completion policy; identifying key issues to be considered. -Compensate and suitably recommend the workers to help in seeking opportunities elsewhere. -offer alternative housing facilities	Project Manager & Contractor	During decommissioning	3,000,000

CONCLUSION AND RECOMMENDATIONS

Overview

Nairobi City County's affordable housing program is part of a broader initiative by the national government to address the housing deficit in Kenya. The program aims to provide affordable homes to low- and middle-income households, particularly targeting the rapidly growing urban population in Nairobi. The program is also aligned with Kenya's Vision 2030, which aims to improve living standards and stimulate the real estate sector.

From the foregoing analysis, the social and economic rating for this project is highly positive. Evaluation of alternatives has already shown that options are limited and costly. Already the proponent has sunk substantial amount of money in the project up to design stage. Further delay of the project is denying all stakeholders the anticipated benefits of the investment. On the other hand, redesigning or relocation will lead to loss of time and money that is already tied in the preliminary costs of the project. The identified negative environmental and social impacts have been serviced with adequate mitigation measures. The project will create employment opportunities and improve income earnings of the neighbouring communities.

During the preparation of this study report for the proposed project, it is observed and established that most of the negative impacts on the environment are rated low and short term. The positive impacts are highly rated and will benefit all stakeholders and the Kenyans at large. The project proponents have proposed to adhere to prudent implementation of the environmental management plan provided. They are obtaining all necessary permits and licenses from the relevant authorities and have qualified and adequate personnel to do the project as proposed. They have proposed adequate safety and health mitigation measures as part of the relevant statutory requirements.

Recommendations

- i. Workers to be provided with protective gears such as ear plugs, helmet, overall, leather hand gloves all the time when they are working. This is very important for health of workers.
- ii. First Aid-Kit should be permanently available at the site. In fact, at-least 15 workers should be given short practical training on first aid so that they can help their colleagues while awaiting for medical help from qualified personnel.

- iii. Workmen's insurance cover. The workmen at the site should be given adequate insurance cover from reputable insurance forms.
- iv. The contractor should work with speed and complete the project. The soonest possible to avoid disruption. Delayed projects with incomplete concrete structures are eye-sores and present waste of resources and can become home for snakes, rodents and hiding places for mosquitoes. They can become source of accidents.
- v. The contractor should not interfere with storm- water drainage system. Any blockage should be cleared soonest.
- vi. Contractors should remove all the waste and debris generated at the site. The waste should be carefully and systematically collected and taken to the approved licensed county dump site.
- vii. Landscaping should be done to compensate for the lost green filed
- viii. Ensure strict adherence to the RAP
- ix. Workers to ensure minimal disturbance to the learners at Joseph Kangethe Primary&Juniour School
- x. Address the all the emerging issues during the project implementation
- xi. Involve the area administration in resettlement of dispute during all the project phases
- xii. Provide an alternative playground to serve the school and the community in general
- xiii. Liaison with the neighbouring residents association to address any identified issues of concern
- xiv. The proponent should work closely with the environmental Experts, county government and other bodies to enhance the facilitation of the issues of concern. This will also help in solving any problem arising and which may not have been identified into the project at every stage of the implementation. It will enhance the co-existence of the proposed project with the environment, during the entire project cycle.
- xv. The various service providers must assess the respective requirements. The proposed design has met the basic requirements. It is recommended that on approval, the proponent should implement the project on the proposed drawings and if alterations are necessary, approval should be sought.

xvi. Conservation resources such as energy and water within the project during construction and occupation phases should be encouraged. Sound construction practices aimed at environmental conservation should also be adopted and special attention should be paid to the extended sources of raw materials such as water, sand, stones and energy. The operators during construction and operational phases should exercise diligence in all activities to ensure environmental balance.

Conclusion

This study is recommendable and should be approved by NEMA for issuance of an EIA license subject to annual environmental audits after it has been completed and occupied. This will be in compliance with the Environmental Management and Coordination Act of 1999 and the Environmental Impact Assessment and Audit regulations, 2003. Above all the proponent should carry out Environmental Audit 12 months after the project is completed.

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16. Republic of Kenya, (2010): Constitution.
17. Republic of Kenya, (2012) The County Governments Act, No. 17 of 2012
18. Proposed development site and architectural plans
19. Reference to other EIAs of the area prepared by the consultants
20. Kenya Population and Housing Census, 2009
21. Documents provided by the proponent

ANNEXES

1. T.o.R approval Letter
2. TOR
3. Minutes of public participation meetings
4. Letters from WERAT &WRWS
5. Dully filled questionnaires
2. Africa Reit Certificate of Incorporation
3. Africa Reit KRA Pin
6. Copy of the Award Letter
4. Architectural Designs Approval letter.
5. Approved architectural designs.
6. Woodley Estate Survey Plan
7. Woodley Estate Advisory Plan
8. 300 Woodley Village Project Concept Development
11. Practising Licenses(Firm and respective experts)
12. copies of compensation cheques
13. copies of allotment letters